

Implementing new nutrition care practices in healthcare:
learning from the experience of health professionals in
hospitals and Family Health Teams.

by

Celia Violet Laur

A thesis
presented to the University of Waterloo
in fulfillment of the
thesis requirement for the degree of
Doctor of Philosophy
in
Health Studies and Gerontology

Waterloo, Ontario, Canada, 2019

© Celia Laur 2019

Examining Committee Membership

The following served on the Examining Committee for this thesis. The decision of the Examining Committee is by majority vote.

External Examiner	Professor Anita Kothari School of Health Studies Western University
Supervisor	Professor Heather Keller Schlegel Research Chair Nutrition & Aging Schlegel-UW Research Institute for Aging & Professor, Department of Kinesiology University of Waterloo
Internal Members	Professor Rhona Hanning School of Public Health and Health Systems University of Waterloo
	Professor Sumantra Ray NNEdPro Global Centre for Nutrition and Health, Founding Chair and Executive Director Cambridge, UK
Internal/External Examiner	Professor Sherry Dupuis Recreation and Leisure Studies University of Waterloo

Author's Declaration

This thesis consists of material all of which I authored or co-authored: see Statement of Contributions included in the thesis. This is a true copy of the thesis, including any required final revisions, as accepted by my examiners.

I understand that my thesis may be made electronically available to the public.

Statement of Contributions

The manuscripts presented in this thesis, including five that have been published or submitted, are the work of Celia Laur, in collaboration with her co-authors and committee members. Exceptions to sole authorship include:

Chapter 4: Laur C, Marcus H, Ray S, Keller H. (2016). Quality nutrition care: measuring hospital staff's knowledge, attitudes, and practices. *Healthcare*, 4(4): 79.

Chapter 5: Laur C, Keller H, Curtis L, Douglas P, Murphy J, Ray S. (2018). Comparing hospital staff nutrition knowledge, attitudes, and practices before and 1 year after improving nutrition care: results from the More-2-Eat implementation project. *Journal of Parenteral and Enteral Nutrition*. 42(4):786-796.

Chapter 6: Laur C, Valaitis R, Bell J, Keller H. (2017). Changing nutrition care practices in hospital: a thematic analysis of hospital staff perspectives. *BMC Health Services Research*. 19;17(1):498.

Chapter 7: Laur C, Bell J, Valaitis R, Ray S, Keller H. (2018). The Sustain and Spread Framework: strategies for sustaining and spreading nutrition care improvements in acute care based on thematic analysis from the More-2-Eat study. *BMC Health Services Research*. 18:930

Chapter 8: Laur C, Carew W, Keller H. (2018). Building falls and nutrition risk screening programs for older adults in Family Health Teams in North Eastern Ontario. Submitted in September 2018.

As lead author of these five chapters, I was responsible for conceptualizing study design, data collection and analysis, and drafting and submitting manuscripts. Chapters 4-7 were conducted within the More-2-Eat project which was designed and led by the lead investigator, Professor Heather Keller, with support from an

extensive team (listed in the acknowledgements for each manuscript). Chapter 8 was an independent project in which I led on all aspects of the work, with support from co-authors.

My co-authors provided methodological guidance and feedback on draft manuscripts. In the qualitative manuscripts, co-authors reviewed selected transcripts or quotations against suggested themes to inform the final thematic analysis. All co-authors approved the manuscripts before submission and publication, with full knowledge that the publication would be included in the doctoral thesis of Celia Laur.

Abstract

Background: When converting evidence into practice to improve patient care, application of implementation, behaviour change and change management theory can help make the changes more effective and sustained. With a third of patients malnourished at admission to hospital and 34% of older adults at nutrition risk in the community, nutrition risk identification is a key care activity. Implementation techniques are needed to integrate screening into hospital and community settings. The overall aim of this dissertation was to understand healthcare professionals' perspectives on implementing several new nutrition care activities in hospitals and nutrition screening in the community.

Methods: Part 1 and 2 of this dissertation are components of the More-2-Eat (M2E) study, which aimed to improve nutrition care by implementing the Integrated Nutrition Pathway for Acute Care (INPAC) in five hospital units across Canada. In Part 1, a knowledge, attitudes and practices (KAP) questionnaire was developed and tested for reliability (test-retest) and then used in the baseline period of M2E. This questionnaire was an implementation technique used to demonstrate barriers to the use of INPAC prior to tailoring to the specific hospital context. Correlation (Intra class correlation; ICC), descriptive, and association analyses were conducted. The questionnaire was then administered to hospital staff on the M2E units before INPAC implementation and again a year later. Paired and unpaired statistical analyses were used to demonstrate changes in staff KAP with implementation of INPAC and associations determined between key staff characteristics and KAP change. For Part 2, key informant interviews and focus groups were conducted with staff and management at the M2E units at baseline, after a year of implementation and a year after project completion. Verbatim transcription was completed for interviews, and focus groups were summarized. Line by line coding was completed followed by thematic analysis. Results collected 1 and 2 years after implementation

were analyzed together. Part 3 is focused on stakeholder perceptions of building a program for falls and nutrition risk screening in primary care. Interviews were conducted with staff, management, and clients from six Family Health Teams in the North East Local Health Integration Network; regional representatives were also interviewed as this was a regional initiative. Family Health Team staff, management and regional representative interviews were transcribed verbatim and client interviews summarized. Line by line coding was conducted on all interviews followed by thematic analysis.

Results: Results from Part 1 indicate the KAP questionnaire is reliable (knowledge/attitude subscale ICC = 0.69 [95% CI 0.45–0.84]; practice subscale ICC = 0.845 [0.68–0.92]) and several barriers with respect to knowledge and attitudes of team members were noted in the baseline use of this questionnaire in the M2E hospitals. Comparing baseline results (n = 189) with scores after a year of implementing INPAC, (n = 147 unpaired and n = 57 paired with baseline) there was a significant increase in total score in unpaired results (from mean 93.6/128 [range, 51–124] to 99.5/128 [range, 54–119]; t = 5.97, P < .0001). There was also an increase in knowledge/attitudes (t = 2.4, P = .016) and practice (t = 3.57, P < .0001) components. There were no statistically significant changes in paired responses. After the year of INPAC implementation, 59% (n = 86) of staff felt involved in the change process, and these staff had higher knowledge/attitudes and KAP scores than those who did not feel involved.

Results from Part 2 provided an understanding of what hospital staff and management considered necessary to make nutrition care improvements. Five main themes were identified from baseline data: building a reason to change; involving relevant people in the change process; embedding change into current practice; accounting for climate; and building strong relationships within the hospital team. Building on these results, 1 and 2 years later, sites described the beginning of a culture change where nutrition care activities were valued and viewed as the

expected norm. Results provided an understanding of what was necessary to sustain changes: maintaining the new routine; building intrinsic motivation; continuing to collect and report data; and engaging new staff and management. Strategies to spread successful nutrition care improvements to other units in the study hospital and other nearby hospitals included: being responsive to opportunities; considering local context and readiness; and making it easy to spread. Strategies that supported both sustaining and spreading included: being and staying visible, and maintaining roles and supporting new champions.

For Part 3, a new context was considered, exploring how Family Health Teams developed falls and nutrition risk screening programs for older adults. Four themes were identified, including: setting up for successful screening; making it work; following up with risk; and an overarching theme that the implementation of this care improvement was about building relationships.

Discussion: This dissertation provides guidance for healthcare providers on how to implement nutrition care improvements in hospitals and steps for building a falls and nutrition risk screening program in a Family Health Team. This dissertation research has significant impact on understanding the process of change which can impact patient care in both settings. Impact is also visible through its contribution to the M2E project overall, as M2E did improve nutrition care in all five hospital units. Comparisons can be made between how changes were initiated in each setting, specifically regarding their use of implementation, behaviour change and change management theories to support sustainable change. These theories are guides that can ensure the processes and changes are viewed from a variety of perspectives and key steps considered. In the M2E hospitals, the teams making the changes were trained on these theories and applied them throughout their implementation of INPAC, including through considering capability, opportunity and motivation, collecting audit data, involving relevant people in the change process, and more.

Family Health Teams had not received such training and although they were thinking through the process and recommended use of change management strategies, they may benefit from applying implementation theories to support their progress.

Conclusion: This dissertation has significant impact in terms of understanding the process of change in hospitals and Family Health Teams. Results from the hospital work are already been applied to practice and research in other hospitals in Canada, Australia and the United Kingdom. Understanding the steps used by Family Health Teams to set up their falls and nutrition risk screening will be beneficial for others that are developing their own programs. Learning from and sharing the experiences of health professionals implementing screening and other nutrition care activities in hospitals and Family Health Teams will help to improve patient care and support continued implementation of nutrition care practices in healthcare.

Acknowledgements

I acknowledge the land on which I completed my degree is on traditional territory of the Neutral, Anishnawbe and Haudenosaunee peoples. The University of Waterloo is situated on the Haldimand Tract, the land promised to the Six Nations that includes six miles on each side of the Grand River.

Recognition and heartfelt thanks are due to Professor Heather Keller for her essential guidance and unwavering support throughout my doctoral training. Her efficiency and pragmatic approach to research inspired me to see what was possible and to always make sure what we attempted was practical and beneficial.

Professor Sumantra Ray and Professor Rhona Hanning have been supportive since the start. Special thanks to Professor Ray for his guidance throughout every step of my career, including my sudden decision to pursue doctoral studies at Waterloo.

Appreciation also goes to my internal/external examiner, Professor Sherry Dupuis, and my external examiner, Professor Anita Kothari for their interest and willingness to review this dissertation.

This work would not have been possible without the More-2-Eat study team and the individuals who participated in this research. The Champions and Research Assistants each assisted with recruitment and warmly welcomed me to their hospital and city. To the dedicated staff at the Family Health Teams, sharing your time, insights and observations was a critical part of this work. To the older adult participants, thank you for taking the time to share your experiences.

Funding from the Canadian Frailty Network for the More-2-Eat study (Parts 1 and 2) and the doctoral award research stipend from the Canadian Institutes of Health Research (Part 3) made this work possible.

My research journey began in the U.K. with the NNEdPro Group. Allowing me to stay involved and providing me with an avenue to apply my studies and discuss new ideas was invaluable.

A special thanks to fellow students Lesley, Ben and Jason for being there from the beginning. Thank you also to the many other students whom I have had the pleasure of working with, particularly Renata, Tara, Sarah W, Sarah A, and Jill. My parents, sister and her family, and other family members were steadfast in their understanding and encouragement. My time at Waterloo would have been very different without Steve; I look forward to many more years together with you.

To all of those who listened and wished me well along the way – this would not have been possible without you.

Table of Contents

Examining Committee Membership.....	ii
Author’s Declaration	iii
Statement of Contributions	iv
Abstract	vi
Acknowledgements	x
Table of Contents	xii
List of Figures	xix
List of Tables	xx
Abbreviations.....	xxii
Chapter 1 : Introduction and Overview	1
1.1 Reflexive standpoint.....	8
1.2 Dissertation overview.....	9
Chapter 2 : Literature Review.....	10
2.1 Knowledge translation.....	10
2.2 Implementation and behaviour change frameworks and theories	11
2.3 Change management	14
2.4 Sustainability	15
2.5 Spread	16
2.6 Teamwork	17
2.7 Malnutrition in acute care.....	18
2.8 Changing nutrition culture in hospital.....	19
2.8.1 Integrated Nutrition Pathway for Acute Care (INPAC)	19
2.8.2 The More-2-Eat implementation study	21
2.9 Falls and nutrition risk screening in primary care.....	24
2.9.1 Nutrition risk screening in the community.....	24
2.9.2 Falls prevention in the community.....	25

2.9.3 Nutrition risk, frailty and falls risk in the community.....	27
2.9.4 Understanding the primary care context	27
2.9.5 Fall and nutrition risk screening in Family Health Teams.....	28
2.10 Study implications	30
Chapter 3 : Research Questions, Hypothesis, and General Methodology	32
3.1 Research questions and hypothesis	32
3.1.1 Research design and positioning	34
3.1.2 Quantitative methodology.....	35
3.1.3 Qualitative methodology	36
3.2 Study sites	39
3.3 Ethical considerations	42
Chapter 4 : Part 1. Manuscript 1: Quality Nutrition Care: Measuring Hospital Staff's Knowledge, Attitudes, and Practices	43
4.1 Abstract.....	43
4.2 Introduction	44
4.3 Materials and methods.....	46
4.3.1 Study 1: Development and face validation of KAP questionnaire	46
4.3.2 Study 1: Test-retest reliability	46
4.3.3 Analysis	47
4.3.4 Study 2: Administration and descriptive analysis of KAP	48
4.3.5 Analysis	49
4.3.6 Ethics.....	50
4.4 Results	50
4.4.1 Study 1: Test-retest reliability results	50
4.4.2 Study 2: Administration results.....	53

4.4.3 Study 2: Descriptive results from More-2-Eat sites	55
4.5 Discussion.....	59
4.5.1 Limitations	61
4.5.2 Using the results.....	62
4.6 Conclusions	62
4.7 Acknowledgements.....	63
Chapter 5 : Part 1. Manuscript 2: Comparing hospital staff nutrition knowledge, attitudes, and practices before and 1 year after improving nutrition care: results from the More-2-Eat implementation project.	64
5.1 Abstract.....	64
5.2 Clinical relevancy	65
5.3 Introduction	65
5.4 Methods	67
5.4.1 Analysis	69
5.5 Ethics	70
5.6 Results	70
5.6.1 Knowledge, attitudes and practices scores	72
5.6.2 Recognition and support of the change processes	76
5.6.3 Perceptions of screening and referral processes	81
5.6.4 Qualitative comments.....	83
5.7 Discussion.....	83
5.7.1 An interdisciplinary approach where staff feels involved.....	86
5.7.2 Limitations	87
5.7.3 Future directions.....	88
5.8 Conclusion	89

5.9 Acknowledgements	90
Chapter 6 : Part 2. Manuscript 3: Changing nutrition care practices in hospital: a thematic analysis of hospital staff perspectives.	91
6.1 Abstract	91
6.2 Background	92
6.3 Methods	94
6.3.1 Overview	94
6.3.2 Sampling and recruitment	94
6.3.3 Data collection	95
6.3.4 Data analysis	97
6.3.5 Ethics approval and consent to participate.....	98
6.4 Results	98
6.4.1 Improving nutrition care for patients	107
6.4.2 Building a reason to change	108
6.4.3 Involving relevant people in the change process	111
6.4.4 Embedding change into current practice	114
6.4.5 Accounting for climate	116
6.4.6 Building strong relationships within hospital teams	118
6.5 Discussion.....	120
6.5.1 Strengths and limitations	123
6.6 Conclusion	125
6.7 Declarations	125
6.7.1 Ethics approval and consent to participate.....	125
6.7.2 Acknowledgements	125

Chapter 7 : Part 2. Manuscript 4. The Sustain and Spread Framework: Strategies for sustaining and spreading nutrition care improvements in acute care based on thematic analysis from the More-2-Eat study.....	127
7.1 Abstract.....	127
7.2 Background.....	129
7.3 Methods	130
7.3.1 The More-2-Eat project	130
7.3.2 Sampling and recruitment	131
7.3.3 Data collection.....	132
7.3.4 Analysis	135
7.4 Results	135
7.4.1 Sustain	138
7.4.2 Spread.....	142
7.4.3 Connecting spread to implementation.....	145
7.4.4 Sustain and spread	146
7.4.5 Creating culture change	147
7.5 Discussion.....	148
7.5.1 Making lasting improvements to nutrition care	149
7.5.2 Being flexible.....	150
7.5.3 Strengths and limitations	151
7.6 Conclusion	152
7.7 Declarations	152
Chapter 8 : Part 3. Manuscript 5. Building falls and nutrition risk screening programs for older adults in Family Health Teams in North Eastern Ontario	154
8.1 Abstract.....	154
8.2 Introduction	155

8.3 Methods	157
8.3.1 Falls and nutrition risk screening	157
8.3.2 Development of interview guides	158
8.3.3 Sampling and recruitment	160
8.3.4 Data collection	161
8.3.5 Analysis	161
8.3.6 Ethics.....	162
8.4 Results	163
8.4.1 Setting up for successful screening.....	172
8.4.2 Making it work	174
8.4.3 Following up with risk	176
8.4.4 “It’s about building relationships”	180
8.5 Discussion.....	182
8.5.1 Strengths and limitations	185
8.6 Conclusion	186
Chapter 9 : Discussion	188
9.1 Implications for implementation practice	188
9.2 Comparing implementation practice between hospitals and Family Health Teams using implementation, behaviour change and change management theories as guides	190
9.2.1 Using the Knowledge-to-Action (K2A) cycle to guide implementation	190
9.2.2 Using behaviour change and other implementation theories	193
9.2.3 Using change management theory and tools.....	198
9.3 Promoting interdisciplinary teamwork	200
9.4 Application of developed implementation, sustain and spread frameworks	203

9.5 Implications for implementation science	204
9.6 Ensuring methodological rigor	206
9.7 Strengths and limitations.....	209
9.8 Next steps	211
Chapter 10 : Conclusion	214
Bibliography:.....	215
Appendix :.....	241

List of Figures

Figure 1.1: Research project timeline	4
Figure 2.1: Planning of the More-2-Eat project using the Knowledge to Action cycle.	13
Figure 2.2: The Integrated Nutrition Pathway for Acute Care (INPAC)	21
Figure 2.3: Outline of the overall More-2-Eat project, with aspects of this dissertation circled.	23
Figure 6.1: Framework describing the themes regarding making change to nutrition care in the hospital setting.....	101
Figure 7.1: The Sustain and Spread Framework.....	136
Figure 8.1: Summary of the steps for building a falls and nutrition risk screening program in Family Health Teams.....	162
Figure 9.1: Mapping the implementation strategies from More-2-Eat to the Kotter 8 Step Model of Change Management.	199

List of Tables

Table 3.1: Characteristics of the More-2-Eat hospitals.....	39
Table 3.2: Characteristics of the Family Health Teams in the North East Local Health Integration Network	41
Table 4.1: Study 1: Demographics for test retest reliability participants (n = 35).	51
Table 4.2: Study 1: Test retest reliability of the KAP questionnaire for individual questions.	52
Table 4.3: Study 2: Demographic information of the hospital staff across five sites.	54
Table 4.4: Study 2: Proportion of responses for knowledge/attitude questions (N = 189). ...	56
Table 4.5: Study 2: Proportion of responses for practice questions (N = 189).....	58
Table 5.1: Demographic information of the hospital staff for T1, T2 and paired responses.	71
Table 5.2: Mean difference scores comparing KA scores for T2 to T1 unpaired and for paired responses.	73
Table 5.3: Mean difference scores comparing practice score for T2 to T1 for all responses and for paired responses.....	75
Table 5.4: Recognition of change on the unit and support provided contrasting unpaired T2, paired samples, and KAP scores.	78
Table 5.5: Perception of proportion of patients screened, referred and receiving appropriate care compared by paired and unpaired samples.	82
Table 6.1: Guide for focus group and interview questions	96
Table 6.2: Participant information for all focus group and interviews.	99
Table 6.3: Summary of themes and applicable quotes based on the focus groups and interviews.....	101
Table 7.1: Interview guide for post-implementation and sustainability interview.	134
Table 7.2: Participant demographics	137

Table 8.1: Interview guides for the Family Health Team staff/management, regional representatives and Family Health Team client participants.	159
Table 8.2: Demographics of Family Health Team staff, management, regional representatives and clients.....	163
Table 8.3: Family Health Team characteristics by case	165
Table 8.4: Summary of themes and applicable quotes based on interviews.....	167
Table 9.1: Mapping the Consolidated Framework for Implementation Research constructs to the More-2-Eat and Family Health Team projects.....	195
Table 9.2: The Miles et al (2014) tactics for ensuring validity and trustworthiness in the data. Examples of how these were within the More-2-Eat and Family Health Team projects. (Miles et al., 2014).....	206

Abbreviations

BCW - Behaviour Change Wheel

COM-B - Capability, Opportunity, Motivation

ED - Executive Director

EMR - Electronic Medical Record

FG - Focus Group

FHT - Family Health Team

ICC - Intraclass Correlation Coefficient

INPAC - Integrated Nutrition Pathway for Acute Care;

iSOLVE - Integrated Solutions for Sustainable Fall Prevention

K2A - Knowledge to Action

KA - Knowledge, attitude

KAP - Knowledge, attitude and practice

KI - Key Informant

M2E - More-2-Eat

MD - Mean Difference

NE LHIN - North East Local Health Integration Network

NNEdPro - Need for Nutrition Education/Innovation Programme

P score - Practice score

PDSA - Plan-Do-Study-Act

RD - Registered Dietitian

REB - Research Ethics Board

RN - Registered Nurse

SCREEN II-AB - Seniors in the Community Risk Evaluation for Eating and Nutrition II
abbreviated version

SGA - Subjective global assessment

SOYF - Stay On Your Feet

T1 - Time 1

T2 - Time 2

THREB - Tri-Hospital Research Ethics Board

Knowing is not enough; we must apply.

Willing is not enough; we must do.

- Johann Wolfgang von Goethe

Chapter 1: Introduction and Overview

In healthcare, we want to do what is best for the patient. Evidence is always growing about what is best practice, however, applying these changes in healthcare institutions including hospitals or primary care, is not easy. Through knowledge translation, particularly “implementation science” and “implementation practice,” there is an increasing understanding of how to implement best practices and a recognition that sustainability, making sure a change stays part of regular practice, should be considered from the beginning of implementation (Lennox, Maher, & Reed, 2018; Moore, Mascarenhas, Bain, & Straus, 2017; Shelton, Cooper, & Stirman, 2018; Straus, Tetroe, & Graham, 2013). Gaps remain in understanding how to implement improvements within specific areas (e.g., nutrition care) and settings (e.g., hospital), as well as general strategies for how to spread and sustain successful changes.

To move from evidence into practice, the Knowledge-to-Action (K2A) cycle can be used as a guide (Graham et al., 2006). K2A includes evidence creation and synthesis at the core, followed by creation of a knowledge tool that is then implemented and sustained as the Action cycle continues (Graham et al., 2006). This dissertation is focused on the implementation of nutrition care improvements based on knowledge tools for two groups: hospitalized adult patients and older adults living in the community. The *evidence synthesis* regarding a need for improved practices for these two groups is based on several studies and reviews on the high prevalence of malnutrition or nutrition risk in these settings; a third of patients are malnourished at hospital admission (Agarwal et al., 2013; Allard et al., 2016; Barker, Gout, & Crowe, 2011; Rasmussen, Holst, & Kondrup, 2010) and 34% of community-dwelling Canadian older adults are at nutrition risk (Ramage-Morin & Garriguet, 2013; Ramage-Morin, Gilmour, & Rotermann, 2017). This *evidence synthesis* also includes an understanding of the barriers and facilitators to adequate

nutrition care, including: barriers to food intake in hospital; benefits of nutrition risk screening in primary care; challenges with respect to nutrition screening and assessment; food access for vulnerable older adults; and known occurrence of a variety of risk factors that make older adults living in the community potentially vulnerable (Craven, Pelly, Isenring, & Lovell, 2017; Craven, Pelly, Lovell, Ferguson, & Isenring, 2016; Keller, 2007; Keller, Allard, Vesnaver, et al., 2015; Laur & Keller, 2017; Payette & Shatenstein, 2005; Sahyoun, Zhang, & Serdula, 2006). Coupled with the evidence regarding barriers, is that nutrition treatment, nutrient dense food, dietetic counselling, mealtime management and use of oral nutritional supplements can be effective for improving intake, body weight and health care outcomes (Hedman, Nydahl, & Faxén-Irving, 2016; Holst et al., 2015; Kimber, Gibbs, Weekes, & Baldwin, 2015; Meehan et al., 2016; Mueller, Compher, Ellen, & American Society for Parenteral and Enteral Nutrition Directors, 2011). Systematizing the nutrition care process in hospitals and primary healthcare is considered a best practice for ensuring those who need intervention, receive it (Bounoure et al., 2016; Lacey & Pritchett, 2003; Silver et al., 2018).

In hospitals, the *knowledge tool* connecting this knowledge synthesis to action is the evidence and consensus based Integrated Nutrition Pathway for Acute Care (INPAC) (Keller, Laur, et al., 2018; Keller, McCullough, Davidson, et al., 2015). The More-2-Eat (M2E) study, the basis for Part 1 and 2 of this dissertation, was an “Effectiveness-Implementation Hybrid Design, Type 2” (Curran, Bauer, Mittman, Pyne, & Stetler, 2012) focused on the implementation of INPAC. Essentially, in this design there was dual testing of clinical and implementation interventions and strategies (Curran et al., 2012). The main focus of M2E was to improve clinical outcomes by implementing the INPAC pathway, but research questions were also included to understand the implementation interventions and strategies. Results have been published on the clinical aspects of M2E, including how it increased the number of people screened for nutrition risk and receiving a standardized nutrition

assessment, while also decreasing barriers to food intake (Curtis et al., 2018; Keller et al., 2017; Keller, Valaitis, et al., 2018; Keller, Xu, et al., 2018; Laur, Butterworth, et al., 2018; Laur, Curtis, et al., 2018; Valaitis, Laur, Keller, Butterworth, & Hotson, 2017). This dissertation focuses on the implementation interventions, steps, and strategies, with Part 1 addressing the “barriers and facilitators”, and “monitoring and evaluation”, aspects of the K2A. Results of a malnutrition knowledge, attitudes and practices (KAP) questionnaire demonstrate strengths and gaps in hospital staff nutrition KAP. This questionnaire was used to assess potential barriers to uptake of INPAC (the knowledge tool), and how with implementation of nutrition care activities, these changed over time. In Part 2, the focus is on understanding the implementation process from the perspectives of hospital staff, including barriers and facilitators to implementation of nutrition care improvements, and how to sustain and spread successful changes.

For Part 3 of this dissertation, a new context is considered to understand the steps, as well as barriers and facilitators for setting up falls and nutrition risk screening for older adults in primary care, specifically in Family Health Teams (FHTs) in the North East Local Health Integration Network (NE LHIN). In this context, the research team was not involved and were only observers of how the screening programs were built as described by those involved at the FHT and regional level. *Evidence synthesis* demonstrates problem identification in that there is an overlap between frailty, falls, and nutrition risk for older adults, and the need to address these problems in primary care (Boulos, Salameh, & Barberger-Gateau, 2016; Chien & Guo, 2014; C. Johnson, 2003; Lorenzo-López et al., 2017; Meijers et al., 2012; Vivanti, McDonald, Palmer, & Sinnott, 2009; Westergren, Hagell, & Sjö Dahl Hammarlund, 2014). A convenience sample of primary care providers were in the process of setting up falls and nutrition risk screening for older adult FHT clients, providing an ideal opportunity to further understand how these programs can be set-up from a variety of perspectives. The *knowledge tools* implemented in Part 3 were part of the Stay on Your Feet strategy

(North East Local Health Integration Network, 2018), using the Staying Independent Checklist for falls risk screening and SCREEN II-AB (Seniors in the Community Risk Evaluation for Eating and Nutrition II abbreviated version) for nutrition risk screening (Keller, Goy, & Kane, 2005). Perspectives of FHT staff and management in the NE LHIN were explored regarding how to build falls and nutrition screening programs to support older adults living in the community.

This dissertation has importance for practitioners and researchers, particularly those in nutrition. It is also useful for the fields of implementation science and practice, as this work, based on implementation theory and frameworks, was assessing the practice of implementation from the perspective of those involved in the change effort. As pragmatic research, the resulting strategies discussed in these studies can be used by hospitals interested in improving nutrition care, by FHTs who want to build falls and or nutrition risk screening programs, and to the field of implementation science as the learning has potential for use in other settings and topics. This dissertation includes three parts, with the timeline provided in Figure 1.1:

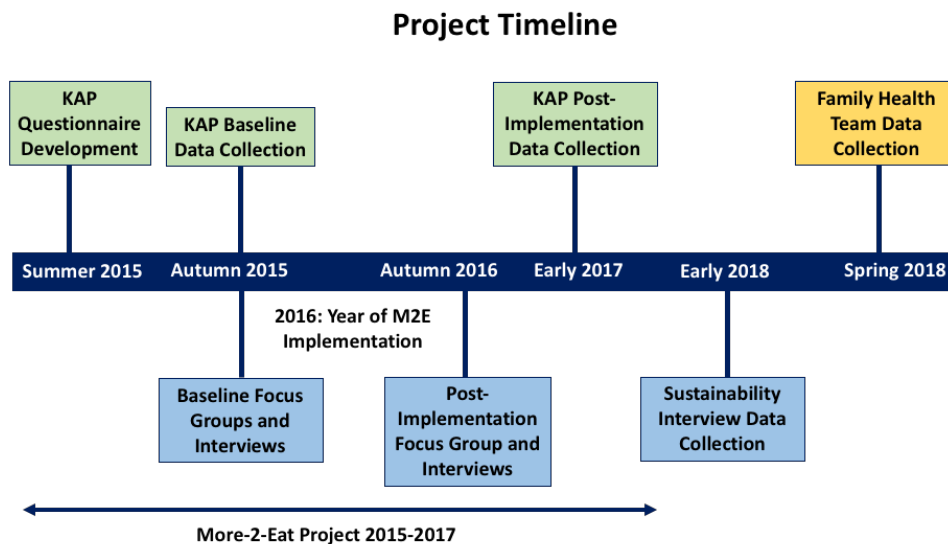


Figure 1.1: Research project timeline
(Part 1: Green; Part 2: Blue; Part 3: Yellow)

Part 1: Development and use of the Malnutrition Knowledge, Attitudes and Practices questionnaire in the More-2-Eat project (Chapter 4 and 5)

To assess barriers and facilitators of changing practice towards INPAC in the five M2E hospitals, a reliable questionnaire that could assess knowledge, attitudes and practices consistent with the INPAC (e.g., screening, referring to the dietitian, weight monitoring, discharge planning etc.) was required. The KAP questionnaire for hospital staff regarding the detection, prevention, and treatment of malnutrition was developed and tested for reliability (test-retest) to confirm questions. Psychometric testing (e.g., Chronbach's alpha) was not undertaken as items were not designed to tap an individual attribute or set of attributes, but rather to cover the core INPAC nutrition activities to be implemented. The finalized questionnaire was administered at baseline in the M2E study as a 'needs assessment' to determine barriers and facilitators of team behaviour change (i.e., step two on the K2A action cycle) before improved nutrition care practices following INPAC were implemented (Chapter 4). The KAP was also administered a year later (Chapter 5) to demonstrate change in KAP as a result of implementation, and thus is a form of evaluation of the implementation effort (i.e., step 5 on the K2A action cycle). Further questions on involvement in implementation efforts were included in this final questionnaire to gauge the importance of including team members in the change effort, with respect to their KAP results.

Findings from the baseline KAP questionnaire helped site champions tailor the implementation of INPAC based on known barriers and facilitators for change among unit staff. Reporting KAP results to staff also helped staff realize their need for change, as current KAP did not align with INPAC and thus provided motivation for the M2E project. Findings from the comparison of baseline and follow-up KAP questionnaires indicate that hospital staff KAP, knowledge/attitude, and practice sub-scores improved significantly after a year of all hospitals implementing nutrition care

improvements in line with INPAC (Curtis et al., 2018; Keller, Xu, et al., 2018; Laur, Keller, et al., 2018). Improvements to nutrition care were recognized by staff on the units. Those who felt involved in the change had higher KAP, knowledge/attitude, and practice scores than those who did not feel involved. Results of this questionnaire demonstrated that implementation of care improvements were recognized by and impacted the nutrition care practices of staff on the units. This questionnaire is available for use by researchers as well as for hospitals as an implementation needs assessment and evaluation tool to measure staff malnutrition care activities KAP and change over time.

Part 2: Hospital staff and management perspectives on implementing, sustaining and spreading nutrition care improvements (Chapter 6 and 7)

As M2E champions and site teams worked through the K2A cycle to implement INPAC, this provided an ideal opportunity to understand their perspectives on what was important for implementing and sustaining the changes. Key informant interviews and focus groups were conducted with hospital staff and management at the five M2E hospitals to increase understanding of how they implemented the changes on their unit, sustained successful changes, and spread nutrition care practices to other units in the hospital and other local hospitals. Interviews and focus groups were conducted at baseline (before nutrition care improvements began), after one year of implementation, and a year after project completion. Baseline results (Chapter 6) identified five main themes focused on the sites' current understanding of what it would take to make lasting improvements: building a reason to change; involving relevant people in the change process; embedding change into current practice; accounting for climate; and building strong relationships within the hospital team (Laur, Valaitis, Bell, & Keller, 2017).

Another round of interviews were conducted after the year of INPAC implementation and again a year after M2E completion. Results from these interviews were

combined into the Sustain and Spread Framework (Chapter 7) (Laur, Bell, Valaitis, Ray, & Keller, 2018). After implementation, sites described the beginning of a culture change with respect to nutrition care, where nutrition care activities were valued and viewed as the expected norm. Strategies to sustain changes included: maintaining the new routine; building intrinsic motivation; continuing to collect and report data; and engaging new staff and management. Strategies to spread included: being responsive to opportunities; considering local context and readiness; and making it easy to spread. Strategies that supported both sustaining and spreading included: being and staying visible, and maintaining roles and supporting new champions. These results were used in the development of the online INPAC implementation toolkit that helps other hospitals to make nutrition care improvements in line with INPAC. The Sustain and Spread Framework has potential application to other settings and topic areas.

Part 3: Setting up falls and nutrition risk screening in Family Health Teams (Chapter 8)

To understand how programs for falls and nutrition risk screening for older adults were beginning to be set-up in primary care, interviews were conducted in six FHTs in the NE LHIN. Four main themes were identified, including: setting up for successful screening; making it work; following up with risk; and an overarching theme that it was about building relationships. Each FHT was at a different stage of building their screening program with some having previously established falls risk screening to which they added nutrition risk screening. Others were at the preliminary testing phases for setting up falls and nutrition risk screening simultaneously. Although each FHT and their screening program was unique, they described the necessary components for building screening programs in this setting and learnings from this analysis will help inform others interested in setting up screening in primary care.

1.1 Reflexive standpoint

For the work included in this dissertation I took a pragmatist view (Daly, 2007; Feilzer, 2010), which allowed me to focus on real problems and practical solutions to improve patient outcomes. I am primarily a qualitative researcher, yet value the quantitative approach. My dissertation methodology was selected based on the research questions and were within my expertise, which aligns with the pragmatist view. I was reflexive throughout projects, recognizing my positioning and potential biases, continually considering if and how they may be impacting my work.

I am a female researcher with a background in public health nutrition and knowledge translation. I believe that having a background in nutrition, although not a dietitian, facilitated my approach as it allowed me to focus on *how* changes were made while still allowing me to understand the context and why changes were needed. My dissertation began with a focus on improving nutrition care in hospitals and has evolved with my recognition and interest in the need to understand the implementation and sustainability processes, and the team dynamics within interdisciplinary teams. My overall aim evolved to explore *how* to make changes in healthcare to improve patient outcomes, with Part 3 allowing me to begin to understand a different context. I see my role as a researcher and implementer, facilitating healthcare professionals to apply evidence into practice.

From an ontological perspective, in my quantitative work with the KAP questionnaire, I tried to be positioned closer to the “one truth” (realism) side with definitive answers, recognizing the limitations of the evidence created. However, with each quantitative analysis, I feel it leads to more unanswered questions, returning me to the relativism perspective. Epistemologically, I am a constructionist, focusing on exploration of a topic, often using a team process, rather than finding a definitive answer (Braun & Clarke, 2013).

1.2 Dissertation overview

This dissertation begins with a brief review of the literature (Chapter 2) focused on knowledge translation concepts and descriptions of nutrition risk prevalence and implications in acute and primary care settings. The methodology and research questions (Chapter 3) describe the overall approach taken for this dissertation, with project specific methods provided within the subsequent chapters. Chapters 4-8 have been written for publication. Chapter 4-7 are published and Chapter 8 is submitted for publication. The final discussion focuses on connecting the chapters and the implications for this work.

In Part 1 and 2, the term “patient” is used to refer to anyone admitted to hospital. For Part 3, the term “client” refers to an individual who is receiving care from a FHT. In Part 3 interviews, participants used “patient” and “client” interchangeably. Throughout this dissertation, unless referring specifically to FHT clients, the term “patient” is used.

Chapter 2: Literature Review

2.1 Knowledge translation

Every day new research findings are published, yet little of this evidence gets applied in the way it was intended (Richard Grol & Grimshaw, 2003; Straus et al., 2013). Even when healthcare professionals or organisations are aware of the evidence, this does not necessarily mean it will be used (or fully used) or that the implemented changes will be sustained (Lennox et al., 2018; Moore et al., 2017; Shelton et al., 2018; Straus et al., 2013). Knowledge translation plays a significant role in facilitating research evidence to be used in practice. When health services interventions are effectively implemented, this can lead to improved patient outcomes (Richard Grol & Grimshaw, 2003), yet there is an estimated \$200 billion (USD) of wasted research funding because the research did not reach its full potential (Macleod et al., 2014).

Knowledge translation is defined by the Canadian Institutes of Health Research as *“a dynamic and iterative process that includes synthesis, dissemination, exchange and ethically-sound application of knowledge to improve health, provide more effective health services and products and strengthen the health care system”* (Canadian Institutes of Health Research, 2017). The scientific study of knowledge translation is called Implementation Science, which includes robust development of theories, models, and frameworks. When Implementation Science and the research evidence about a content area is used to change practice it has many names, yet will be referred to here as Implementation Practice (Health Services Research Information Central, 2018).

Within knowledge translation, this dissertation includes aspects of Implementation Science and Practice. The Implementation Practice aspects were to understand how staff in healthcare institutions changed their practices with new evidence, how they used implementation, behaviour change and change management theories, what

strategies were used to sustain and spread changes, and the perceived impact of interdisciplinary teamwork. The Implementation Science aspect involved the development of new implementation frameworks that may be applicable to other settings or contexts. The M2E study, the basis for Part 1 and 2, is mainly focused on Implementation Practice, while some aspects of this dissertation also focus on the Implementation Science within M2E. The Implementation Practice and Science components are interrelated and work together to support sustainable improvements in clinical care. Sustainability of an intervention is considered throughout.

2.2 Implementation and behaviour change frameworks and theories

The K2A cycle is an implementation theory used to ensure all aspects needed for a sustainable intervention are considered (Graham et al., 2006). The K2A cycle has Knowledge Creation and Action Cycles working iteratively so that all evidence is presented and all aspects are considered in the development of an implementation intervention. A visual summary of the plan for how the M2E project would follow the K2A cycle is outlined Figure 2.1 (Laur & Keller, 2015).

Changing behaviour is a crucial aspect of putting evidence into practice. The overarching Theory of Behaviour Change follows the Michie (2011) Behaviour Change Wheel (BCW), which highlights aspects to be considered when designing behaviour change interventions (Michie, van Stralen, & West, 2011). At the core of behaviour change is the “sources of behaviour”: capability, opportunity and motivation (COM-B). These three factors are needed in order for behaviour change to occur (Michie et al., 2011). The BCW is intricately connected to Implementation Science and Practice, as it is a useful tool that ensures that several components of behaviour change can be used to encourage sustained change. Further, behaviour change techniques from the Theoretical Domains Framework (Atkins et al., 2017), can be mapped onto COM-B components providing practical suggestions for those attempting to change behaviour. For example, Theoretical Domains Framework

domains such as belief about consequences, optimism, and reinforcement can be used to motivate staff. From the Implementation Science perspective, understanding which aspects of behaviour change are used and impact the change helps to encourage spread and provide direction to others interested in implementing changes in their own setting. Using the BCW as a guide to an implementation process ensures that strategies and techniques are put into place to facilitate staff to have the necessary capability, opportunity and motivation to change their behaviour when implementing a change.

The Normalization Process Theory is typically used within complex interventions, such as M2E (May et al., 2009; Murray et al., 2010). Normalization Process Theory promotes the inclusion of implementation and sustainability methods from the beginning of the project by looking at how interventions work and how they can be embedded into routine practice (May et al., 2009; Murray et al., 2010). The Normalization Process Theory components require that an intervention is coherent (does the intervention makes sense?); has cognitive participation (is there engagement from the staff or stakeholders?); collective action (is work being done to make the intervention happen?); and reflexive monitoring (are there formal/informal ways of assessing the benefit of the intervention? Does it impact cost?) (May et al., 2009, 2015; Murray et al., 2010). Normalization Process Theory was used to advise the implementation process in M2E and was considered as part of understanding the Implementation Science components.

The Consolidated Framework for Implementation Research (Damschroder et al., 2009) was also used as a guide for M2E and this dissertation. This framework is based on 19 published implementation theories and includes five major domains: intervention characteristics, outer setting, inner setting, characteristics of individuals and process. Within these domains there are 39 underlying constructs and sub-constructs that are thought to influence efforts to change the practice (Damschroder

et al., 2009). These domains and underlying constructs were used in the planning of the M2E project and in developing the qualitative questions within Part 2 and 3.



Figure 2.1: Planning of the More-2-Eat project using the Knowledge to Action cycle.

This diagram is adapted from (Laur & Keller, 2015). The Canadian Malnutrition Task Force study determined the prevalence of malnutrition and barriers to food intake in Canadian hospitals. The catalyst grant focus groups were conducted during the development of INPAC. Score cards are a component of M2E that encouraged hospital teams to track their progress, including meeting outcomes, key steps, etc. Monitoring patient outcomes and length of stay was part of the overall M2E study. PDSA – Plan Do Study Act.

2.3 Change management

Change management is strongly connected to knowledge translation and implementation science/practice, although it takes a wider view focusing on any change within an organisation, not specifically healthcare. Change management typically focuses on individual and organization/institutional level changes. Several hospital and FHT management participants included within this dissertation were trained in and used change management principles and tools, particularly Plan-Do-Study-Act (PDSA) cycles (Maher, Gustafson, & Evans, 2010; Taylor et al., 2014).

The Kotter model of change management provides an effective guide for working through changes within an organisation (Kotter, 1996). The original Kotter 8 Step Model of change began with increasing urgency about the problem that needed to be changed, and works through several steps of building a team, communicating buy-in, keeping going, and making change stick (Kotter, 1996). In 2017, Kotter released an Accelerated version of his 8 Step Model which aimed to meet the needs of “today’s world” (Kotter International, 2017). In the revised model, rather than focusing on each step, the steps are more concurrent and continuous. Other changes include that a group of volunteers is recruited to facilitate the change, flexibility is more encouraged, as is responding to opportunities (Kotter International, 2017). Although the Accelerated version of Kotter’s 8 Step Model was not used in the planning of M2E, it was found as a useful way for M2E hospitals to think through their changes during INPAC implementation.

Each of these theories and frameworks were used as a guide to varying degrees. For example, the Consolidated Framework for Implementation Research and the K2A cycle were used to plan the project and referred to throughout implementation. The Behaviour Change Wheel, particularly capability, opportunity and motivation, and Kotter’s models were used in training with M2E hospitals and were suggested as their guides to implementation.

2.4 Sustainability

For an effective change or innovation to continue, methods to promote sustainability should be considered from the beginning, recognizing the need to continually adapt to changing context after initial implementation (Proctor et al., 2015; Straus et al., 2013). Sustaining change is important so that the positive impact can continue (Chambers, Glasgow, & Stange, 2013). The lack of sustainability has the potential to make patient outcomes worse, such as decreasing quality of care and quality of life (Scheirer, 2005; Stirman et al., 2012). Even though there is a clear need for interventions to be sustained, there is minimal research in this area (Chambers et al., 2013; Moore et al., 2017; Proctor et al., 2015; Schell et al., 2013; Tricco et al., 2016). It has even been said that, *“sustainability remains one of the least understood and most vexing issues for implementation research, largely due to unique methodological challenges”* (Proctor et al., 2015) (p. 2).

There continues to be confusion about the definition of sustainability. It is called by different names (routinization, institutionalization, maintenance, adherence, etc.), a variety of metrics are used to measure it (percent of sites that sustain the practice, rate of outcome improvement, etc.), and there is no consistency regarding time periods to consider when deciding that sustainability has been achieved (Fleischer, Semenic, Ritchie, Richer, & Denis, 2015; Ilott, Gerrish, Pownall, Eltringham, & Booth, 2013; Moore et al., 2017; Proctor et al., 2015; Schell et al., 2013; Tricco et al., 2016). In an attempt to address this confusion, a concept analysis found that sustainability literature typically described this concept as innovation-, context-, leadership-, and process- related (Fleischer et al., 2015). Moore et al. (2017), attempted to define sustainability as: *“1) after a defined period of time, 2) the program, clinical intervention, and/or implementation strategies continue to be delivered and/or 3) individual behavior change (i.e., clinician, patient) is maintained; 4) the program and individual behavior change may evolve or adapt while 5) continuing to produce benefits for individuals/systems”* (Moore et al., 2017) (p. 6).

There are several proposed models of sustainability, yet a 2016 scoping review focused on interventions that continued beyond research funding or were longer than 1 year, found that none of the studies used a sustainability framework (Tricco et al., 2016). Within this dissertation, sustainability models were considered and used as guides. The Schell et al. model was considered as it has nine domains for successful sustainability in public health interventions (Schell et al., 2013). The Dynamic Sustainability Framework was also considered as it involves “*continued learning and problem solving, ongoing adaptation of interventions with a primary focus on fit between interventions and multi-level contexts, and expectations for ongoing improvement as opposed to diminishing outcomes over time*” (Chambers et al., 2013) (p. 1). Sustainability guides were also considered, including the National Health Service (NHS) Institute for Innovation and Improvement Sustainability Model (Maher et al., 2010), and the NHS Scotland, Quality Improvement Hub document “The Spread and Sustainability of Quality Improvement in Healthcare” (Jeffcott, 2014). As these frameworks are all relatively new, there is still a lack of evidence regarding their ability to support the development, implementation or measurement of sustainability of knowledge translation interventions (Tricco et al., 2016).

Given the strong need for sustainability in an intervention to both benefit patients and advance the field, the two rounds of interviews conducted after one and two years of implementing INPAC focused on strategies to sustain successful changes and for spreading to other hospital units.

2.5 Spread

Alongside sustainability, spread of successful interventions allows the beneficial change to have a wider impact (Charif et al., 2017). As with sustainability, there continues to be lack of consensus regarding spread in terms of terminology, metrics for measuring, and timeframe. (Charif et al., 2017). Spread has been interpreted as “horizontal diffusion”, making changes along a specific care pathway going beyond

the initial implementation location (Ilott et al., 2013). Unfortunately, only some of the learning from the initial implementation may apply when spreading to a new location due to differences in context and culture. Some spread may occur naturally, such as through sharing ideas with other staff (Straus et al., 2013), but this is not a guaranteed approach to spread and more deliberate action is likely needed, such as actively working with staff on the new unit to find a process for the new change that works for that unit. For spread, working through each stage of the K2A cycle again is recommended so correct adaptations can be made based on context, and sustainability encouraged (Graham et al., 2006; Straus et al., 2013).

Similar to spread is “scaling up,” which, for this dissertation, has been interpreted to focus on spread at a larger scale, such as to other hospitals (Ilott et al., 2013). As the focus of the M2E sites was on spread to other units, and less about other hospitals, scaling up is not considered in this dissertation.

2.6 Teamwork

When implementing evidence into practice, then sustaining and spreading successful changes, there is a need for strong teamwork, particularly interdisciplinary teamwork, and effective communication. The literature on teamwork crosses disciplines and is so vast that one expert indicated: *“A plethora of research driven by increased interest in teams has resulted in a seemingly endless array of literature attempting to explain teamwork and the conditions surrounding its success or failure”* (Salas, Shuffler, Thayer, Bedwell, & Lazzara, 2015) (p. 599). Reviews from Salas and colleagues were used as guides to this vast literature, and specifically the consolidation of key concepts into the 9C’s for effective teams (cooperation, conflict, coordination, communication, coaching, cognition, composition, context and culture) (Salas et al., 2015).

In the health sector, some research on teamwork has focused on patient safety of which provision of nutrition care is a key component. A review of teamwork and

patient safety found that *“staff’s perceptions of teamwork and attitudes toward safety-relevant team behavior were related to the quality and safety of patient care”* (Manser, 2009) (p. 143). Positive impact was typically associated with strong leadership, team buy-in, knowing the gaps, and slowly embedding the change (Plonien & Williams, 2015; Sheppard, Williams, & Klein, 2013). These are all key concepts typically found in Implementation Science and Practice theory and frameworks and are concepts noted throughout each part of this dissertation. Understanding how teams work together is a key component to understanding how to implement best practice in hospital and primary care settings.

2.7 Malnutrition in acute care

The prevalence of malnutrition in hospitals is high in many countries, with approximately 20–50% of patients in acute care being malnourished, depending on the population and how malnutrition is assessed (Barker et al., 2011). In Canada, 45% of patients admitted to medical and surgical wards who stay two or more days are already malnourished (Allard et al., 2015). Both poor hospital food intake and malnutrition have been shown to be associated with negative health outcomes including a longer length of stay, readmission, comorbidities, and mortality (Agarwal et al., 2012, 2013; Allard et al., 2016; Barker et al., 2011; Zisberg, Shadmi, Gur-Yaish, Tonkikh, & Sinoff, 2015), along with increased cost (Curtis et al., 2017). A 2017 Statistics Canada report also found that those over age 65 who were malnourished in the community were more likely to be hospitalized and had an increased risk of mortality 25-36 months after hospitalization (Ramage-Morin et al., 2017).

The Nutrition Care in Canadian Hospitals study determined the Canadian prevalence of hospital malnutrition, and that 75% of the moderately malnourished and 60% of the severely malnourished patients did not receive a dietitian consult. Forty five percent of the overall dietetics consults were for well-nourished patients

(Allard et al., 2016; Keller, Allard, Laporte, et al., 2015). Despite this high malnutrition prevalence, inconsistent care processes, and the ad hoc nature of prevention, detection, and treatment of malnutrition in Canadian hospitals (Keller, Allard, Laporte, et al., 2015), before M2E, little was done to change the culture of nutrition care in hospitals (Tappenden et al., 2013). These results indicate that improvements are needed so that the right hospital staff are seeing the right patients at the right time, resulting in patients receiving the best nutrition care.

2.8 Changing nutrition culture in hospital

Making change in the hospital setting requires a comprehensive approach, which includes having all staff involved and sharing the responsibility of providing patient centered nutrition care (Allard et al., 2016; Laur, McCullough, Davidson, & Keller, 2015). In 2013, the Alliance to Advance Patient Nutrition published a call to action for improving nutrition care in hospitals. The Alliance indicated several principles for action including the need to change the institutional culture to one that values nutrition care (Tappenden et al., 2013). In working towards culture change, increased awareness regarding the importance, barriers, and enablers of adequate food intake is needed among the hospital organisations, staff, patients, and their families (Laur et al., 2015; Tappenden et al., 2013). Implementation Science and Practice, through putting evidence into sustainable practice changes could encourage this cultural shift.

2.8.1 Integrated Nutrition Pathway for Acute Care (INPAC)

The Integrated Nutrition Pathway for Acute Care (INPAC), shown in Figure 2.2, is an algorithm designed to address hospital malnutrition and facilitate appropriate nutrition care for all patients and is the knowledge tool implemented in M2E (Keller, Laur, et al., 2018; Keller, McCullough, Davidson, et al., 2015). Although other pathways for the detection and treatment of malnutrition in hospital exist (American Society for Parenteral and Enteral Nutrition, 2015; National Institute for Health and

Care Excellence, 2018) they fail to consider prevention. INPAC development was based on expert consensus and the literature, because many of the best practices in nutrition care, such as opening food packages for patients, are not published (Keller et al, 2015a). INPAC includes several steps starting with screening using the Canadian Nutrition Screening Tool (Laporte et al., 2015), assessment using the subjective global assessment (SGA) (Detsky et al., 1987), monitoring of food intake and mealtime barriers (Keller & McCullough, 2018; McCullough, Marcus, & Keller, 2017) and discharge planning, all to support prevention, detection, monitoring, and communication of malnutrition in hospitals (Keller, McCullough, Davidson, et al., 2015). In 2017, INPAC was updated to reflect the experience of M2E hospitals (Keller, Laur, et al., 2018; Keller, McCullough, Davidson, et al., 2015) (Figure 2.2).

The INPAC uses the Canadian Nutrition Screening Tool because it is short (2-questions) and has been validated against the “semi-gold standard” assessment tool, the SGA (Laporte et al., 2015). To follow ethical screening, if a patient is deemed at nutrition risk, an assessment must be completed to diagnose the patient and an appropriate care plan followed (Keller, Brockest, & Haresign, 2006). For nutrition assessment, INPAC uses SGA, a physical assessment, which typically takes 10 minutes and can be completed by a dietitian, a physician or other trained professionals (Detsky et al., 1987). This assessment categorises patients as SGA A (well nourished), B (mild/moderately malnourished) or C (severely malnourished). Within INPAC, SGA score is used as a mechanism for triaging patients into a designated pathway so the patient receives the appropriate nutrition care. This pathway is consistent with other best practice such as the Nutrition Care Process (Lacey & Pritchett, 2003).

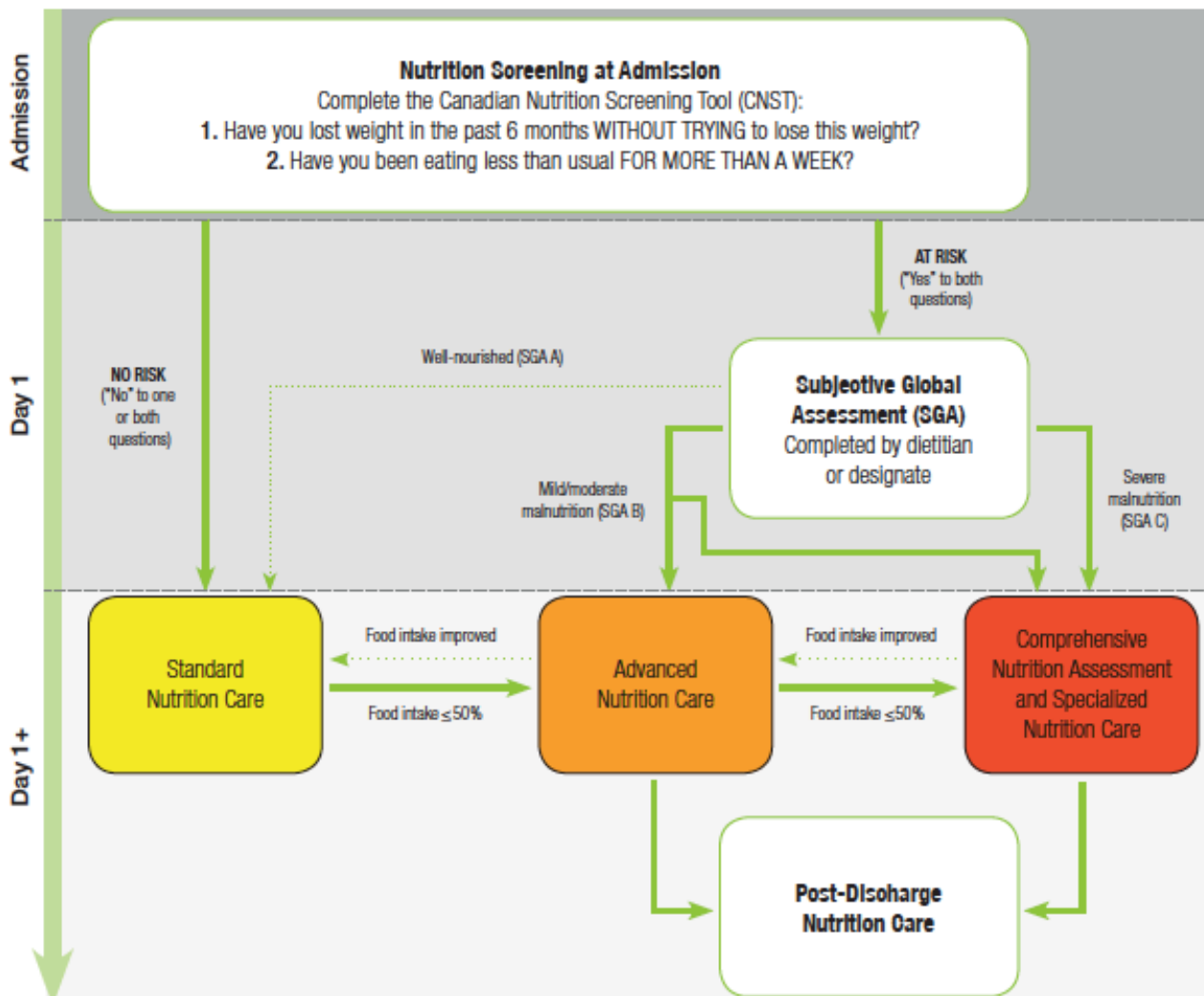


Figure 2.2: The Integrated Nutrition Pathway for Acute Care (INPAC)

Used with permission from the authors of (Keller, Laur, et al., 2018)

2.8.2 The More-2-Eat implementation study

Following the development of INPAC, the next step was to determine how it could be implemented in the hospital setting. The aim of the M2E study was *“to optimize nutrition care in hospitals and thus performance of the healthcare system, ensuring that malnutrition and poor food intake are prevented, detected and treated”* (Keller et

al., 2017) (p. 2). An outline of the M2E project with key aspects of this dissertation circled is included in Figure 2.3.

In M2E, five hospitals (one medical unit per hospital) from four provinces in Canada were selected by the research team based on their perceived ability and desire to implement change in nutrition care. M2E included three phases: baseline (Sept-Dec 2015; to collect baseline data on all measures, set up the Site Implementation Team [i.e., the multi-disciplinary team, including the site champion(s) and research assistants, selected at each hospital to make decisions regarding plans for implementation; members may change based on the change being implemented]); implementation (Jan-Dec 2016; plan-do-study-act [PDSA] cycles were used to implement changes within the unit in line with INPAC); and sustainability (Jan-Mar 2017; each unit was quantitatively monitored to see which changes remained in effect after the year of implementation was complete). The M2E champions led implementation in each site and the M2E research assistants collected the data and assisted with the implementation activities. The researchers acted as coaches for implementation and supported behaviour change by conducting monthly calls and creating monthly reports on audit data that were provided as feedback to the site team. Details of M2E are included in the protocol (Keller et al., 2017).

Each site decided what INPAC activities (e.g., screening, assessment with SGA, etc.) to implement and how to implement the changes on their unit. This tailoring by the sites included deciding who was responsible for certain tasks, such as screening or which strategies would be used for implementation. In this approach, the site has the flexibility to implement INPAC based on their specific context, including staffing, patient population, and available resources.

At the end of M2E, all key factors for INPAC implementation were used to create a virtual toolkit so other hospitals could learn from M2E. The toolkit is available here: <http://m2e.nutritioncareincanada.ca/>

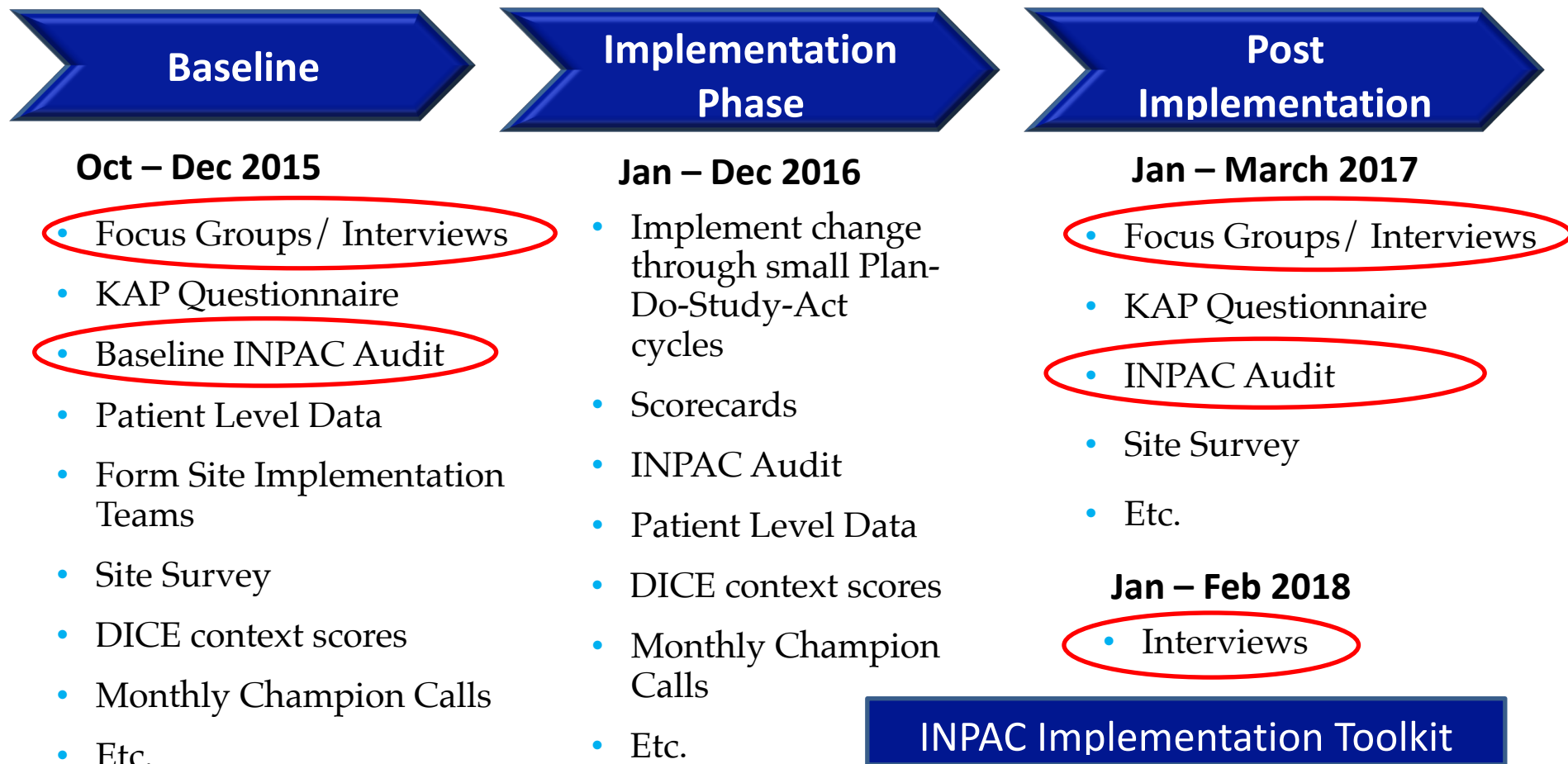


Figure 2.3: Outline of the overall More-2-Eat project, with aspects of this dissertation circled. DICE: Duration, Integrity, Commitment, Effort (a change management tool); INPAC: Integrated Nutrition Pathway for Acute Care; KAP: Knowledge, Attitudes and Practices.

2.9 Falls and nutrition risk screening in primary care

2.9.1 Nutrition risk screening in the community

The high prevalence of malnutrition at admission to hospital indicates that the problem has likely developed in the community. As the average age of participants in the Canadian hospital study was 66 (Allard et al., 2016), it was evident that focusing nutrition care improvements on older adults would be a good starting point. The 2008/09 results from the Canadian Community Health Survey found that 34% of community dwelling older adults were at nutrition risk (Ramage-Morin & Garriguet, 2013). Nutrition risk was associated with: level of disability, poor oral health, medication use, living alone, low social support, infrequent social participation, and not driving on a regular basis (Ramage-Morin & Garriguet, 2013; Ramage-Morin et al., 2017). As in hospital, nutrition risk in the community needs to be identified early in older adults to prevent exacerbation of the issue, thus screening tools such as SCREEN II-AB (Seniors in the Community Risk Evaluation for Eating and Nutrition-II-Abbreviated) are used (Keller et al., 2005). SCREEN II-AB is considered the preferred tool for nutrition risk screening in community settings (Power et al., 2018) and is already used in the Canadian Longitudinal Study on Aging and by Statistics Canada. It is a brief (8-item), self-administered tool that has demonstrated validity against dietitian assessment of nutrition risk (Keller et al., 2005) and predictive validity against outcomes including hospitalization, mortality and health-related quality of life (Keller & Østbye, 2003; Keller, Østbye, & Goy, 2004; Ramage-Morin et al., 2017).

There are many barriers to nutrition screening in the community, with dietitians indicating insufficient time to screen and lack of knowledge by non-dietetic staff (Craven et al., 2017). General Practitioners recognized the benefits but rarely screened, indicating patient selection and forgetting to screen as barriers (Gaboreau et al., 2013). Enablers to screening in the community included policy and procedures

and the provision of education and training (Craven et al., 2017). Following the seven steps for successful screening in the community is recommended, with the first step focused on making sure screening is ethical, such that support is available for those at risk (Keller et al., 2006). The ability to support at risk individuals in the community can be more challenging than in hospital, as less control is available in the community regarding access to food, food intake monitoring, or provision of services (Keller, 2007; Keller et al., 2006).

2.9.2 Falls prevention in the community

Approximately 30% of those over age 65 living in the community fall at least once each year (Pearson, St-Arnaud, & Geran, 2014). Falls are associated with morbidity and mortality, are linked to poorer overall health, and can lead to earlier admission to long term care facilities (Ambrose, Cruz, & Paul, 2015; Ambrose, Paul, & Hausdorff, 2013; American Geriatrics Society and British Geriatrics Society, 2011; Brown, 1999; Campbell, Spears, & Borrie, 1990; Rubenstein, 2006; Rubenstein & Josephson, 2002). In the United States, the direct medical cost of non-fatal falls related injuries was approximately \$30.3 billion (USD) in 2012 and \$31.3 billion (USD) by 2015 (Burns, Stevens, & Lee, 2016).

Over the past 30 years, there has been growing and continued awareness of the need for falls prevention in the community, yet continued concern about implementation into practice and subsequent sustainability (Child et al., 2012; Goodwin, Jones-Hughes, Thompson-Coon, Boddy, & Stein, 2011; Lovarini, Clemson, & Dean, 2013). Implementation and sustainability of falls prevention programs have many barriers as interventions are complex, with many factors to consider. One review categorized barriers to falls prevention intervention implementation as: practical considerations (economic, access to intervention, and time), adapting for community (social and cultural influences), and psychosocial (transforming identities [the implications of being at falls risk] and defining the expert)

(Child et al., 2012). Few of the falls prevention studies included in these reviews mentioned falls risk screening.

In Australia, the *Integrated Solutions for Sustainable Fall Prevention* (iSOLVE) project is exploring the implementation and sustainability of a falls prevention program with General Practitioners (Clemson et al., 2017). iSOLVE aims “to establish integrated processes and pathways between general practice, allied health services and programs to identify older people at risk of falls and engage a whole of primary care approach to falls prevention” (Clemson, 2018; Clemson et al., 2017) (p. 2). This project includes screening of patients over age 65 (or who had previously fallen), using electronic tablets with an updated *Stay Independent Patient Check List* and the *General Practitioner Fall Risk Assessment chart*, as well as education and training of allied health professionals, among other components (Clemson et al., 2017). Allied health interviews regarding falls prevention for this project indicated falls prevention was complex, mentioning challenges working with clients with varied needs, working with practitioners from other disciplines with varied understanding of roles, competition and communication (Liddle et al., 2018).

To support those at falls risk or with a history of falls, a 2012 Cochrane review on falls prevention interventions in the community found that group and home based exercise programs and a home safety intervention reduced the risk of falling and rate of falls, while intervention programmes reduced rates of falling but not risk of falling (Gillespie et al., 2012). The 2018 review examined multifactorial (intervention differs based on individual level of risk) and multiple component interventions (the same intervention to everyone), finding that multifactorial intervention may reduce the rates of falls, while multiple component interventions may reduce the rate of falls and risk of falling (Hopewell et al., 2018).

2.9.3 Nutrition risk, frailty and falls risk in the community

There is a relationship between nutrition and falls risk, with poor diet quality and lack of exercise leading to muscle mass and strength loss, which can lead to frailty, and potentially a fall (Boulos et al., 2016; Chien & Guo, 2014; Lorenzo-López et al., 2017; Vivanti et al., 2009; Westergren et al., 2014). Those with a history of falls typically have more nutrition risk compared to non-fallers (C. Johnson, 2003; Meijers et al., 2012; Vivanti et al., 2009).

In older adults, there is also an association between malnutrition and frailty (Fried et al., 2001; Jeejeebhoy, 2012; Liu et al., 2015; Lorenzo-López et al., 2017; Vellas, Cesari, & Li, 2016) including consistency in constructs, identification tools, and treatment methods (Laur, McNicholl, Valaitis, & Keller, 2017). Research also suggests that these conditions are connected and may have the potential to exacerbate each other and further conditions (Ng et al., 2015; Vellas et al., 2016), while treatment strategies are generally similar (Morley et al., 2013; Vellas et al., 2016). As frailty, falls and nutrition risk appear to be connected, falls and nutrition risk screening tools are starting to be used in combination, such as in FHTs in the NE LHIN.

2.9.4 Understanding the primary care context

In Ontario, 14 LHINs are responsible for planning, integrating and funding health care services (Ministry of Health and Long-Term Care, 2018). Within the LHINs are FHTs, which are primary health care organizations that use a team approach to provide primary health care for a community. The size and composition of a FHT varies and may include family physicians, nurse practitioners, registered nurses, social workers, dietitians, occupational therapists and other professionals; each FHT has an Executive Director (Ministry of Health and Long-Term Care, 2018). Across the province, there are also Quality Improvement Decision Support Specialists, who assist FHTs in their quality improvement objectives, such as by assisting with data

standardization, extraction, and analysis (Association of Family Health Teams of Ontario, 2015).

There are over 3 million people enrolled in FHTs in over 200 communities across Ontario. The NE LHIN is one of the geographically largest, including 44% of Ontario's land mass yet only 4.1% of Ontarians; it has 27 FHT (North East LHIN, 2018). Twenty three percent of the population is Francophone (the highest of the LHINs), and 11% is indigenous (North East LHIN, 2018). There are many rural communities and access to food, public transportation, and health services can be limited. In the NE LHIN, the proportion of the population aged 65 and over is projected to increase from 19% to 30% by 2036, higher than other areas in the province (North East LHIN, 2018). The rates for heavy drinking, smoking, obesity, and chronic disease, including diabetes, are also higher than the provincial average (North East LHIN, 2018).

2.9.5 Fall and nutrition risk screening in Family Health Teams

To help this aging population in Northern Ontario to live independently in their own homes for longer, in 2015, the NE LHIN officially adopted the Stay on Your Feet (SOYF) strategy. This strategy included the use of the falls risk screening tool, the Staying Independent Checklist (North East LHIN, 2018; Rubenstein, Vivrette, Harker, Stevens, & Kramer, 2011), and the launch of exercise programs designed for older adults (North East Local Health Integration Network, 2018). Funding from IDEAS (Improving & Driving Excellence Across Sectors), a province-wide initiative offered through the University of Toronto, the Ministry of Health and Long-Term Care and Health Quality Ontario (Bedard, 2017; Government of Ontario, 2018), provided electronic tablets for falls screening pilot sites along with a 1-year subscription to the "OCEAN" platform, which the FHTs could decide to renew if desired. OCEAN, by CognisantMD™, is a system that facilitates use of secure patient forms, screening tools, and surveys and integrates them directly into the Electronic Medical Record (EMR) (CognisantMD, 2018). Questions can be completed directly by the patient or

with support from FHT staff, then results are automatically embedded into the EMR. The tablet and OCEAN system are programmable, typically with the support of Quality Improvement Decision Support Specialists, to align with the FHT workflow. Use of tablets by older adults is supported in the literature, with a 2017 systematic review indicating older adults have overall high ratings for satisfaction with using tablets, including helpfulness and usability (Ramprasad, Tamariz, Garcia-Barcena, Nemeth, & Palacio, 2017).

A report of an internal evaluation of the original falls risk screening pilot in the North East Stay On Your Feet Strategy (6 FHT; 5 the same as the current study) collected EMR data (number of clients that were screened for falls risk, at high risk, and received a follow-up assessment); a 12 question survey (n=10), and a focus groups (n=unknown) with FHT staff (Bedard, 2017). Results indicated that of the 501 clients screened for falls risk between March to October 2016, 157 were at high risk (13-47% range within FHTs) yet only 30 clients (19% of all high risk clients) received the follow-up falls assessment. Survey results suggested screening was easy to integrate but the follow-up was more challenging (Bedard, 2017). The next steps from this evaluation proposed the addition of nutrition risk screening, client interviews, and to use the evaluation findings to improve the screening program (Bedard, 2017). These preliminary results demonstrated the need for further consideration of the full screening program, including follow-up with at risk clients, which was provided through this dissertation project.

In 2017, the nutrition risk screening tool, SCREEN-II-AB, was added to the OCEAN system along with a customizable handout of results that could be printed for each patient based on their responses (i.e., if low fruit and vegetable consumption was indicated the handout provided suggestions on how to increase fruit and vegetable consumption). Six FHTs who had previously piloted the falls risk screening (five in the original pilot, one as it started to spread) were selected by the NE LHIN to pilot

nutrition risk screening. One site had a team that had participated in the original falls risk screening pilot, but started falls and nutrition risk screening together at a newly opened FHT in the same area, with the same nurse and dietitian who were originally involved.

To build off the preliminary evaluation and gain further understanding of the falls and nutrition risk screening programs, the Stay on Your Feet strategy coordinator requested an evaluation using interviews with FHT staff, management and clients. This timely evaluation provided the opportunity for increased understanding of screening program development and the opportunity to understand implementation of a new nutrition care activity in a different context from hospitals. The Quality Improvement Decision Support Specialists monitor the quantitative aspects including number of clients screened, and number at risk, however these data are not included as it was outside the scope of this dissertation.

2.10 Study implications

This project has implications for the nutrition community and for Implementation Science and Practice. For nutrition, the M2E study has had beneficial impact on patients (i.e., decreased mealtime barriers) outcomes and staff perceptions regarding nutrition care (Curtis et al., 2018; Keller, Valaitis, et al., 2018; Keller, Xu, et al., 2018; Laur, Butterworth, et al., 2018; Laur, Curtis, et al., 2018; Laur, Keller, et al., 2018). This dissertation supports those effects by focusing on how the changes happened, including strategies that can be applied by other hospitals. Documenting the practice of implementation as described by those involved in the change effort will help other hospitals looking to make nutrition care improvements, and has potential for use in other topics, such as patient safety, or other locations, such FHTs. Results from the FHT study will be shared with FHTs across Ontario who are interested in setting up their own falls and nutrition risk screening programs. There is growing

interest on this topic within FHTs in Ontario and these results will provide suggestions for what to consider when developing screening programs to use these tools.

By focusing on general strategies for implementing, sustaining and spreading practices like screening, results have potential to be applicable to other settings and topics. Understanding more about these strategies can provide specific ideas and actions for hospitals to follow. If implementation is set up with a strong foundation, these strategies are expected to be effective for promoting culture change.

Chapter 3: Research Questions, Hypothesis, and General Methodology

3.1 Research questions and hypothesis

Part 1: Development and use of the staff Malnutrition Knowledge, Attitudes and Practices questionnaire in the More-2-Eat project (Chapter 4 and 5)

Objectives

1. To develop a reliable staff knowledge, attitudes and practices (KAP) questionnaire concerning the detection, prevention, and treatment of hospital malnutrition.
2. Determine if KAP of staff involved in implementation of INPAC changes as a result of the various implementation efforts undertaken. (Part of the M2E study)

Hypotheses and Research Questions

- P1-1 H₀: The KAP questionnaire a) as a whole, b) as knowledge/attitudes sub-scale and c) as a practices sub-scale, is not considered reliable (i.e., ICC <0.6) based on test-retest administration with clinical hospital staff.
- P1-2 Using the KAP questionnaire, what are the KAP, knowledge/attitudes and practices scores of M2E hospital staff concerning the detection, prevention, and treatment of malnutrition *before* implementation of INPAC? What are the care gaps that will need to be addressed during implementation of INPAC?
- P1-3 H₀: After one year of INPAC implementation, there will be no significant ($p > 0.05$) change in scores for KAP a) as a whole, b) as a knowledge/attitudes

subscale and c) as a practices subscale of M2E hospital staff concerning the detection, prevention, and treatment of malnutrition.

P1-4 H₀: After one year of INPAC implementation, there will be no significant (p>0.05) association between a) KAP; b) knowledge/attitudes; or c) practices scores, with staff self-perceived involvement in the nutrition care changes.

Part 2: Hospital staff and management perspectives on implementing, sustaining and spreading nutrition care improvements (Chapter 6 and 7)

Objective: To describe and understand in relation to relevant theories, the perspectives of hospital staff and management involved in implementing INPAC in their hospital over a period of up to 2 years, and the strategies required to: a) implement, b) sustain and, c) spread nutrition care practices to other hospital units. (Part of the M2E study)

Research Questions

P2-1 What are the pre-implementation perspectives of M2E hospital staff and management on the necessary factors to successfully change nutrition care practices into the unit routine?

P2-2 What are the post-implementation (after 1 year of INPAC implementation and 1 year after the end of the project) perspectives of M2E hospital staff and management on the necessary factors to successfully: a) implement, b) sustain, and c) spread to other units/hospitals, new nutrition care practices?

Part 3: Setting up fall and nutrition risk screening in Family Health Teams

Objective: To describe the perspectives of Family Health Team staff, management and clients, on how Family Health Teams have started to build a program for: a) adding nutrition risk screening to an existing falls risk screening program for older

adults, or b) a combined falls and nutrition risk screening program, and c) supporting older adult clients at falls and/or nutrition risk.

P3-1 From the perspectives of Family Health Team staff and management, how did Family Health Teams add nutrition risk screening to an existing falls risk screening program for older adults?

P3-2 Where falls screening was not in place, from the perspectives of Family Health Team staff and management, how did Family Health Teams start to build a falls and nutrition screening program for older adults?

P3-3 From the perspectives of Family Health Team staff and management, how did Family Health Teams build a program to support older adult clients at falls and/or nutrition risk?

P3-4 From the perspectives of Family Health Team patients, what were the barriers and facilitators to completing falls and nutrition risk screening?

3.2 General methodology

3.1.1 Research design and positioning

This dissertation includes quantitative and qualitative methodology, following an overall pragmatic approach (Daly, 2007). A post-positivist approach was followed for the development and use of the KAP questionnaire. Development included test-retest reliability to demonstrate the stability of questions and that interpretation was consistent over time if no other intervention occurred (Hulley, Cummings, Browner, Grady, & Newman, 2013). A social constructionist paradigm (Braun & Clarke, 2013) (p. 336-337), indicating that realities are shaped through our experiences and our interactions with others, guided the collection of the qualitative data through interviews and focus groups with key hospital and FHT staff and management. The pragmatic sampling strategies and evolving nature of the questions are in line with

the social constructionist paradigm, which encourages the generation of new ideas and co-construction of reality (Miles, Huberman, & Saldana, 2014). Part 1 and 2 of this dissertation were supported by the M2E advisory team, as included in acknowledgements.

3.1.2 Quantitative methodology

3.1.2.1 Justification for a Malnutrition Knowledge, Attitudes, and Practice questionnaire

As part of the K2A process for implementing INPAC, it was important to understand potential staff-level barriers and facilitators to implementation of the new nutrition practices included on INPAC. To promote efficiency and inclusivity of unit staff, a questionnaire was required to understand what hospital staff knew about malnutrition and nutrition care, their attitudes towards this care, and what they did in practice (self-reported) to provide patient centered nutrition care. Such an understanding would support implementation of INPAC in the specific setting by identifying where change was required. Based on these needs, a KAP questionnaire was selected as the appropriate method (details on questionnaire development and testing provided in Chapter 4). The World Health Organization indicates that KAP questionnaires should be used to collect data regarding what is known, believed and done in relation to a particular topic (World Health Organization, 2008).

Using general questionnaire methodology, principles of behaviour change theory, and topic specific questionnaires including Mowe (2006), Rasmussen (1999), and Lindorff-Larsen (2007), a KAP questionnaire was developed (Lindorff-Larsen et al., 2007; Mowe et al., 2006; Rasmussen, Kondrup, Ladefoged, & Staun, 1999). Items were based on the INPAC activities (e.g., screening) as the purpose of this questionnaire in the M2E implementation acted as a needs assessment with respect to staff training. The resulting questionnaire was able to highlight gaps and provide a direction of focus for each of the M2E sites with regard to changing staff behaviour.

This questionnaire was also used as part of the implementation process to understand the current context regarding the KAP of hospital staff, stimulate improvements in behaviour to the INPAC standard and was used to detect change over time, after a year of INPAC implementation.

As it is difficult to distinguish between knowledge and attitudes in nutrition care, results were indicated by an overall KAP score, as well as knowledge/attitude and practice sub-scales or scores. Due to the nature of the KAP, psychometric testing such as internal consistency (e.g., Chronbach's alpha) was not considered appropriate as each item focused on diverse INPAC activities that could be considered as standalone behaviours or attitudes, and elimination of questions based on such testing was not the goal. A before-after methodology was used for this questionnaire to show change over time. Linking of participant responses allowed for paired comparison of results, however with high turnover of staff and difficulty in recruitment, after the designated time period, the questionnaire was opened to all staff so unpaired analysis could be conducted with a larger sample size. Challenges with before-after methodology recognize the difficulty in attributing the change to the intervention, and results tend to overestimate the effect (Eccles, Grimshaw, Campbell, & Ramsay, 2003).

3.1.3 Qualitative methodology

3.1.3.1 Active interviewing

Active interviewing was used in all interviews and focus groups as it allows interviewer and interviewees to contribute to the advancement of knowledge (Holstein & Gubrium, 1995). This approach follows an interview guide, however encourages new ideas to be explored and discussed, which in turn helped with the implementation process. Focus groups in M2E at baseline in particular, were treated as part of a needs assessment for the implementation as they allowed staff to discuss what they thought they could do to improve nutrition care and the barriers

and facilitators of the change. These focus groups also helped to build team interest in making change. Having the opportunity to discuss changes as an interdisciplinary group can be a unique opportunity in hospital and is being encouraged as part of INPAC implementation. Due to the small size of the FHTs involved in the Stay on Your Feet initiative, focus groups were not feasible, however occasional Stay on Your Feet webinars and calls were conducted with FHT dietitians and Executive Directors to discuss their progress and so they could ask questions.

3.1.3.2 Inductive thematic analysis

The inductive approach is a primary characteristic of qualitative inquiry that allows for the identification, definition, and elucidation of categories based on the individuals studied (Patton, 2002). The inductive approach was used to recognize patterns within the data that were not necessarily explicitly stated within interview or focus group discussion (Patton, 2002). For the M2E post-implementation and 1-year after project completion interviews, after line-by-line coding, attempts were made to deductively map findings to existing sustainability frameworks listed in a systematic review (Lennox et al., 2018). However, as no existing framework accurately represented the results, an inductive approach was taken and new themes and a framework were developed.

For Part 3, an inductive approach was also taken to present the most accurate and comprehensive view of the results focused on development of a screening program (Chapter 8). Due to some similarities between Part 2 and 3 results, Part 3 results were deductively mapped to the Part 2 frameworks. As sites were at varied levels with respect to embedding falls and nutrition screening and integration into the workflow and care programming was ongoing, sustainability was seen more as a goal rather than what they had done. For this reason, it was determined that the inductive approach would be more comprehensive of all results and also more useful for the FHTs.

3.1.3.3 Ensuring methodological rigor

Within qualitative analysis, demonstrating credibility and trustworthiness is essential, particularly when relying on researcher interpretation of the findings (Miles et al., 2014). The researcher will always have bias, however this dissertation relied on the Miles et al. thirteen tactics aimed at ensuring quality data, examining exceptions to patterns, and taking a skeptical approach to emerging patterns/explanations. Other methods for confirmation of findings include objectivity/confirmability, where methods are described in detail, conclusions linked with displayed data, and the researcher recognizes their own bias and how it may have impacted results (Miles et al., 2014).

Regarding internal validity of the results, the aim was to write “rich descriptions” of the data, which made sense to the researchers and readers (Miles et al., 2014), within the word count of the publication. The data were matched with the categories/themes and were presented as a unified picture. Uncertainty in the data was addressed by including negative evidence and rival explanations (Miles et al., 2014). Although there were only five hospitals and six FHT, saturation did occur for all themes.

External validity/transferability is whether the results can be generalized to other settings (Miles et al., 2014). The social constructionist approach for data collection focuses on the specific context of each site and does not attempt to generalize findings. However, for Part 2, consistent results were found across all five sites (site details provided in Table 3.1), thus increasing external validity and the potential that these results may be transferable to other hospitals. In Part 3 consistent results were also found across all six FHTs, thus increasing external validity and the potential that these results may be transferable to other FHTs. Further mapping to the Miles et al. 2014, thirteen characteristics for ensuring quality data is included in the Discussion (Chapter 9).

3.2 Study sites

The KAP questionnaire reliability testing was conducted at the Grand River Hospital in Kitchener, Ontario.

In M2E, five hospitals (one medical unit/hospital) from four provinces in Canada were selected based on their application to be part of the project, including assessment of perceived readiness and desire to implement change in nutrition care as determined through hospital applications to participate. Details of the sites and numbers of interviews, focus groups and KAP questionnaires completed are provided in Table 3.1.

Table 3.1: Characteristics of the More-2-Eat hospitals

		Site A	Site B	Site C	Site D	Site E
Province		Saskatchewan	Ontario	Ontario	Alberta	Manitoba
Hospital Type		Academic	Academic	Community	Academic	Community
Hospital Size (beds)		430	1100	150	798	186
Unit Size (beds)		35	27	50	28	34
Average Length of Stay		9.3 days	10.3 days	5.5 days	9.3 days	10.9 days
Unit specialization		Accountable Care Unit	Specialized Staff	Acute Stroke	Respiratory	Family Medicine
# of KAP responses (n)	Baseline	36	39	38	39	37
	Implementation; unpaired (paired)	30 (13)	28 (11)	31 (13)	28 (8)	30 (12)
# of Interviews (n)	Baseline	14	7	5	6	8
	Implementation	13	9	6	7	10
	1-year after project completion	2	2	2	2	2
	Baseline	0	0	0	0	0

# in Small Group Discussions * # (n)	Implementa tion	4 (10)	0	0	0	0
	1-year after project completion	1 (2)	0	0	0	0
# of Focus Groups Conducted # (n)	Baseline	3 (21)	2 (12)	2 (19)	2 (21)	2 (20)
	Implementa tion	3 (16)	2 (17)	2 (10)	2 (11)	2 (17)

* Small group discussions include 2-3 people

Part 3 took place at six FHTs across the NE LHIN. All sites had at least one physician and access to a dietitian. Details of the sites including their screening programs are provided in Table 3.2.

Table 3.2: Characteristics of the Family Health Teams in the North East Local Health Integration Network

	Site 1	Site 2	Site 3	Site 4	Site 5	Site 6	External [*]
# of Physician	7	1	1	3	4	6	N/A
When did Falls Risk Screening Start (or restart) relative to data collection?	Restarted within the past 2-3 months	Restarted within the past 2-3 months	Approximately 3 years ago	Started at a new site 2-3 months ago	Unknown	Restarted 5 months	N/A
When did Nutrition Risk Screening Start	Same time as falls screening (recently)	Same time as falls screening (recently)	Within the past month	Started with “Stand Up” participants; embedding into routine in past 2-3 months	Within the past 2-3 months	Within the past 2-3 months	N/A
Criteria for Nutrition Risk Screening	Age 65+ and at falls risk	Age 65+ and at falls risk	All patients age 65+	Age 65+ who see the nurse + at falls risk	All patients 65+	Patient age 55+ [†] at falls risk	N/A
# of Interview with FHT Staff and Management (n)	4	3 (n=2 also work at Site 3)	2	3	5	3	3
# of interview with FHT patients	0	2 [‡] (n=3)	0	0	1	3	N/A
Included in the original falls risk pilot for which the SOYF evaluation was conducted	Yes	Yes	Yes	Yes (the same team was involved but was starting screening at a new site in the same region)	Yes	No	N/A

* External representatives were interviewed to provide an overarching perspective. Some representatives were based at a specific FHT, however were treated as External based on their high level of overall involvement.

† Age 55+ is used in this site due to a large Indigenous population

‡ 1 small group discussion (n=2)

Abbreviations: FHT - Family Health Team; SOYF – Stay on Your Feet

3.3 Ethical considerations

For the development and testing of the KAP questionnaire, ethics approval was obtained through the University of Waterloo Research Ethics Board ([REB] ORE#: 20730; Appendix B). Approval for test-retest reliability was provided by the University of Waterloo REB and the Tri-Hospital Research Ethics Board, through Grand River Hospital, Kitchener, Ontario (THREB# 2015-0571; Appendix B). Approval for administration of the questionnaire at the M2E sites and for conducting site visits for interviews and focus groups was obtained from the University of Waterloo REB (ORE#: 20590; Appendix C) and by the ethics committees at each of the five participating hospitals (Niagara Health Ethics Board, Ottawa Health Science Network Research Ethics Board, Health Research Ethics Board of the University of Alberta, Regina Qu'Appelle Health Region Research Ethics Board, and Concordia Research Ethics Committee) as part of the larger ethics protocol for M2E. For the FHTs project in the NE LHIN, ethical approval was obtained from the University of Waterloo REB (ORE #22965; Appendix G). Details on the ethical procedures of each project are included within each chapter.

Chapter 4: Part 1. Manuscript 1: Quality Nutrition Care: Measuring Hospital Staff's Knowledge, Attitudes, and Practices

Manuscript published in *Healthcare*.

Laur C, Marcus H, Ray S, Keller H. (2016). Quality nutrition care: Measuring hospital staff's knowledge, attitudes, and practices. *Healthcare*, 4(4): 79.

4.1 Abstract

Understanding the knowledge, attitudes, and practices (KAP) of hospital staff is needed to improve care activities that support the detection/prevention/treatment of malnutrition, yet quality measures are lacking. The purpose was to develop (study 1) and assess the administration and discriminative potential (study 2) of using such a KAP measure in acute care. In study 1, a 27-question KAP questionnaire was developed, face validated (n = 5), and tested for reliability (n = 35). Kappa and Intraclass Correlation (ICC) were determined. In study 2, the questionnaire was sent to staff at five diverse hospitals (n = 189). Administration challenges were noted and analyses completed to determine differences across sites, professions, and years of practice. Study 1 results demonstrate that the knowledge/attitude (KA) and the practice (P) subscales are reliable (KA: ICC = 0.69 95% CI 0.45–0.84, F = 5.54, p < 0.0001; P: ICC = 0.84 95% CI 0.68–0.92, F = 11.12, p < 0.0001). Completion rate of individual questions in study 2 was high and suggestions to improve administration were identified. The KAP mean score was 93.6/128 (range 51–124) with higher scores indicating more knowledge, better attitudes and positive practices. Profession and years of practice were associated with KAP scores. The KAP questionnaire is a valid and reliable measure that can be used in needs assessments to inform improvements to nutrition care in hospital.

4.2 Introduction

In 1974, Butterworth highlighted the essential role of quality nutrition care for health and recovery (Butterworth, 1974). Since then, research has determined the prevalence of malnutrition and its impact on key health outcomes and issues (Agarwal et al., 2013; Allard et al., 2016; Barker et al., 2011; Pennington & McWhirter, 1994; Zisberg et al., 2015), yet little research has attempted to improve its detection and treatment. As approximately 20%–50% of patients in acute care are malnourished (Allard et al., 2016; Barker et al., 2011), effective strategies to address this significant problem are needed. In 2013, the Alliance to Advance Patient Nutrition published a call to action for improving nutrition care in hospitals (Tappenden et al., 2013), which suggested that a comprehensive approach involving all staff was needed (Allard et al., 2016; Keller, Vesnaver, & McCullough, 2015; Laur et al., 2015). In response, a consensus based Integrated Nutrition Pathway for Acute Care (INPAC) was developed (Keller, McCullough, Davidson, et al., 2015). INPAC aims to address hospital malnutrition by incorporating evidence of best practice into a pathway specifying key care activities, such as nutrition screening at admission (e.g., with Canadian Nutrition Screening Tool (CNST)) (Laporte et al., 2015) and diagnosing and triaging patients with the subjective global assessment (SGA) (Detsky et al., 1987). The INPAC provides guidance regarding how to implement best practices, considering both bottom-up (direct care staff) and top-down (policy and management level) approaches. INPAC emphasizes that all staff have a role to play in preventing, detecting, and treating malnutrition.

Implementing best practice requires a multifaceted approach, including education and training, as well as other behavior change techniques (Michie et al., 2011). Before attempting to raise awareness on a particular topic through education, it is necessary to understand the environment, potentially using a knowledge, attitudes, and (self-reported) practices (KAP) questionnaire (Kaliyaperumal, 2004). This type of questionnaire aims to measure what is “known, believed, and done in relation to a

particular topic” (World Health Organization, 2008) (p. 6). A KAP questionnaire can be used as part of a needs assessment before implementing best practice, such as improving nutrition care practices towards the ideal.

Staff-focused questionnaires used to date have been designed to detect gaps in nutrition knowledge (Duerksen et al., 2015, 2016) or attitudes and routines (Lindorff-Larsen et al., 2007; Mowe et al., 2006; Rasmussen et al., 1999). These assessments have demonstrated gaps between knowledge, attitudes, and practices, yet they have limitations. No questionnaire currently exists to adequately capture a broad target audience of healthcare professionals (hospital staff), or sufficiently address specific nutrition care activities focused on prevention, detection, and treatment of malnutrition.

A reliable questionnaire is required to understand the KAP of hospital staff in their provision of nutrition care. It is anticipated that such a questionnaire would demonstrate diversity among (1) sites, (2) professions, and (3) years of practice that could be used to inform behavior change strategies. A questionnaire such as this could be used as part of a needs assessment, identifying gaps in care and areas to focus the behavior change strategies, to ultimately impact patient health outcomes (Duerksen et al., 2015, 2016). The aims of this manuscript are to: (1) describe the development of a KAP questionnaire for hospital staff regarding nutrition care (study 1); (2) to assess the administration and discriminative potential of this questionnaire (study 2). Preliminary results regarding differences between sites, professions, and years of practice are provided demonstrating the capacity of this questionnaire to discriminate between KA and practices within these respondent characteristics.

4.3 Materials and methods

4.3.1 Study 1: Development and face validation of KAP questionnaire

An initial draft of the questionnaire was created to reflect key prevention, detection, and treatment activities consistent with INPAC, as well as incorporating nutrition knowledge and attitude domains from other applicable questionnaires and research (Duerksen et al., 2015, 2016; Keller, Allard, Vesnaver, et al., 2015; Lindorff-Larsen et al., 2007; Mowe et al., 2006; Naithani, Thomas, Whelan, Morgan, & Gulliford, 2009; Rasmussen et al., 1999). A Likert scale was used for response options (Hulley et al., 2013). Knowledge and attitude (KA) questions had the same response categories and were treated in the same way conceptually and for scaling as it is difficult to distinguish between what is known and what is believed; categories included Strongly Disagree, Somewhat Disagree, Neutral, Somewhat Agree, and Strongly Agree. For the practice questions (P), a four-point scale was deemed appropriate and responses included Never, Sometimes, Often, Always, and Not Applicable. The draft questionnaire was reviewed independently by eight experts in the field.

Cognitive interviews were then conducted with health professionals (n = 5; 2 dietitians, 1 diet technician, 1 food service manager, 1 nurse). Interview questions focused on the applicability, the wording (was it clear?), and the interpretation of the question (what did they think the question meant?). The questionnaire was deemed applicable for hospital staff with a clinical role, however was not applicable for food service workers, food service managers, or dietitians as too many of the questions were not relevant or, as with dietitians, their results would not be representative of the general staff on the unit.

4.3.2 Study 1: Test-retest reliability

Test-retest reliability demonstrates the stability of questions and that interpretation is consistent over time if no intervention occurs (Hulley et al., 2013). To address the

issues of memory and maturation typically associated with test-retest reliability (Hulley et al., 2013), a two-week period was chosen as the time between test administrations. Sample size calculations were based on a Pearson's correlation coefficient (r) (Hulley et al., 2013), which was used to estimate the intra-class correlation. With a sample of 60 staff members, a correlation among administrations of the questionnaire as small as $r = 0.4$ (two-sided test $\alpha = 0.05$, $\beta = 0.10$ i.e., 90% power) could be determined (Donker, Hasman, & van Geijn, 1993; Whitehead, 1986).

Participants were recruited at a single hospital site using a display table in the cafeteria during a two-week period. An incentive (\$5 gift card for a coffee shop) was provided for completing the questionnaire at two time points. Eligible participants were those with a clinical role and direct patient contact in any inpatient department of the hospital. Food service workers, food service managers, and dietitians were excluded as explained above. Each eligible participant consented to complete both questionnaires and responses were kept confidential. Two weeks after a participant had completed the initial hardcopy, the same questionnaire was sent by e-mail or mail for completion and return to the investigators. Up to four reminders were sent to participants over a six-week period to support completion.

4.3.3 Analysis

Kappa was calculated to determine reliability of individual questions and identify items requiring revision or removal (Landis & Koch, 1977). KA questions (Strongly Disagree, Somewhat Disagree, and Neutral vs. Somewhat Agree and Strongly Agree) and P questions (Not Applicable and Never vs. Sometime, Often, and Always) were collapsed into two categories for analysis. Despite recruitment efforts, a lower number of respondents for both administrations resulted (test 1: $n = 60$, test 2 $n = 35$). Thus, a Kappa of 0.3 (fair) was used to determine reliability of individual questions (Landis & Koch, 1977) and potential items for removal prior to calculating

subscale reliability. Level of agreement (total number of “matching” responses, i.e., those that provided the same answer in both questionnaires) was also determined and used in conjunction with the Kappa score to show reliability for individual questions. Kappa, level of agreement, and significance were considered together to determine if the individual question was reliable.

For determining total scale reliability, Intraclass Correlation Coefficient (ICC) was used. Two subscales were developed: the KA questions were separated from the P questions. Items (questions 1,8,13,15) that were negatively stated were reverse coded and the subscale total calculated so that a higher score indicated the more positive KA and P. For ICC, “fair to good agreement” is recognized as 0.61–0.8 and “excellent agreement” as 0.81–1.00 (Donker et al., 1993; Whitehead, 1986). Analysis was completed using SPSS Version 23 (IBM SPSS Software, Chicago, IL, USA).

4.3.4 Study 2: Administration and descriptive analysis of KAP

The More-2-Eat (M2E) implementation project is a developmental evaluation designed to explore how INPAC activities can be implemented in five hospitals (one medical unit/hospital) in four provinces across Canada. An important component of INPAC implementation is to understand staff views and practices regarding nutrition care in order to provide direction on areas of focus and influence staff behavior change strategies. The M2E project provided the opportunity to further test how the KAP questionnaire for staff could be administered in the acute care setting and describe differences in KAP between profession and years in practice for KA and P. This testing provides information regarding how long it may take for a specified number of staff to complete the questionnaire, strategies for improving completion, and incentives required. Hospital staff do not feel they have time for questionnaires, however the information provided is important for identifying targets for behavior change. When deciding to use a KAP questionnaire as part of a needs assessment,

it is important to understand the potential ways it can be used and how it can discriminate between specific groups of respondents.

The KAP questionnaire was completed at the five M2E sites to characterize the KAP of unit staff. The questionnaire was placed on Simple Survey (Outsidesoft Solutions Inc., Quebec, QC, Canada). Consent was provided by the hospital sites to send e-mail invitations to unit staff, facilitated by the M2E personnel seconded at the site. Reminders were sent regularly (e-mail and in person) until the quota (30/site) was complete (open from 30 September 2015 to 25 January 2016). All staff on the M2E unit were eligible to complete the questionnaire if they had a direct clinical role with patients, excluding dietitians.

Based on a 30-bed unit with approximately 30 nurses (full and part time) and 60 staff (estimate based on personal communication with sites), it was deemed feasible to obtain 30 responses per site for a total of $n = 150$ across the five sites. This was agreed as a conservative estimate based on the anticipated staffing levels, but also the expected challenges with recruitment, as identified in the administration in the test retest reliability study (study 1) at a single site. Thirty responses per site was also deemed adequate to understand the KAP for the unit staff to support strategies for education and training. This total is also consistent with Kaliyaperumal (Kaliyaperumal, 2004) who states the need to aim for a sample size of 200 with a reasonably high response rate.

4.3.5 Analysis

The mean KAP total, as well as the KA and P scores were calculated across all five sites. ANOVA was used to determine if there was a difference in scores among sites. Where no statistically significant differences were noted, samples were collapsed across sites to explore any associations between staff role (nurse vs. other) and years of practice as these were hypothesized to influence KA and P. It was also hypothesized that profession (nurse vs. other) and years of practice would

influence KA and P scores. Discussion between researchers and M2E personnel from the five sites were held monthly to learn about survey recruitment challenges and strategies to overcome those challenges.

4.3.6 Ethics

Study 1 received ethics clearance through a University of Waterloo Research Ethics Board (REB) (ORE #: 20730). Approval for test-retest reliability was provided by the Tri-Hospital Research Ethics Board, through Grand River Hospital (THREB #2015-0571). Study 2 received clearance from a University of Waterloo REB (ORE #: 20590) and by the ethics committees at each of the five hospitals as part of the ethics protocol for M2E.

4.4 Results

4.4.1 Study 1: Test-retest reliability results

Sixty participants were recruited and completed the first administration; 35 questionnaires were returned after the second administration. Demographic information is provided in Table 4.1. The Kappa, agreement, and significance were calculated (Table 4.2). The questions with Kappa below 0.3 and low agreement were noted, discussed, and minor edits were made prior to their use in Study 2. Even though some questions only had slight agreement, no questions were removed because they were all deemed necessary for understanding the KAP related to preventing, detecting, and treating malnutrition.

For subscale reliability, the KA had “fair to good reliability” (calculated ICC = 0.69 (95% CI 0.45–0.84), $F = 5.540$ ($p < 0.001$)) and P had “excellent reliability” (calculated ICC = 0.845 (0.68–0.92), $F = 11.118$ ($p < 0.001$)) (Hulley et al., 2013). It is noteworthy that, even considering the lower bound of the 95% confidence interval, both scales met our a priori criterion for a reliable measure.

Based on the adequate Kappa (0.3) for most of the individual questions, high agreement, and the relatively high ICC for KA and P subscales, the questionnaire was deemed reliable and appropriate for use.

Table 4.1: Study 1: Demographics for test retest reliability participants (n = 35).

Demographics	N (percent)
Profession	
Registered Nurse	11 (31%)
Registered Practical Nurse/ Licensed Practical Nurse	2 (6%)
Attending Physician	1 (3%)
Physiotherapist/Occupational Therapist	4 (11%)
Resident	1 (3%)
Other	16 (46%)
Employment	
Full Time	23 (66%)
Part Time	11 (31%)
Casual	1 (3%)
Years Employed	
Less than 2 years	6 (17%)
2–5 years	6 (17%)
6–10 years	7 (20%)
11–20 years	8 (23%)
21–30 years	6 (17%)
31+ years	2 (6%)
Age	
<30 years	10 (29%)
30–39 years	9 (26%)
40–49 years	10 (29%)
50–59 years	5 (14%)
60+ years	1 (3%)
Gender	
Female	33 (94%)
Male	2 (6%)

Note: this table only includes results for participants who completed both administrations of the questionnaire.

Table 4.2: Study 1: Test retest reliability of the KAP questionnaire for individual questions.

Question	n	Kappa	Agreement	Sig.
Please rate your agreement with the following statements: Strongly Disagree; Somewhat Disagree; Neutral; Somewhat Agree; Strongly Agree				
1. Nutrition is not important to every patient's recovery in hospital +	34	0.313	26/34	0.033
2. All patients should be screened for malnutrition at admission to hospital	33	0.713	30/35	0.000
3. A patient's weight should be taken at admission	34	0.269	30/34	0.117
4. All staff involved in patient care can help set up the tray, open packages, etc.	34	0.197	23/34	0.248
5. All staff involved in patient care can provide hands-on assistance to eat when necessary	34	0.401	24/34	0.016
6. Malnutrition is a high priority at this hospital	33	0.471	24/33	0.003
7. Giving malnourished patients an adequate amount of food will enhance their recovery	33	0.436	29/33	0.009
8. All malnourished patients require individualized treatment by a dietitian +	34	0.301	28/34	0.071
9. I have an important role in promoting a patient's food intake	32	0.463	23/32	0.004
10. Monitoring food intake is a good way to determine a patient's nutritional status	34	0.217	24/34	0.152
11. Interruptions during the meal can negatively affect patient food intake	35	0.643	31/35	0.000
12. Promoting food intake to a patient is every staff member's job	35	0.340	25/35	0.043
13. Nutritional care of a patient is only the role of the dietitian +	35	0.525	32/35	0.002
14. Malnourished patients who are discharged need follow up in the community	35	0.525	32/35	0.002
15. A patient's weight is not necessary at discharge +	34	0.209	26/34	0.184
Please rate your agreement with the following statements Strongly Disagree; Somewhat Disagree; Neutral; Somewhat Agree; Strongly Agree				
1. I always know when to refer to a dietitian	33	0.436	24/33	0.012
2. I know how to refer to a dietitian	34	0.672	29/34	0.000
3. I know when a patient is at risk of malnutrition or is malnourished	34	0.712	29/34	0.000
4. I know some strategies to support food intake at meals	34	0.580	27/34	0.001
5. I need more training to better support the nutrition needs of my patients	34	0.395	24/34	0.020
Please rate how often you DO the following Never; Sometimes; Often; Never; N/A				

Question	n	Kappa	Agreement	Sig.
1. Check the patient has all that they need to eat (e.g., dentures, glasses)	33	0.816	30/33	0.000
2. Help a patient with opening food packages	33	0.807	30/33	0.000
3. Assist a patient to eat if they need help	33	0.637	27/33	0.000
4. If permitted, encourage a patient's family to bring food from home for the patient	32	0.808	29/32	0.000
5. Visit and check a patient during their meal time to see how well they are eating	33	0.573	26/33	0.001
6. Realign my tasks so I do not interrupt a patient during their meal time	33	0.518	25/33	0.002
7. At discharge of a malnourished patient, provide the patient or family with nutrition education material	32	0.167	22/32	0.346

Note: The number of questionnaires returned is out of a possible n = 60, yet not everyone completed all questions which accounts for the discrepancy across the n values. Kappa (0.3 considered “fair”) shows reliability of the individual question. Agreement demonstrates the number of people that provided the same answer in both questionnaires.

†: Reverse Coded; Sig.: Significance.

4.4.2 Study 2: Administration results

KAP questionnaires were completed at the five M2E sites and exceeded the original quota per hospital (n = 189). The survey remained open until all sites had reached 30 participants who completed the questionnaire and included their contact information. The time to complete 30 surveys ranged from 45–94 days (mean = 75 days). It should be noted that this period included Christmas (no recruitment), and that many sites reached the target before these dates. For M2E criteria, only respondents with contact information could contribute to the target of 30, thus these recruitment times may be inflated.

For recruitment of participants, in-person as well as e-mail reminders were used. It was found that some hospital staff did not have access to e-mail and requested hardcopies of the questionnaire. Some staff were also unaware that they had a hospital e-mail address. Due to issues of confidentiality within the units, use of hardcopies was not possible in this study. Access to a computer was also seen as a barrier.

There were very little missing data. Only four people did not answer five of the KA questions. For the practice questions, questions left blank were N/A (range from 12%–23%) and were treated as N/A rather than missing data. The highest proportion of responses was from Registered Nurses (35%) and Registered Practical Nurse/Licensed Practical Nurse (15%). As anticipated, Other Staff (25%) was also quite high. Demographic information of participants is presented in Table 4.3.

Table 4.3: Study 2: Demographic information of the hospital staff across five sites.

	Percentage of Staff (n)
Profession (n = 189)	
Registered Nurse	31% (58)
Registered Practical Nurse/Licensed Practical Nurse	15% (28)
Dietetic Technician	0.5% (1)
Health Care Aide/Personal Support Worker	5% (9)
Physiotherapist/Occupational Therapist	9% (17)
Speech-Language Pathologist	4% (8)
Attending Physician	6% (11)
Other	25% (48)
Employment (n = 188)	
Full Time	63% (119)
Part Time	29% (55)
Casual	7% (14)
Years Employed (n = 187)	
Less than 2 years	10% (19)
2–5 years	24% (45)
6–10 years	21% (40)
11–20 years	19% (36)
21–30 years	18% (34)
31+ years	7% (13)
Age (n = 189)	
less than 30 years of age	23% (43)
30–39 years of age	26% (48)
40–49 years of age	26% (48)
50–59 years of age	21% (40)
60 years of age	5% (9)
Gender (n = 189)	
Female	86% (162)
Male	14% (27)

4.4.3 Study 2: Descriptive results from More-2-Eat sites

The mean KAP score from the five sites was 93.6/128 (Range 51–124). For Site A, the mean score was 92/128 (Range 63–114); for Site B 93.7/128 (Range 55–120); for Site C 91.9/128 (Range 56–124); for Site D 94.7/128 (Range 66–116); and for Site E 94.1/128 (Range 51–114). There was no significant difference among sites for the total KAP score ($F(4,184) = 0.379, p = 0.823$). Sites were collapsed to determine if differences existed among professional groups and years of practice.

Breakdown of proportion of participants in each response category per question are included in Table 4.4 for the KA questions and Table 4.5 for P questions. Most (88%; $n = 166$) respondents thought that nutrition was important, however only 62% always knew when to refer to a dietitian ($n = 118$), but 80% ($n = 152$) knew how to refer. A little more than half (58%; $n = 110$) reported knowing when a patient was at risk of malnutrition or was malnourished and a similar proportion (55%; $n = 104$) reported often/always helping a patient open food packages, and providing eating assistance when needed (49%; $n = 92$). However, only 35% of respondents reported realigning their tasks so as not to interrupt a patient during their meal time.

When comparing nurses ($n = 89$) to other hospital staff ($n = 111$), there was a significant difference in total KAP score (nurses = 99.5/128; other = 88.3/128); $t(187) = 5.89, p = 0.000$, the KA score (nurses = 80.1/100; other = 76.4/100; $t(187) = 2.677, p = 0.008$), and the P score (nurses = 19.4/28; other = 11.9/28; $t(187) = 7.71, p = 0.000$). This indicates that nurses had more/better knowledge and attitudes and were more likely to report care behaviors that supported the detection, prevention, and treatment of malnutrition than non-nursing direct care staff.

Table 4.4: Study 2: Proportion of responses for knowledge/attitude questions (N = 189).

Questions	Strongly Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Strongly Agree	Missing	Mean (out of 5)	Median (out of 5)
Please rate your agreement with the following statements:								
1. Nutrition is not important to every patient's recovery in hospital *	12 (6%)	2 (1%)	0 (0%)	9 (5%)	166 (88%)	0	4.7	5
2. All patients should be screened for malnutrition at admission to hospital	6 (3%)	6 (3%)	21 (11%)	63 (33%)	93 (49%)	0	4.2	4
3. A patient's weight should be taken at admission	7 (4%)	5 (3%)	10 (5%)	36 (19%)	131 (69%)	0	4.5	5
4. All staff involved in patient care can help set up the tray, open packages, etc.	7 (4%)	11 (6%)	14 (7%)	30 (16%)	127 (67%)	0	4.4	5
5. All staff involved in patient care can provide hands-on assistance to eat when necessary	8 (4.2%)	20 (11%)	20 (11%)	52 (28%)	89 (47%)	0	4.0	4
6. Malnutrition is a high priority at this hospital	9 (5%)	25 (13%)	48 (25%)	69 (37%)	38 (20%)	0	3.6	4
7. Giving malnourished patients an adequate amount of food will enhance their recovery	5 (3%)	8 (4%)	16 (9%)	59 (31%)	101 (53%)	0	4.3	5
8. All malnourished patients require individualized treatment by a dietitian *	108 (57%)	58 (31%)	12 (6%)	7 (4%)	4 (2%)	0	1.6	1
9. I have an important role in promoting a patient's food intake	8 (4%)	13 (7%)	33 (17.5%)	61 (32%)	74 (39%)	0	4.0	4

10. Monitoring food intake is a good way to determine a patient's nutritional status	3 (2%)	13 (7%)	18 (10%)	80 (42%)	75 (40%)	0	4.1	4
11. Interruptions during the meal can negatively affect patient food intake	2 (1%)	6 (3%)	14 (7%)	80 (42%)	87 (46%)	0	4.3	4
12. Promoting food intake to a patient is every staff member's job	7 (4%)	8 (4%)	24 (13%)	59 (31%)	91 (48%)	0	4.2	4
13. Nutritional care of a patient is only the role of the dietitian *	11 (6%)	12 (6%)	18 (10%)	57 (30%)	91 (48%)	0	4.1	4
14. Malnourished patients who are discharged need follow up in the community	3 (2%)	7 (4%)	10 (5%)	70 (37%)	99 (52%)	0	4.4	5
15. A patient's weight is not necessary at discharge *	5 (3%)	17 (9%)	54 (29%)	59 (31%)	54 (28%)	0	3.7	4
16. I always know when to refer to a dietitian	8 (4%)	32 (17%)	27 (14%)	87 (46%)	31 (16%)	4 (2%)	3.5	4
17. I know how to refer to a dietitian	8 (4%)	14 (7%)	11 (6%)	48 (25%)	104 (55%)	4 (2%)	4.1	5
18. I know when a patient is at risk of malnutrition or is malnourished	6 (3%)	36 (19%)	33 (18%)	85 (45%)	25 (13%)	4 (2%)	3.4	4
19. I know some strategies to support food intake at meals	5 (3%)	25 (13%)	36 (19%)	90 (48%)	29 (15%)	4 (2%)	3.5	4
20. I need more training to better support the nutrition needs of my patients	9 (5%)	17 (9%)	30 (16%)	77 (41%)	52 (28%)	4 (2%)	3.7	4
Total score (out of 100)	N/A	N/A	N/A	N/A	N/A	N/A	78.2	80

*: These are negative questions and the scoring was reversed: Strongly Disagree (5); Somewhat Disagree (4); Neutral (3); Somewhat Agree (2); Strongly Agree (1); Blank (0). A higher score indicates more positive knowledge/attitude. For example, in the first question 1, 4.7/5 means that more people think that nutrition is important. For question 8, 1.6/5 means that more people believe that all malnourished patients require individualized treatment by a dietitian.

Table 4.5: Study 2: Proportion of responses for practice questions (N = 189).

Questions	Never	Sometimes	Often	Always	N/A or Blank	Mean (out of 4)	Median (out of 4)
Please rate how often you DO the following:							
1. Check the patient has all that they need to eat (e.g., dentures, glasses)	22 (12%)	32 (17%)	47 (25%)	53 (28%)	35 (18.5%)	2.3	3
2. Help a patient with opening food packages	7 (4%)	35 (19%)	43 (23%)	81 (43%)	23 (12%)	2.8	3
3. Assist a patient to eat if they need help	33 (18%)	30 (6%)	34 (18%)	60 (32%)	32 (17%)	2.3	2
4. If permitted, encourage a patient's family to bring food from home for the patient	17 (9%)	48 (25%)	55 (29%)	42 (22%)	27 (14%)	2.4	3
5. Visit and check a patient during their meal time to see how well they are eating	34 (18%)	33 (18%)	39 (21%)	45 (24%)	38 (20%)	2.1	2
6. Realign my tasks so I do not interrupt a patient during their meal time	22 (12%)	59 (31%)	43 (23%)	37 (20%)	28 (15%)	2.2	2
7. At discharge of a malnourished patient, provide the patient or family with nutrition education material	83 (44%)	36 (19%)	14 (7%)	13 (7%)	43 (23%)	1.3	1
Total score (out of 28)	N/A	N/A	N/A	N/A	N/A	15.4	17

There was no significant difference for total KAP score for years in practice. A significant difference was found for years in practice to KA score ($F(5182) = 2.87, p = 0.016$) with those practicing for 21–30 years having the highest mean KA score (81.85 (CI 79.03–84.67)) and those in the 2–5 years practicing category having the lowest mean KA score (74.02 (CI 70.89–77.16)). A significant difference was also found for years practicing and mean P score ($F(5182) = 3.276, p = 0.007$) with those practicing less than 2 years having the highest mean P score (18.00 (CI 14.39–21.61)) and those practicing for more than 31 years having the lowest (10.31 (CI 6.10–16.51)).

4.5 Discussion

In Study 1, a valid and reliable questionnaire was developed to assess nutrition KAP applicable for a wide variety of healthcare professionals who work in the hospital setting. The intent was to have a questionnaire that reflected quality nutrition care practices, and could be used as one of several instruments for a needs assessment when using behavior change to implement nutrition care improvements. The questionnaire needed to be applicable to hospital staff who do not necessarily see themselves as having a direct role in nutrition care, yet are still involved in nutrition care, such as opening food packages, making food available on the unit for patients, and avoiding mealtime interruptions. Scaling results indicate that although improvements can be made and the sample size was small, the questionnaire was sufficiently reliable for use. The questionnaire is designed for use by hospitals to provide direction and feedback regarding which areas of their own staff behavior to focus on when optimizing nutrition care. It is recommended that future users of this KAP questionnaire consider which questions are applicable to their needs and context. The Kappa values for individual questions provide some assurance of item vs. scale reliability.

Study 2 provided information regarding how best to administer the questionnaire in acute care settings, while retaining anonymity of respondents. Although barriers to completion were highlighted, several strategies were used to increase completion.

Potential strategies included having hardcopies available on the unit (keeping in line with confidentiality agreements), or only sending the questionnaire when no other hospital wide survey was underway. Incentives (i.e., entry into a draw, snacks, verbal encouragement), verbal reminders, and competition between units were all strategies used to increase completion rates. No complaints or concerns with respect to length of the questionnaire were reported.

Results from study 2 provide a sense of the capacity of the KAP questionnaire to discriminate between KA and P among professional groups and across years of practice, which lends further credibility to this measure. Prevalence of key items also confirms a need for further education and training to improve nutrition care in hospital; although a high percentage (88%) of staff already believe nutrition was important. Unfortunately, this belief did not always translate into practice as only 28% always checked to see that a patient had everything they needed to eat, and only 43% always helped to open food packages. Although the KA scores were relatively high for this group, the P scores demonstrate room for improvement. For example, proponents of “protected mealtimes” suggest decreasing mealtime interruptions (Chan & Carpenter, 2015; Hickson, Connolly, & Whelan, 2011; Huxtable & Palmer, 2013; Palmer & Huxtable, 2015), yet only 35% of M2E hospital staff arrange their tasks to minimize this interruption. Food intake is an important factor for determining length of stay, and 82% agreed/strongly agreed that monitoring food intake was important, yet this was not always done in practice.

Several studies have shown that education can increase knowledge, yet this does not mean that it will improve practice immediately, as changing behavior is part of a continuous process (Contento, 2010; McCluskey & Lovarini, 2005). For this reason, it is important to use a multi-faceted approach to behavior change that provides education and/or training, while also working on other components, such as having an environment conducive to the change (Michie et al., 2011). If the processes are

not in place for staff to apply their knowledge, education that increases knowledge is unlikely to influence practice.

Exploratory analyses comparing groups of staff based on their discipline and years of practice suggest potential differences in KAP worthy of further investigation. For years in practice, it was not surprising to have more experience relating to higher KA, however it was unexpected to have this equating to lower P scores. Since most differences were expected, it reinforced the need to focus on education of staff as well as ensuring the processes are in place to practice what is learned. Conclusions with respect to the identified associations in this analysis cannot be made until more diverse samples with greater generalizability are assessed with the KAP questionnaire. However, locally sensitive data can be used for bespoke local solutions, which can subsequently add to the body of regionally effective best practices since there is no “one size fits all” solution in health systems improvement.

4.5.1 Limitations

Although identified to be reliable, the KAP questionnaire could benefit from further development. Due to the time restrictions of the M2E project, pretesting of the questionnaire was limited. Future analysis should include cognitive interviews with physicians and allied health to ensure that questions are fully understood. After completion of the M2E project, further items to support improved nutrition care practices may become evident for consideration and inclusion in the next version of the questionnaire. Test-retest reliability should be conducted on any revised version of the questionnaire.

Analysis of the M2E results examined differences across professions (nurses versus other professions), differences based on years in practice, and differences between sites; however, the sample size is not designed for these individual comparisons and any statistically significant differences should be interpreted with caution. A larger

sample size was deemed unrealistic based on limits of the M2E study, as well as learnings from study 1.

It is important to note that these are self-perceived practices and may not be representative of what occurs in real life. There are also many more questions that could be asked, but given the busy schedule of hospital staff, the questionnaire had to be completed within a maximum of 5–10 minutes. Given these limitations, the questionnaire was still deemed sufficient to use within M2E to determine the KAP environment of each site.

4.5.2 Using the results

This questionnaire provides important information to inform gaps in KAP and areas to focus behavior change strategies for improving staff nutrition care. Within M2E, sites received their results and the overall average scores from across the five sites. This technique could be used by any hospital to compare between units. This questionnaire can be used as an evaluation instrument, as it can be re-administered after behavior change efforts have been made to see if there is a change over time. In M2E, the questionnaire will be used again at the end of the project as a way to examine if there is any change in KAP after one year of INPAC implementation. If the same participants complete the questionnaire, intra-individual changes over time can be assessed.

4.6 Conclusions

The KAP questionnaire is a face valid and reliable questionnaire that has the potential to support understanding of staff KA and P with respect to nutrition care. The questionnaire can be used as a needs assessment in an educational project to improve these aspects. However, it may need to be adapted based on the context and applicability of questions within the needs assessment. Strategies for recruitment within acute care are likely to be applicable across several contexts. Results from M2E sites indicated that KA scores are higher than P scores,

suggesting that education is not sufficient to change staff behavior with respect to best practice for nutrition care in hospital. Use of KAP questionnaires may also improve awareness in respondents as well as hospital management who approve its use. Overall, this questionnaire provides direction and feedback, which can be used by hospitals and researchers aiming to optimize nutrition care in hospital.

4.7 Acknowledgements

This research is funded by Canadian Frailty Network (known previously as Technology Evaluation in the Elderly Network, TVN), supported by Government of Canada through Networks of Centers of Excellence Program. Authors would like to thank Tiffany Got, McMaster University, for her contribution to data collection in Study 1. Many thanks to those who completed the questionnaire and to all More-2-Eat team members who facilitated the recruitment of participants.

Chapter 5: Part 1. Manuscript 2: Comparing hospital staff nutrition knowledge, attitudes, and practices before and 1 year after improving nutrition care: results from the More-2-Eat implementation project.

Manuscript published in *Journal of Parenteral and Enteral Nutrition*.

Laur C, Keller H, Curtis L, Douglas P, Murphy J, Ray S. (2018). Comparing hospital staff nutrition knowledge, attitudes, and practices before and 1 year after improving nutrition care: results from the More-2-Eat implementation project. *Journal of Parenteral and Enteral Nutrition*. 42(4):786-796.

5.1 Abstract

Background: Staff plays a key role in the prevention, detection and treatment of hospital malnutrition. Understanding staff knowledge, attitudes, and practices (KAP) is important for developing and evaluating change management strategies.

Methods: The More-2-Eat project aims to improve nutrition care in five Canadian hospitals by implementing the Integrated Nutrition Pathway for Acute Care (INPAC). To understand staff views before (T1) and after one year of implementation (T2), a reliable KAP questionnaire, based on INPAC, was administered. T2 included questions about involvement in implementation. The mean difference between T2 and T1 responses were calculated. T-tests were used for comparisons.

Results: The questionnaire was completed at T1 (n=189) and T2 (n=147) (unpaired); 57 staff completed both questionnaires (paired). A significant increase in total score was seen in unpaired results at T2 (from 93.6/128, Range 51-124 to 99.5/128, Range 54-119; $t=5.97$, $p<0.0001$), with an increase in knowledge/attitudes (KA) ($t=2.4$, $p=0.016$) and practice ($t=3.57$, $p<0.0001$) components. There were no

statistically significant changes in paired responses. 70% (n=102/147) noticed positive changes in practices, 12% (n=18) noticed positive/negative changes, 1% (n=1) noticed negative change, and 17% (n=25) noticed no change. Positive changes included: increased awareness of nutrition importance, food intake monitoring, mealtime readiness, volunteer support, increased availability of food, nutrition screening, recording weights, supplement use, staff working together, and improved patient outcomes. 59% (n=86) felt involved in the change and these staff had higher KA and KAP scores than those who did not feel involved.

Conclusion: Staff involvement is important in the implementation process for improving nutrition care.

5.2 Clinical relevancy

All hospital staff should be involved in the prevention, detection, and treatment of hospital malnutrition. Improving nutrition care requires a multi and interdisciplinary approach to the safe and effective provision of food, fluid and nutritional care. Staff that felt involved in nutrition care improvements had a greater increase in nutrition knowledge/attitudes and total scores after implementation of nutrition care activities.

5.3 Introduction

Hospital malnutrition is prevalent in Canada (Allard et al., 2016) and similar countries worldwide (Agarwal et al., 2013; Barker et al., 2011; Russell & Elia, 2014), impacting negative health outcomes such as length of stay, mortality, and readmission (Agarwal et al., 2013; Allard et al., 2016; Hiesmayr et al., 2009; Lim et al., 2012). To address this issue, there is increasing recognition that all hospital staff should be involved in nutrition care and a multi- and interdisciplinary approach is required (Keller et al., 2014; Laur et al., 2015; Tappenden et al., 2013; Van Asselt et al., 2012; Zisberg et al., 2015). However, many practicing healthcare providers, including physicians, physiotherapists and social workers, may not be aware of the importance of nutrition, nor the prevalence of malnutrition (Kris-Etherton et al.,

2014). The cross-cutting nature of nutrition within healthcare can lead to diffusion of responsibility with everyone seeing nutrition care as someone else's responsibility. Dietitians play an important role, but they are a specialized resource and are often focused on addressing the more complex nutrition related problems of patients (Keller, Allard, Laporte, et al., 2015). As nurses have the most day-to-day contact with patients, they should play an important role in nutrition care. A survey by Duerksen et al indicates that nurses believe they lack the time to provide quality nutrition care and knowledge to manage nutrition problems (Duerksen et al., 2016). However, nurses agree that they can play an important role in identifying those at risk through nutrition screening (Duerksen et al., 2016). Physicians also need to be involved and knowledgeable about nutrition prevention, detection and treatment, but they recognize a gap between their current versus optimal nutrition care practices in hospital (Duerksen et al., 2015). Health Care Assistants/Aides also have a role to play, particularly regarding getting patients ready for meals (sitting up, tray within reach etc.) and providing eating assistance, however they are not in all hospitals, and may not have adequate time to meet the needs of all patients (Keller et al., 2014). It is evident that different staff can play a variety of roles to meet the nutrition needs of patients, yet a coordinated approach is needed.

In addressing hospital malnutrition, it is important to focus on prevention, detection and treatment. To fulfill this need, a consensus based Integrated Nutrition Pathway for Acute Care (INPAC) was developed, which incorporates evidence of best practice into an algorithm specifying key nutrition care activities (Keller, McCullough, Davidson, et al., 2015). The INPAC activities include nutrition screening at admission (e.g., with Canadian Nutrition Screening Tool [CNST] (Laporte et al., 2015)), diagnosing and triaging patients with the subjective global assessment (SGA) (Detsky et al., 1987), monitoring food intake, standard and advanced care activities such as opening packages or prescription of medpass (a small amount of oral nutrition supplement provided at regular intervals, typically with medication), and

discharge planning (Keller, McCullough, Davidson, et al., 2015). INPAC emphasizes that all staff have a role in the prevention, detection, and treatment of malnutrition.

INPAC implementation in hospital requires a variety of implementation strategies, and change management activities, as well as methods of tracking and evaluating progress. Understanding staff's knowledge, attitudes, and practices (KAP) is a vital step for the development and evaluation of change management activities. KAP questionnaires are designed to measure what is "known, believed, and done in relation to a particular topic" (World Health Organization, 2008) (p. 6). The aim of this manuscript is to compare the change in knowledge/attitude (KA), practice, and total KAP scores before and after INPAC implementation in hospital, and to describe staff perceptions of the change management process.

5.4 Methods

The More-2-Eat project (M2E) implemented INPAC for 1 year in 5 Canadian hospitals (1 medical unit/ward per hospital) (Keller et al., 2017). The 5 hospitals were geographically diverse (located in 4 provinces), and ranged in size from 185 to >1000 beds, but the study unit size was relatively consistent at 20-35 beds. All units were medical: one respiratory care unit; one was also implementing the Accountable Care Unit model; and the other three were mixed units (one with beds for acute stroke care and one in a small community hospital). Each M2E unit had the flexibility to decide which aspects of INPAC to focus on and how to implement the change. All 5 units aimed to raise awareness of the importance of nutrition, and implemented nutrition screening and diagnosis. More tailoring occurred with improving standard and advanced nutrition care by using a range of strategies such as medpass, or weight or food intake monitoring. Results will highlight those common components of implementation used by sites (e.g., INPAC activities and strategies).

A pre-INPAC implementation questionnaire was completed by 30 staff on each M2E unit. The KAP questionnaire, regarding nutrition care practices based on INPAC

activities (Laur, Marcus, Ray, & Keller, 2016), was used as part of a needs assessment and as a baseline to evaluate post implementation changes in staff knowledge and perceptions. Results of the initial questionnaire were reported back to the units to provide information on staffs' perceptions and possible directions for implementation, education and areas for improvement (Keller et al., 2017). The staff were resurveyed a year later, adding questions focusing on the recognition of change and involvement of staff during the INPAC implementation process (rating 1-10; low/high; agree/disagree).

The KAP questionnaire used at baseline and after 1 year of INPAC implementation has demonstrated test-retest reliability (Laur et al., 2016). Additional questions regarding involvement in the change processes were developed based on consultation with the M2E team and were included on the post-implementation survey. A Likert scale was used for response options (Hulley et al., 2013). Categories for KA questions and some regarding involvement in implementation included strongly disagree (score=1) through to strongly agree (score=5). For the practice questions, a four-point scale was deemed appropriate and responses included: never (score=1), sometimes, often, always (score=4), and not applicable (score=1). Practice questions left blank were treated as not applicable. For the remaining questions regarding involvement in implementation, responses were ranked from 1 (low/poor/negative) to 10 (high/good/positive). The final questions on screening and follow-up proportions had participants select from a list of ranges between 0-100%. All staff, except dietitians, who had a direct clinical role with patients on the M2E units, were eligible to complete the questionnaire. Dietitians were excluded since many of the questions were not relevant. Dietitians are aware and knowledgeable of the importance of nutrition, thus their responses would not be representative of the general staff on the unit.

Baseline data (T1) were collected in autumn 2015 (Laur et al., 2016) using the Simple Survey (Outsidesoft Solutions Inc., Quebec, QC, Canada) platform. Sample size was based on consideration of feasibility and the anticipated response rate of 50% of eligible staff from each unit (e.g., 30 nurses (full and part time) and 60 total staff). Each site was required to recruit 30 eligible staff at baseline considering the expected challenges with recruitment. The primary purpose of T1 data collection was a needs assessment for the sites to support implementation processes. One year later (T2), the updated questionnaire was placed on the same online survey platform. Consent was provided by each hospital for e-mail invitations to be sent to unit staff that had previously completed the questionnaire at T1 and consented to be contacted for T2. Three reminders were sent (1 per week for 3 weeks) before the questionnaire was opened to all other eligible M2E unit staff. Recruitment was facilitated by the M2E personnel seconded at the unit for M2E data collection. Regular reminders were provided (by e-mail and in person) until the quota (30/unit) was complete (open from November 2016 to January 2017).

5.4.1 Analysis

Knowledge and attitude questions were added for a summary scale (KA), as it is difficult to distinguish between what staff knows versus what they believe. The mean difference between T2 and T1 responses for individual questions and for total responses was calculated for KA, practice, and KAP total scores. Comparisons were made using independent sample t-tests as the majority of respondents did not complete both questionnaires. A paired sample t-test was calculated for the subset of respondents who completed both pre and post implementation questionnaires. Comparison between units was not completed due to the small samples. For the staff recognition, involvement, and support of changes in practice questions added at T2, a score of >7 indicated awareness and positive views, unless it was reverse coded where negative scores indicated positive changes. T-tests (independent and paired) were used to compare these groups (positive vs. more negative view) by the

KA, practice and KAP scores for the T2 and T2-T1 paired responses. Comparison was also made to determine if there was a difference in perceived level of screening based on being a nurse versus another profession. All analyses were completed on SPSS version 22.

Participants at T2 were asked to explain what changes they noticed and the most significant change. Since most participants listed similar responses for both questions without necessarily highlighting the single most significant change, the results from the two questions were collapsed and analyzed together. Direct quote responses were organized into topic areas using NVivo 11, QSR International Pty Ltd. Version 11, 2015.

5.5 Ethics

Ethical approval for M2E was obtained from the University of Waterloo Research Ethics Board (ORE #20590) and from the ethics committees at each of the five participating hospitals. All data remained anonymous to all researchers, excluding the lead author. Data was stored in password-protected files on locked computers.

5.6 Results

The online, 27-item KAP questionnaire was completed at T1 (n=189), and T2 (n=147) (unpaired sample); 57 staff completed both questionnaires (paired sample) (Table 5.1). A large proportion of respondents were Registered Nurses (31% at T1 and 43% at T2), and Registered Practical Nurses/Licensed Practice Nurses (15% at T1 and 16% at T2). More than half of the respondents were employed full time and had been employed for less than 10 years overall, not only at their current hospital. Nearly half were under the age of 39 and the majority female. Similar demographics were found for paired responses (Table 5.1), with slightly fewer responses from Registered Practical Nurses/Licensed Practice Nurses (9%) and slightly higher for Attending Physicians (6%, 4% and 9% for T1, T2, and paired respectively) and Physiotherapists/Occupational Therapists at T2 (9%, 9% and 14% for T1, T2, and

paired respectively). There were no statistically significant differences between these demographics for paired and unpaired samples.

Table 5.1: Demographic information of the hospital staff for T1, T2 and paired responses.

	T1 % (numerator) N=189	T2 % (numerator) N=147	Paired (T1 & T2) % (numerator) N=57
Profession			
Registered Nurse	31% (58)	43% (63)	35% (20)
Registered Practical Nurse/Licensed Practical Nurse	15% (28)	16% (23)	9% (5)
Dietetic Technician	0.5% (1)	1% (1)	0
Health Care Aide/Personal Support Worker	5% (9)	4% (6)	3.5% (2)
Physiotherapist/Occupational Therapist	9% (17)	9% (13)	14% (8)
Speech-Language Pathologist	4% (8)	3% (4)	5% (3)
Attending Physician	6% (11)	4% (6)	9% (5)
Fellow	0	1% (1)	0
Other	25% (48)	20% (30)	25% (14)
Employment⁺			
Full Time	63% (119)	64% (94)	63% (36)
Part Time	29% (55)	31% (45)	32% (18)
Casual	7% (14)	5% (8)	5% (3)
Years Employed⁺⁺			
Less than 2 years	10% (19)	9.5% (14)	14% (8)
2-5 years	24% (45)	23% (34)	21% (12)
6-10 years	21% (40)	20% (29)	16% (9)
11-20 years	19% (36)	24.5% (36)	23% (13)
21-30 years	18% (34)	15% (22)	21% (12)
31+ years	7% (13)	8% (12)	5% (3)

Age			
less than 30 years of age	23% (43)	22% (32)	23% (13)
30-39 years of age	26% (48)	22% (33)	23% (13)
40-49 years of age	26% (48)	29% (43)	28% (16)
50-59 years of age	21% (40)	22% (33)	25% (14)
60+ years of age	5% (9)	4% (6)	2% (1)
Gender			
Female	86% (162)	89% (131)	84% (48)
Male	14% (27)	11% (16)	16% (9)

Note: no statistically significant differences were noted in demographics for paired and unpaired samples.

* Missing n=1; ** Missing n=2; T1, Time 1; T2, Time 2

5.6.1 Knowledge, attitudes and practices scores

At T1, the mean KAP score across hospitals was 93.6/128 (Range 51–124). It increased to 99.5/128 (Range 54-119) at T2 for unpaired respondents. For paired responses a smaller increase in scores was noted from baseline to follow up with T1 being 96.1/128 (Range 66-114) and T2 being 97.5/128 (Range 54-113). There was a significant increase in overall KA (mean difference (MD) 2.4, 95% Confidence Interval (CI) [0.51, 4.28], $p=0.016$), practice (MD 3.57, 95% CI [2.06, 5.09], $p<0.0001$), and KAP scores (MD 5.97, 95% CI [3.21, 8.73], $p<0.0001$) for the unpaired respondents. No statistically significant differences were found in paired responses despite similar trends in improvement at T2 for KA (MD 0.35, 95% CI [-1.60, 2.30], $p=0.72$), practice (MD 1.02, 95% CI [-0.32, 2.35], $p=0.13$), and KAP scores (MD 1.37, 95% CI [-1.45, 4.19], $p=0.34$) (Table 5.2 and 5.3).

Statistically significant mean differences were found for individual KA questions for both unpaired (16/20 KA questions) and paired respondents (9/20 KA questions) (Table 5.2). More respondents in T2 thought all patients should be screened for

malnutrition (unpaired MD 0.42, 95% CI [0.24, 0.61], $p < 0.0001$; paired MD 0.40, 95% CI [0.11, 0.70], $p = 0.008$) and that nutrition is now a high priority at their hospital (unpaired MD 0.56, 95% CI [0.34, 0.77] $p < 0.0001$; paired MD 0.37, 95% CI [0.08, 0.66], $p = 0.013$). T2 respondents knew more about *when* to refer a patient to a dietitian (unpaired MD 0.53, 95% CI [0.29, 0.77], $p < 0.0001$; paired MD 0.60, 95% CI [0.28, 0.91], $p < 0.0001$); *how* to refer a patient to a dietitian (unpaired MD 0.41, 95% CI [0.18, 0.65], $p < 0.0001$; paired MD 0.37, 95% CI [0.09, 0.65], $p < 0.01$); could recognize a malnourished patient (unpaired MD 0.583, 95% CI [0.36, 0.81] $p < 0.0001$; paired MD 0.39, 95% CI [0.09, 0.69], $p = 0.013$); and fewer felt they needed more training to better support the nutrition needs of their patients (unpaired MD -0.51 95% CI [-0.76, -0.26] $p < 0.0001$; paired MD -0.60, 95% CI [-0.94, -0.26], $p = 0.001$). There was a statistically significant increase in scores for all practice questions in the unpaired respondents between T2 and T1, but not for paired responses (Table 5.3).

Table 5.2: Mean difference scores comparing KA scores for T2 to T1 unpaired and for paired responses.

Questions	Unpaired Mean scores out of 5 (Standard Deviation)		Mean difference unpaired T2-T1 T1 n=189 T2 n=147 (95% Confidence Interval)	Mean difference for T2-T1 Paired Responses n=57 (95% Confidence Interval)
	T1	T2		
1. Nutrition is not important to every patient's recovery in hospital [^]	4.7 (1.0)	4.2 (1.5)	-0.47 ** (-0.76, -0.18)	-0.53 ** (-0.91, -0.14)
2. All patients should be screened for malnutrition at admission to hospital	4.2 (1.0)	4.7 (0.7)	0.42 **** (0.24, 0.61)	0.40 ** (0.11, 0.70)
3. A patient's weight should be taken at admission	4.5 (1.0)	4.6 (0.7)	0.16 (-0.03, 0.34)	0.14 (-0.16, 0.44)
4. All staff involved in patient care can help set up the tray, open packages etc.	4.4 (1.1)	4.7 (0.7)	0.28 ** (0.08, 0.47)	0.21 (-0.03, 0.45)

5. All staff involved in patient care can provide hands-on assistance to eat when necessary	4.0 (1.2)	4.3 (1.0)	0.23* (-0.00, 0.47)	0.07 (-0.23, 0.37)
6. Malnutrition is a high priority at this hospital	3.6 (1.1)	4.1 (0.9)	0.56 **** (0.34, 0.77)	0.37 * (0.08, 0.66)
7. Giving malnourished patients an adequate amount of food will enhance their recovery	4.3 (1.0)	4.6 (0.7)	0.27 ** (0.09, 0.46)	0.26 (-0.04, 0.56)
8. All malnourished patients require individualized treatment by a dietitian [^]	1.6 (0.9)	1.4 (0.7)	-0.19 * (-0.37, -0.02)	-0.35 ** (-0.60, -0.10)
9. I have an important role in promoting a patient's food intake	4.0 (1.1)	4.3 (1.0)	0.35 ** (0.13, 0.57)	0.04 (-0.21, 0.28)
10. Monitoring food intake is a good way to determine a patient's nutritional status	4.1 (0.9)	4.4 (0.8)	0.28 ** (0.09, 0.47)	-0.09 (-0.30, 0.12)
11. Interruptions during the meal can negatively affect patient food intake	4.3 (0.8)	4.4 (0.8)	0.14 (-0.03, 0.32)	0.18 (-0.01, 0.36)
12. Promoting food intake to a patient is every staff member's job	4.2 (1.1)	4.4 (0.8)	0.28** (0.09, 0.48)	-0.05 (-0.20, 0.30)
13. Nutritional care of a patient is only the role of the dietitian [^]	4.1 (1.2)	4.1 (1.2)	0.02 (-0.23, 0.27)	0.23 (-0.09, 0.55)
14. Malnourished patients who are discharged need follow up in the community	4.4 (0.9)	4.4 (0.8)	0.09 (-0.09, 0.27)	-0.04 (-0.29, 0.22)
15. A patient's weight is not necessary at discharge [^]	3.7 (1.1)	2.2 (1.1)	-1.52**** (-1.75, -1.29)	-1.63 **** (-2.06, -1.20)
16. I always know <i>when</i> to refer to a dietitian	3.5 (1.2)	4.0 (1.0)	0.53 **** (0.29, 0.77)	0.60 **** (0.28, 0.91)
17. I know <i>how</i> to refer to a dietitian	4.1 (1.3)	4.5 (0.9)	0.41 *** (0.18, 0.65)	0.37 ** (0.09, 0.65)
18. I know when a patient is at risk of malnutrition or is malnourished	3.4 (1.2)	4.0 (1.0)	0.58 **** (0.36, 0.81)	0.39 * (0.09, 0.69)
19. I know some strategies to support food intake at meals	3.5 (1.1)	4.0 (1.0)	0.50 **** (0.28, 0.72)	0.28 (-0.01, 0.57)

20. I need more training to better support the nutrition needs of my patients	3.7 (1.2)	3.2 (1.1)	-0.51 **** (-0.76, -0.26)	-0.60 *** (-0.94, -0.26)
Total KA score (out of 100)	78.2 (9.8)	80.6 (7.8)	2.4 * (0.51, 4.28)	0.35 (-1.60, 2.30)

^Reverse coded questions, negative difference indicates improvement at T2

* <0.05, ** <0.01, ***<0.001, ****<0.0001

T1, Time 1; T2, Time 2; KA, knowledge, attitudes

Table 5.3: Mean difference scores comparing practice score for T2 to T1 for all responses and for paired responses.

Questions	Mean practice scores out of 4 (Standard Deviation)		Mean difference T2-T1 T1 n=189 T2 n=147 (95% Confidence Interval)	Mean difference T2-T1 Paired Responses n=57 (95% Confidence Interval)
	T1	T2		
1. Check the patient has all that they need to eat (e.g., dentures, glasses)	2.3 (1.5)	3.0 (1.2)	0.64 **** (0.35, 0.92)	0.18 (-0.09, 0.44)
2. Help a patient with opening food packages	2.8 (1.4)	3.2 (1.1)	0.44 *** (0.18, 0.70)	0.04 (-0.18, 0.25)
3. Assist a patient to eat if they need help	2.3 (1.5)	2.8 (1.3)	0.45 ** (0.15, 0.76)	0.05 (-0.22, 0.32)
4. If permitted, encourage a patient's family to bring food from home for the patient	2.4 (1.3)	2.9 (1.2)	0.53 **** (0.26, 0.79)	0.11 (-0.12, 0.33)
5. Visit and check a patient during their meal time to see how well they are eating	2.1 (1.5)	2.6 (1.3)	0.54 **** (0.24, 0.84)	0.18 (-0.10, 0.45)
6. Realign my tasks so I do not interrupt a patient during their meal time	2.2 (1.3)	2.8 (1.1)	0.55 **** (0.29, 0.81)	0.25 (-0.07, 0.56)
7. At discharge of a malnourished patient, provide the patient or family with nutrition education material	1.3 (1.1)	1.8 (1.2)	0.43 ** (0.18, 0.69)	0.23 (0.00, 0.46)

Total Practice Score (out of 28)	15.4 (7.6)	19.0 (6.5)	3.57 **** (2.06, 5.09)	1.02 (-0.32, 2.35)
Total KAP score (out of 128)	93.6 (14.2)	99.5 (11.5)	5.97 **** (3.21, 8.73)	1.37 (-1.45, 4.19)

* <0.05, ** <0.01, ***<0.001, ****<0.0001

T1, Time 1; T2, Time 2; KAP, knowledge, attitudes, practices.

5.6.2 Recognition and support of the change processes

For the questions regarding staff perceptions of the changes on the unit and support provided for the change process, 70% (n=102/147) of respondents reported noticing positive changes in the past year, 12% (n=18) positive and negative changes, 1% (n=1) a negative change, and 17% (n=25) no change. Responses were similar for unpaired and paired respondents (Table 5.4). Those in the unpaired sample who recognized positive change had significantly higher KA (p=0.003), practice (p=0.049), and KAP (p=0.003) scores. These change process responses were not statistically significantly different by KA, practice and KAP scores for the paired sample, although similar trends were noted.

Table 5.4 indicates that there were significantly higher KA, practice, and KAP scores for unpaired respondents who ranked the impact of the M2E project on patient's overall health and recovery as positive (>7) (KA: t=3.90, p<0.0001; practice: t=2.56, p=0.012); KAP: t=4.06, p<0.0001), had positive job satisfaction (KA: t=3.41, p=0.001; practice: t=2.12, p=0.032; KAP: t=3.61, p<0.0001), and/or considered the project a positive overall value to the unit (KA: t=4.39, p<0.0001; practice: t=2.12, p=0.04; KAP: t=4.07, p<0.0001). No statistically significant difference was found for paired responses, although similar trends were noted. Eighty-four percent (n=122) of respondents felt there was more focus on nutrition care in their hospital, with positive scores associated with significantly higher KA (t=3.74, p=0.001), and KAP (t= 3.169,

p=0.004) scores for overall T2 responses. Just over 79% (n=116) felt supported to make changes to nutrition care over the past year, and 91% (n=132) agreed that they were aware that changes were underway on their unit. Being aware of the change did not lead to increased KA, practice, or KAP scores potentially as only 9% (n=13) were unaware of the change. Two-thirds (n=97) of staff felt that they were asked what changes to nutrition care were needed, and those who felt they had been asked had significantly higher KA (t=4.40, p<0.0001) and KAP (t=3.95, p<0.0001) scores. Fifty-nine percent (n=86) agreed they were involved in planning and making changes, and those who agreed also had significantly higher KA (t=4.56, p<0.0001), practice (t=2.05, p=0.04) and KAP (t=4.38, p<0.0001) scores.

Table 5.4: Recognition of change on the unit and support provided contrasting unpaired T2, paired samples, and KAP scores.

	Frequencies for % (numerator)		Median Scores		Median KA total (out of 100)		Median Practice total (out of 28)		Median KAP total (out of 128)	
	T2 only n=147	Paired sample n=57	T2 only n=147	Paired sample n=57	T2 only n=147	Paired sample n=57	T2 only n=147	Paired sample n=57	T2 only n=147	Paired sample n=57
1. Have you noticed any change in nutrition care practice on the study unit over the past year?										
Yes, positive change noticed	70% (102) ⁺	72% (41)	-	-	83 ^{^**}	83	21 [*]	19	103 ^{**}	102
Positive and negative changes	12% (18) ⁺	7% (4)	-	-	82.5	75	22	22	103	90.5
No change noticed	17% (25) ⁺	19% (11)	-	-	77 [^]	75	18 [*]	13	95	92
Negative change noticed	1% (1) ⁺	2% (1)	-	-	71	-	23	-	94	-
2. On a scale of 1 (low/poor/negative) to 10 (high/good/positive), rank how the change you noticed ...										
<i>a. Impacted patients' overall health and recovery</i>										
Yes (7 +)	67% (98) ⁺	65% (37) ⁺	7/10	7/10	83 ^{****}	83	21 [*]	20	104 ^{****}	103
No (<7)	33% (48) ⁺	33% (19) ⁺			77	77	19	15	95.5	92
<i>b. Affected your job satisfaction</i>										
Yes (7 +)	63% (92) ⁺	60% (34) ⁺	7.5/10	7/10	83 ^{***}	83	21 [*]	20	104 ^{****}	102.5

No (<7)	37% (54) ⁺	39% (22) ⁺			77.5	78.5	19*	16	97.5	96
<i>c. Provided overall value to the unit</i>										
Yes (7 +)	81% (83) ⁺	75% (43) ⁺	8/10	8/10	83****	83	21*	20	104****	103
No (<7)	14% (20) ⁺	23% (13) ⁺			76	75	18.5*	15	93.5	90
3. On a scale of 1 (lower) to 10 (higher), rate the focus of this unit on nutrition care as compared to one year ago?										
High focus (7+)	84% (122) ⁺	84% (48) ⁺⁺	8.5/10	9/10	83***	83	21	19	103**	101.5
Lower focus (<7)	16% (24) ⁺	12% (7) ⁺⁺			76.5	69	19.5	15	92.5	84
4. On a scale of 1 (low/poor) to 10 (high), rate how supported you felt to make changes to nutrition care over the past year?										
Yes, supported (7 +)	79.5% (116) ⁺	79% (45) ⁺⁺	8/10	8/10	83****	83	21**	19	104****	102
Not supported (<7)	20.5% (30) ⁺	17.5% (10) ⁺⁺			76	71.5	16.5	14	91.5	85
6. Please rate your agreement with each of the following statements (Strongly Disagree, Somewhat Disagree, Neutral, Somewhat Agree, Strongly Agree)										
<i>a. I was aware that changes were occurring regarding nutrition care on the study unit</i>										
Agree	91% (132) ⁺⁺	91% (52) ⁺⁺	5 (strongly agree)	5 (strongly agree)	82	82.5	20.5	19	102	100.5
Disagree/ Neutral	9% (13) ⁺⁺	5% (3) ⁺⁺			78	77	21	20	100	90

<i>b. I was asked what changes to nutrition care I wanted to see on the unit</i>										
Agree	67% (97) ⁺⁺	77% (44) ⁺⁺	4	4	83 ^{****}	83	21	19.5	104 ^{****}	102.5
Disagree/Neutral	33% (48) ⁺⁺	19% (11) ⁺⁺	(some-what agree)	(some-what agree)	77	74	19	13	97	90
<i>c. I was involved in planning and making changes to nutrition care on the unit</i>										
Agree	59% (86) ⁺⁺	63% (36) ⁺⁺	4	4	83 ^{****}	83.5	21 [*]	20	104 ^{****}	103.5
Disagree/Neutral	41% (59) ⁺⁺	32% (18) ⁺⁺	(some-what agree)	(some-what agree)	78	78	20 [*]	13	97	90.5

⁺ Missing n=1, ⁺⁺ Missing n=2

^{*} <0.05, ^{**} <0.01, ^{***} <0.001, ^{****} <0.0001

T1, Time 1; T2, Time 2; KA, knowledge, attitude; KAP, knowledge, attitudes, practices.

-, Not Applicable

[^] Comparison between Yes, positive change noted, and No change noticed. Negative change noticed and positive/negative changes noticed were not included in this comparison due to the small number of responses and categorization with either a yes or no response was considered logical.

5.6.3 Perceptions of screening and referral processes

As nutrition screening is a crucial part of INPAC and all hospitals had implemented screening and diagnosis by T2, questions regarding staff perceptions of the proportion of patients screened, referred, and receiving appropriate treatment were included (Table 5.5). Forty-eight percent thought that 75-100% of patients were being screened and 30% did not know. Fifty-nine percent (n=50) of nurses believed that 75-100% of patients were screened for nutrition risk, compared to 32% (n=19) of other staff (non-nurses) [$\chi^2(1, N=145) = 10.4, p = 0.001$]. Fifty-four percent of respondents believed that 75-100% of patients were referred to a dietitian if they were thought to be at nutritional risk, with 60% believing those patients received appropriate care following identification of the risk.

Table 5.5: Perception of proportion of patients screened, referred and receiving appropriate care compared by paired and unpaired samples.

	Frequencies for Unpaired Sample % (numerator) n=146 ⁺⁺	Frequencies for Paired Sample % (numerator) n=57 ⁺⁺
5. What proportion of patients at your hospital are:		
<i>a. Screened for nutrition risk?</i>		
None	1% (1)	0
Less than 10%	1% (1)	0
11-49%	6% (9)	7% (4)
50-74%	14.5% (21)	11% (6)
75-100%	48% (69)	54.5% (30)
Don't Know	30% (44)	27% (15)
<i>b. Referred to a dietitian if they are thought to be at nutrition risk</i>		
None	1% (1)	0
Less than 10%	1% (2)	2% (1)
11-49%	8% (11)	9% (5)
50-74%	14.5% (21)	18% (10)
75-100%	54% (78)	51% (28)
Don't Know	22% (32)	20% (11)
<i>c. Received appropriate nutrition care following identification of nutrition risk</i>		
None	0	0
Less than 10%	1% (1)	2% (1)
11-49%	3% (5)	4% (2)
50-74%	12% (18)	14.5% (8)
75-100%	60% (87)	62% (34)
Don't Know	23% (34)	18% (10)

⁺⁺ Missing n=2

5.6.4 Qualitative comments

When respondents at T2 were asked to explain what change they noticed, 65% (n=96) responded. Most comments (89.6%; n=86) were from those who noticed positive changes. Responses focused on areas of INPAC that each unit was implementing. Main topics included: increased nutrition awareness, monitoring of patient food intake, mealtime readiness, food availability, volunteer support, nutrition screening, supplement use, recording weights, staff working together and improvements to patient outcomes. Of the few negative comments, respondents indicated the need for more attention on setting patients up for the meal, the difficulty in opening packages, and lack of eating assistance.

5.7 Discussion

It is encouraging to see the increase in KA, practice, and KAP scores in unpaired responses before and 1 year after INPAC implementation, with practice scores generally increasing more than KA scores. As the same statistically significant changes were not seen in the paired responses, despite their similar demographics, it cannot be confirmed that the changes in scores were due solely to the M2E project. The lack of significance within the paired responses is likely due to the limited sample size, as all changes in this subgroup were in the anticipated direction and consistent with the unpaired sample.

Both the unpaired and paired groups had a significant increase in their understanding that nutrition is important to every patient's recovery and is a high priority at their hospital (Table 5.2). The importance of nutrition was a key area of implementation across all sites. Having the hospital involved in M2E appears to have influenced staff to see that their hospital recognizes nutrition is a priority. Both groups also recognized the need for nutrition screening, a key component of INPAC and a priority for all sites. Within M2E, by T2, all units were screening above 70% of admitted patients (unpublished results). Many staff were accurately predicting

screening rates at above 50%. The proportions of “do not know” responses indicate that some staff was still unaware of screening. Nurses were more likely to report screening prevalence, as they were typically more involved in this activity. For implementing screening and other INPAC activities, the most commonly used behavior change techniques included education, enablement, and environmental restructuring (unpublished results).

In the qualitative responses, nutrition screening was mentioned but not as frequently as standard care activities. This was an expected result, as screening would only impact certain staff, and implementation efforts would only be applicable to those staff. Screening was also implemented at the beginning of the year and minimal comment may be because it had already been incorporated into the routine, thus not thought of as a recent change. When considering that staff reported an increased recognition of the need for screening, had positive qualitative comments regarding early identification of malnutrition, and were generally aware that screening was underway, this suggests that M2E efforts with respect to screening will be sustained in these study units.

Based on KA results, there was an increased recognition of when a patient was at risk of malnutrition, when and how to refer to a dietitian, and that not all patients require individualized support from a dietitian. These changes are in line with the implementation efforts focused on raising awareness, increasing nutrition screening, and working toward increased recognition that everyone should be involved in nutrition care. There was no change regarding views that nutritional care of a patient is only the role of the dietitian, which may mean more focus should be placed on having staff recognize nutrition as everyone’s responsibility, not just the dietitian. As predicted, diagnosis with subjective global assessment, although implemented across all five sites, was not mentioned in the qualitative comments, as this questionnaire was not completed by dietitians who were the ones typically involved

in this care activity in M2E. Having screening as part of the routine and staff having an increased understanding of when and how a dietitian should be involved, suggests success with educating staff and is an example of a multidisciplinary approach to nutrition care, espoused by INPAC.

Qualitative comments regarding monitoring food intake and patient set-up at mealtimes were the most commonly reported positive changes, in line with INPAC standard care activities. Involvement of volunteers at mealtimes was another standard care approach. Volunteers were mentioned in qualitative comments more frequently in those units that had launched a volunteer mealtime program; staff was recognizing the change and the benefit of including volunteers. This feedback is beneficial for the units, and may support the implementation of mealtime volunteer programs at other hospitals as a way to address standard care activities within INPAC.

There was no change in the perception that interruptions during the meal can negatively affect patient food intake. This result is in line with observed practices, as most units took the approach of having staff, volunteers, family and friends provide encouragement and company during mealtimes to support the social side of eating rather than restricting access to patients' rooms. It is not clear if staff considered this as interruptions or not. Although protected mealtimes (Hickson et al., 2011; Palmer & Huxtable, 2015) discourage mealtime interruptions, some are unavoidable, and responses to this question may reflect this reality.

Although not mentioned as an INPAC activity, regular and accurate (not estimated) weights, such as through a weekly weighing program, were seen as changes as a result of M2E implementation efforts in some sites. An overall change was not experienced because in some sites staff recognized the importance of accurate weights at admission at T1 and the opinion did not change at T2. In addition, not all

sites focused on weights. There was a significant increase in the number of staff who felt a patient's weight was necessary at discharge.

There was minimal change in opinion regarding the need for malnourished patients to be followed-up in the community and little emphasis on discharge planning in the qualitative feedback. Many units were unable to address this care step within the implementation year. Lack of difference may also be due to the fact that at T1, staff were already supportive of community follow-up, recognizing that connecting the hospital to the community is important. There was also a significant increase in practice regarding the number of staff who reported providing the patients or families with nutrition education material at discharge. These results highlight the need for future work to focus on the transition from hospital to home, ensuring that patients are receiving adequate follow-up and support regarding their nutrition needs in the community.

The qualitative results are consistent with INPAC activities and demonstrate that staff recognized the changes underway. Some comments were about changes (e.g., selective menus) that occurred at the same time as M2E, but were not necessarily part of the project. As well, the changes mentioned are not reflective of all changes on the units, but do reflect those that had an impact on the daily practice of staff on all units. Staff no longer felt the need for more training to better support the nutrition needs of their patients, which may be because there were several education sessions provided for staff at each unit throughout the year. All practice scores had increased and staff was more aware of the importance of nutrition, could accurately comment on many of the changes, and many felt involved in the overall change process at T2.

5.7.1 An interdisciplinary approach where staff feels involved

Recognition of a positive change on the unit was associated with higher KA, practice, and KAP scores. Higher KA and KAP scores were also found for staff who

felt they were asked about what changes were needed and felt involved in the change process. These findings support the literature that staff should be involved in the change process (Brewster et al., 2015; Laur et al., 2015; Tappenden et al., 2013). Staff know what works in practice and their opinions should be considered throughout the process.

The study results are in line with literature indicating that a multi- and interdisciplinary approach is needed to address hospital malnutrition (Keller et al., 2014; Laur et al., 2015; Tappenden et al., 2013; Van Asselt et al., 2012; Zisberg et al., 2015). As mentioned by Duerksen et al, nutrition care goes beyond dietitians, with nurses, for example, being involved in standard nutrition care practices such as ensuring trays are within reach of the patient, as well as monitoring food consumption and body weight (Duerksen et al., 2016). Food services staff could play a role in encouraging food intake, while hospital management could support a culture of proactive nutrition care. Nutrition care practices cannot be left solely to nurses and dietitians, as all staff, clinical or non-clinical, has a role to play in improving nutrition care. For M2E, being involved in making improvements made staff more likely to understand the issues associated with hospital malnutrition.

5.7.2 Limitations

There are limitations to the use of the questionnaire(s), particularly as they were conducted on a wide variety of professionals, but may not represent the opinions of all staff (Laur et al., 2016). The questions regarding recognition and support of change processes were added for T2. The M2E team confirmed the questions, but pilot testing was not completed. The small sample size for the paired responses was also a limitation. It was deemed impractical to increase the sample size, and three weeks of reminders for those who completed at T1 was deemed realistic before opening the questionnaire to all eligible staff. The limited sample size also restricted the ability to compare results at the unit level to the specific INPAC activities

implemented on that unit. For example, it was not possible to see if the scores for the questions about weight monitoring had more change in units that focused on this activity. Practice scores also need to be interpreted carefully, as they are self-perceived practices that may not be representative of actual practice. It is also not possible to say based on these data if changes had an impact on patient outcomes. Further analyses in M2E will focus on these research questions.

Although the paired and unpaired samples were not different in their demographic characteristics (Table 5.1) sample differences appeared for baseline KAP scores. The paired group started with higher scores at T1, leaving less room for improvement at T2. The paired sample also typically had lower practice scores at T2, indicating that the unit efforts may not have had as much effect on the paired sample as the group overall, but it is unclear why these differences may have existed. Having a wide variety of professionals complete the questionnaire may appear as a disadvantage for interpreting the results. This broad approach is in line with the need to have everyone involved in nutrition care, yet does not allow for comparison of changes based on profession. A global, rather than a profession specific approach may be the way forward when working towards implementing INPAC.

5.7.3 Future directions

All hospitals interested in improving nutrition care or implementing INPAC are encouraged to evaluate the KAP of hospital staff before and after making changes. Baseline results can be used to inform areas for improvement, while repeating the questionnaire allows for recognition of change. This repetition may also allow for quantification of impact for some implementation efforts, such as raising awareness of the importance of nutrition. Making improvements in practice is a continuous process and using existing tools, such as this KAP questionnaire, to track progress and feedback the results is part of good practice for making sustainable change

(Ivers et al., 2012, 2014; Meyers, Durlak, & Wansersman, 2012; Scheirer, 2005). The importance of understanding the KAP of patient and families regarding the importance of nutrition may be another important consideration in INPAC implementation and future work should consider developing a questionnaire specific to this group. Further analyses in M2E will highlight patient perceptions of the importance of nutrition, as well as success with INPAC implementation, and improvements in-patient reported outcomes.

An online toolkit has been created regarding learnings from M2E on how to implement INPAC (m2e.nutritioncareincanada.ca). This toolkit includes tips for making change in hospital, strategies and models for implementing INPAC activities, as well as tools and resources important for the change process. This INPAC KAP questionnaire is available in the toolkit for use by any hospital.

5.8 Conclusion

This is the first known questionnaire assessing staff KAP with respect to nutrition care in hospitals. As part of the change management process, all hospitals are encouraged to conduct a needs assessment of staff perceptions of nutrition care to inform changes before implementation and to evaluate change later on. Understanding the KAP of hospital staff can provide direction regarding understanding perceptions and areas for improvement. KAP was shown to significantly improve during the M2E implementation study. The additional questions regarding the change processes further demonstrate staff perceived involvement and extent of the impact, as well as the positive association of those perceptions on KAP scores. With this bottom-up approach of involving unit staff in the change process, the staff increased their KA, practice and KAP scores during the year of INPAC implementation, and recognized that positive changes were occurring on their unit. Many staff felt they had been asked what was needed and felt involved in the process, which may have supported overall INPAC implementation. All staff

should be involved in the change process when working towards improving nutrition care in hospital and a KAP questionnaire can support this engagement.

5.9 Acknowledgements

The M2E implementation study team includes the following co-investigators (C. Basualdo-Hammond, J. Bell, P. Bernier, L. Curtis, D. Duerksen, P. Douglas, L. Gramlich, M. Laporte, S. Ray), collaborators (L. Dietrich, J. Dubin, K. Jeejeebhoy, A. Maybee, M. Mourtzakis, S. Robbins, H. Truber), champions (M. Atkins, D. Butterworth, B. Hotson, S. Obiorah, R. Nasser, M. Stickles-White, M. Tom) and research associates: (S. Barnes, M. Booth, A. Digweed, S. Doering, S. Cowan, C. Marcell, J. Murphy, L. Vescio). Canadian Malnutrition Task Force has provided in-kind project management through the Director B. Davidson who is also part of the research/facilitation team, which also includes T. McNicholl and R. Valaitis. NNEdPro has specifically supported key aspects of implementation toolkit development and will provide dissemination across its network. Dietitians of Canada, Canadian Nutrition Society and the Canadian Society of Nutrition Management also support dissemination of this work.

Chapter 6: Part 2. Manuscript 3: Changing nutrition care practices in hospital: a thematic analysis of hospital staff perspectives.

Manuscript published in *BMC Health Services Research*.

Laur C, Valaitis R, Bell J, Keller H. (2017). Changing nutrition care practices in hospital: a thematic analysis of hospital staff perspectives. *BMC Health Services Research*. 19;17(1):498.

6.1 Abstract

Background. Many patients are admitted to hospital and are already malnourished. Gaps in practice have identified that care processes for these patients can be improved. Hospital staff, including management, needs to work towards optimizing nutrition care in hospitals to improve the prevention, detection and treatment of malnutrition. The objective of this study was to understand how staff members perceived and described the necessary ingredients to support change efforts required to improve nutrition care in their hospital.

Methods. A qualitative study was conducted using purposive sampling techniques to recruit participants for focus groups (FG) (n=11) and key informant interviews (n=40) with a variety of hospital staff and management. Discussions based on a semi-structured schedule were conducted at five diverse hospitals from four provinces in Canada as part of the More-2-Eat implementation project. One researcher conducted 2-day site visits over a two-month period to complete all interviews and FGs. Interviews were transcribed verbatim while key points and quotes were taken from FGs. Transcripts were coded line-by-line with initial thematic analysis completed by the primary author. Other authors (n=3) confirmed the themes by

reviewing a subset of transcripts and the draft themes. Themes were then refined and further detailed. Member checking of site summaries was completed with site champions.

Results. Participants (n=133) included nurses, physicians, food service workers, dietitians, and hospital management, among others. Discussion regarding ways to improve nutrition care in each specific site facilitated the thought process during FG and interviews. Five main themes were identified: building a reason to change; involving relevant people in the change process; embedding change into current practice; accounting for climate; and building strong relationships within the hospital team.

Conclusions. Hospital staff need a reason to change their nutrition care practices and a significant change driver is perceived and experienced benefit to the patient. Participants described key ingredients to support successful change and specifically engaging the interdisciplinary team to effect sustainable improvements in nutrition care.

Trial Registration. Retrospectively registered ClinTrials.gov Identifier: NCT02800304, June 7, 2016.

6.2 Background

Globally, many studies have examined the prevalence of malnutrition (Agarwal et al., 2013; Allard et al., 2016; Barker et al., 2011; Corish & Kennedy, 2000; Vanderwee et al., 2010), the barriers to food intake (Bell, Bauer, Capra, & Pulle, 2013; Keller, Allard, Vesnaver, et al., 2015; Naithani et al., 2009), and ways to protect mealtimes (Chan & Carpenter, 2015; Hickson et al., 2011; Huxtable & Palmer, 2013; Palmer & Huxtable, 2015) in hospital. Few studies have attempted to describe how to improve hospital nutrition care practices and embed those practices in the unit routine (Brewster et al., 2015). An interdisciplinary approach is needed to improve the

prevention, detection and treatment of hospital malnutrition (Laur et al., 2015; Tappenden et al., 2013). A key component of changing practice is to understand the views of those who will be involved in the change and the context or climate where the changes are occurring (Weiner, 2009; Weiner, Belden, Bergmire, & Johnston, 2011). Qualitative methods, including focus groups (FG) and key informant (KI) interviews, allow for this in-depth understanding (Miles et al., 2014).

The More-2-Eat (M2E) implementation project aims to optimize nutrition care in hospital through use of the Integrated Nutrition Pathway for Acute Care (INPAC) (Keller, McCullough, Davidson, et al., 2015). INPAC is an algorithm that recommends use of simple screening and assessment tools to diagnose malnutrition. Identification of barriers to food intake and food monitoring are also key activities to prevent iatrogenic malnutrition. Providing standardized advanced care strategies (e.g., oral nutrition supplementation) supports efficiently treating patients and discharge planning is considered. As part of the M2E project, five hospitals in Canada are changing their nutrition care processes to align with INPAC. M2E is focused on developing and understanding the methods required for embedding the knowledge of INPAC into the routine of the unit (Keller et al., 2017). A variety of methods were used throughout the M2E developmental (May-Dec 2015), implementation (Jan-Dec 2016), and sustainability phases (Jan-Mar 2017), to conduct process and outcome evaluation. All methods are described in a prior publication (Keller et al., 2017).

The M2E project is based on the action portion of the Knowledge-to-Action (Graham et al., 2006) cycle (Laur & Keller, 2015) and includes steps to understand context as well as barriers and facilitators to support change processes and adoption of knowledge in order to promote sustainability. This qualitative study was designed to address these steps in the action cycle, but also aims to increase our understanding of what is necessary for implementing changes to nutrition care practices in hospital.

A pragmatic approach was taken throughout the developmental phase of M2E due to the need to promptly understand context, as well as the barriers and facilitators to change required for sites to progress with their implementation efforts.

6.3 Methods

6.3.1 Overview

This was a qualitative descriptive study using thematic analysis conducted at the five diverse M2E hospitals, including: Royal Alexandra Hospital; Niagara Health, Greater Niagara General Site; The Ottawa Hospital; Concordia Hospital, and Pasqua Hospital Regina Qu'Appelle Health Region. Details of the sites are available elsewhere (Keller et al., 2017).

6.3.2 Sampling and recruitment

FG (n=11) and KI interviews (n=40) were conducted during two-day site visits by CL in October/November 2015 at each site. A total of n=133 participants were involved. Two FGs with 4-15 participants per group and 5-14 individual interviews were completed at each site. Despite evidence of similar issues being discussed by the time the third site was completed, all arranged site FG and interviews were completed to provide context-specific data to support implementation efforts. For the interviews, purposive sampling methods were used to select KIs to participate based on the criteria that they would provide valuable insight, both positive and negative, about nutrition care and making change on the unit or in the hospital (Patton, 2002). For the FG, all staff on the M2E unit were invited; a minimum of two FG were scheduled for each site to capture staff on varying shifts. M2E champions and research associates, who led the implementation process at their hospital, conducted this recruitment using posters, e-mails and verbal reminders.

6.3.3 Data collection

All interviews were conducted by CL, which increased credibility of results, as learnings and understandings built from interviews to FG and from site to site. CL is a female mixed methods researcher and PhD candidate in health studies, with a background in public health nutrition and implementation science. She is not a health professional and not associated with any of the hospitals. CL did not meet participants before the site visits, however, before the discussions began, CL described her background to participants as well as the reason for the interview/FG.

During the FG and interviews, the environment (meeting room in the hospital) was made to feel comfortable, with a free lunch provided for FG discussions. Upon arrival, participants read and signed a consent form and completed a short demographic form. Each FG and interview took between 10-50 minutes and was digitally recorded. A M2E champion or research associate was in the room during the FG to take notes, and this was explained to the group and included in consent. When interview participants were not available during the 2-day visit, the interview was conducted by phone (n=7). The discussions were based on a semi-structured guide (Table 1) that was adapted by CL during the interview, based on profession/role of the interviewee. The Holstein and Gubrium (1995) approach of Active Interviewing was used as it encourages the development of new questions based on interviewee responses allowing for the making of new connections and insights (Holstein & Gubrium, 1995). Context memos for each site were written by CL to elaborate on key observations and reflections at the end of the two-day site visit. This reflection process included reviewing audio-files and making preliminary summarizations of key data to be transferred to sites for consideration in their implementation process. As a first level form of member checking, each site was requested to respond to the summary if they did not feel it was an accurate representation.

All interview audio files were transcribed verbatim by a professional transcription service. FG recordings were not sent for transcription due to the volume of KI data and as a result, FG data were considered complementary in the analysis. Key points and quotes from each FG were obtained by listening to recordings a minimum of twice (CL).

Table 6.1: Guide for focus group and interview questions

Focus Group/Interview Questions Guide
<ol style="list-style-type: none"> 1. What do you think this unit does well in terms of nutritional care? 2. What are the major challenges to providing nutrition care in this hospital? 3. In INPAC, we have suggested screening patients at admission by asking them 2 questions about weight change and food intake. What would help to make this change? What might prevent this change? 4. We want all patients to receive standard care, such as having packages opened, being set up to eat and ensuring that all patients have adequate access to food. What would help to make this change? What might prevent this change? 5. How can food intake of a patient be monitored? What would help to make this change? What might prevent this change? 6. <i>For RDs</i> – Are you familiar with SGA? Have you been trained? If SGA were to be done for all patients who are screened as at risk, what would help make this change? What might prevent this change? 7. If there was one thing you could change about the way food and nutrition care is provided on this unit, what would it be? 8. When you have made changes to improve care practices in the past, what worked well? What didn't? Why?

CNST: Canadian Nutrition Screening Tool; RD: Registered Dietitian; SGA: Subjective Global Assessment; INPAC: Integrated Nutrition Pathway for Acute Care

Note: Not all questions were asked of all participants and not all questions asked are listed here.

6.3.4 Data analysis

One researcher (CL) completed all initial analyses of interview transcripts, FG notes and context memos using NVivo 11 to support the coding structure and summarization of codes. Analysis followed the Saldana et al., inductive approach of first and second cycle coding (Miles et al., 2014). Each idea was assigned a specific “code” with one idea per code. Codes were then grouped when they had the same idea, and higher-level pattern codes (second level codes) were used to organize the data. The in vivo approach was used whenever possible to preserve the phraseology (Miles et al., 2014). Theoretical saturation was evident before all FG and KI interviews were fully analyzed, but all data were included.

Once coding was completed, CL started to develop potential themes and worked with HK and RV (researchers on the M2E project, intimately involved in facilitating implementation) to organize the data and categorize emerging themes through an iterative process. Thematic memos were developed which provided a rich description of the theme supported by exemplar quotes and these were revised in an iterative process with RV and HK. Several uncoded transcripts (4-5 transcripts per researcher as selected by CL, total n=13) were reviewed by RV, HK and JB to familiarize them with the sites and data. The four researchers then considered these data when reviewing the emerging themes as exemplified by the thematic memos. Further discussions were held among the researchers until all authors agreed the themes were representative of the data provided in transcripts. Triangulation with other findings, including M2E data and M2E researcher experiences were also used to confirm the themes (Keller et al., 2017; Keller, McCullough, Davidson, et al., 2015; Laur & Keller, 2015). JB provided external review since he was familiar with M2E, yet not as connected to the M2E data collection as HK or RV. Member checking of themes was also obtained during a stakeholder meeting with M2E champions and co-investigators (n=25). Further opportunities to confirm the credibility of themes occurred in webinars and conference presentations for acute care clinicians.

6.3.5 Ethics approval and consent to participate

Ethical approval for M2E was obtained from the University of Waterloo Research Ethics Board (ORE #20590) and from the ethics committees at each of the five participating hospitals (Niagara Health Ethics Board, Ottawa Health Science Network Research Ethics Board, Health Research Ethics Board of the University of Alberta, Regina Qu'Appelle Health Region Research Ethics Board, Concordia Research Ethics Committee). Data collection directly from staff required informed written consent, which was attained prior to data collection. All data remained anonymous to all researchers, excluding CL, and was stored in password-protected files on locked computers. Written consent was taken before each interview or FG, complemented with a verbal reminder before recording began. Participants were aware that some quotations would be used and that these would be de-identified by person and hospital before use.

6.4 Results

Demographics of participants are included in Table 2. The themes that emerged from this study focused on how to make change to nutrition care practices in the hospital from the perspective of a variety of hospital staff including: registered nurses (RNs), registered dietitians (RDs), physicians, food service workers, management, etc. At the core, staff indicated that there needs to be a reason for them to change their practices, and this was typically to benefit the patient. Growing from that reasoning was the need to involve relevant people in the change process and a focus on how to embed change into current practice. Context was key; thus understanding the context and overall climate should be considered when working within the hospital structure. Finally, strong relationships within the hospital teams were seen as vital throughout the change process. A heuristic of these themes is represented in Figure 2 with details included in Table 3.

Table 6.2: Participant information for all focus group and interviews.

Demographic Information		Interviews n (%)	Focus Groups n (%)
# of Participants		40	93
Gender	Female	29 (73%)	79 (85%)
	Male	11 (27%)	9 (10%)
	Missing Data	0	5 (5%)
Years of Age (Range)	<30 years	4 (10%)	28 (30%)
	30-39 years	8 (20%)	21 (23%)
	40-49 years	14 (35%)	17 (18%)
	50-59 years	10 (25%)	17 (18%)
	60+ years	4 (10%)	5 (5%)
	Missing Data	0	5 (5%)
Profession	Dietitian	6	7
	Diet Technician/Diet Assistant	4	2
	Food Service	2	3
	Food Service Supervisor/Manager	7	2
	Dietitian + Food Service	3	0
	Registered Nurse (+Discharge Planner)	7	28 (+2)
	Registered Practical Nurse/Licensed Practical Nurse	0	9
	Nurse Practitioner/Clinical Nurse Specialist	0	1
	Health Care Aide/Personal Support Worker	0	11
	Attending Physician	6	1
	Physiotherapist/Occupational Therapist	0	14
	Speech-Language Pathologist	0	6
	Discharge Planner (+Registered Nurse)	0	1 (+2)
	Management*	13	0
	Other	9 ⁺	8 [^]
	Missing	0	5

Note: some participants indicated more than one profession, therefore the profession values will not equate to the total number of participants.

* Management Positions: Process Improvement Manager, Manager Patient Flow, Director of Nutrition and Food Service, Manager Clinical Nutrition, Manager, Executive Director (n=2), Clinical Site Lead, Program Director, Unit manager, Clinical Care Lead, Clinical Manager, Director of Food and Logistics. (Many managers also put their clinical role so are included twice in the list of professions.)

+ Others (interview): Admin ED, VP Physician and Integrated Health Services (Medicine Service Line).

^Others (focus group): student (n=3), unit clerk, enterostomal therapist, social worker, physicians' assistant, pharmacist, educator, case manager (n=2).

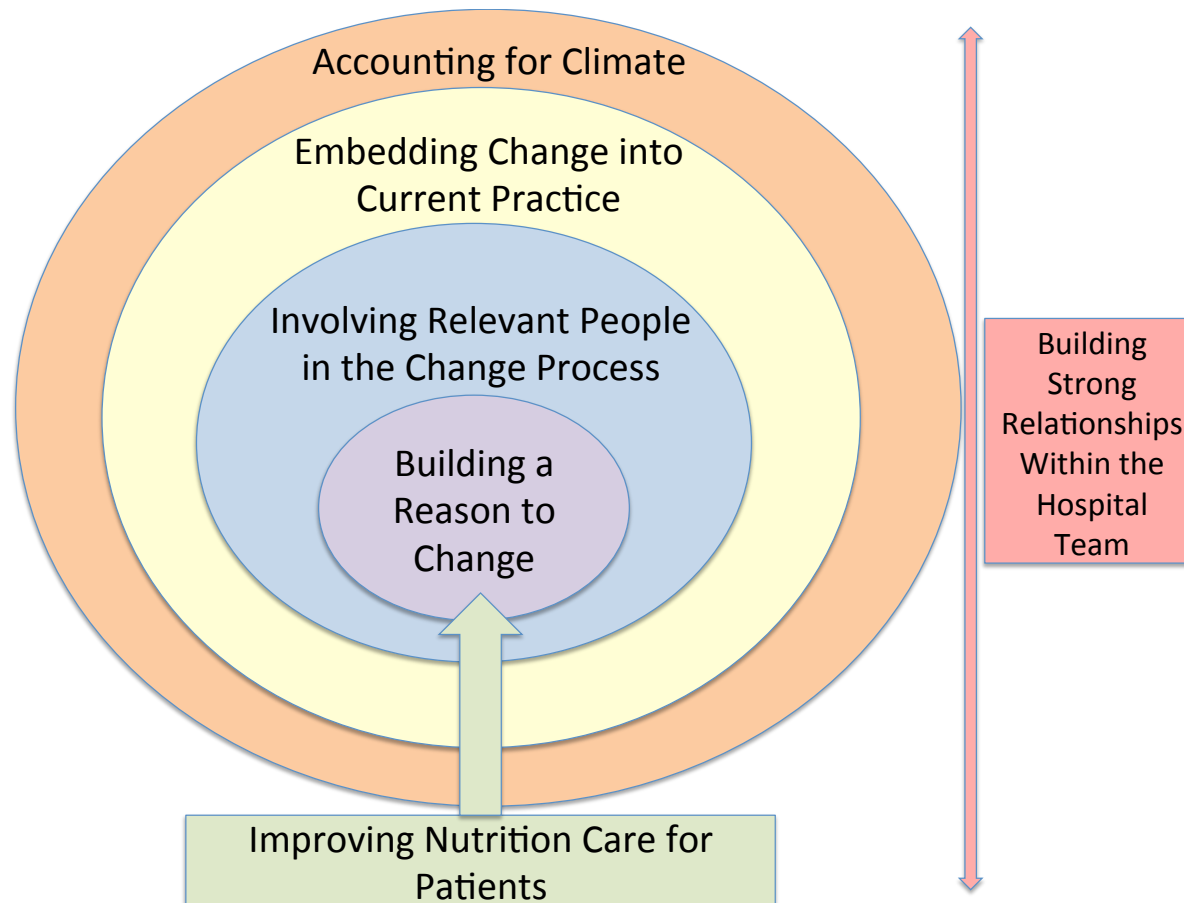


Figure 6.1: Framework describing the themes regarding making change to nutrition care in the hospital setting

Table 6.3: Summary of themes and applicable quotes based on the focus groups and interviews.

Building a Reason To Change	
Using drivers to change	<p><i>If they think it's affecting patient care, if they think they'll make the patients better and if they think it'll make the care more efficient and less expensive, I don't think it's a tough sell at all. [Site B-12: Attending Physician]</i></p> <p><i>What drove this was... it's one of the competencies for the students is they have to learn, I don't know if it's SGA or if they have to learn physical assessment, so we were like, 'We don't do this.' We have to be able to teach the students and able to meet their competencies so we better learn it ourselves, which I am so thrilled that I was like yay. It's more than just [name of interviewee] saying so. [Site A-17: RD, Dietetics Manager]</i></p>
Facilitating the change process	<p><i>I think if it doesn't have a lot of meaning for people and there's no associated actions tied to it so people don't see it as valuable so I think that's probably one of the questions that people tend to skip some of the time. If they can see that value I think that would be very helpful in that change management piece. [Site A-11: RN, Manager]</i></p> <p><i>But it's numbers. That's the challenge. You get to the VP level, all they want to talk about is numbers and right now we're all talking this is a great idea and nobody argues with them. It's a great idea but until we get some good numbers that we can prove it, then it's going to be a lot more powerful then. [Site B-17: Senior Management]</i></p> <p><i>Simple, effective, with a clear meaningful impact then it'll be fine. This [nutrition screening with CNST] is an easy one. This is not adding an extra 45, you know, we get asked to do, you need to do this now when you're discharging a patient and it's actually 40 minutes for every discharge and we're like, whoa, you just increased my day by two hours. So that's hard to sell. [Site B-12: Attending Physician]</i></p>
Being ready for change	<p><i>I think when you talk honestly and you talk openly about [the change] to them and you tell them right off the bat we don't promise to have all of the answers. We don't promise to know everything but we're going to work with you and we're going to figure it out as we go, right? I think the thing is, is we've been talking about it and we've done other changes and they've seen how we've proceeded to do those other changes and we've done them exactly how we've said is that we have to start somewhere. Here's where we're starting. We've taken two or three weeks where we've tweaked them and made changes. We've listened to their comments and suggestions and then we've improved it. [Site B-13: Food Service Manager]</i></p> <p><i>... when they start balking the system and not wanting to change, the thing that we always remind them is that, do you have a cell phone? Do you have an iPhone? "Yes." How many times have you updated your iPhone in the last year? "Well three or four." Then why is your work not the same? And I think if you put it into those</i></p>

	<i>terms, that speaks to every single one of them. They say, “Oh yeah, that makes sense.” [Site B-13: RD, Manager]</i>
Involving Relevant People in the Change Process	
Involving staff in the change process	<p><i>It’s almost like saying every patient needs to walk but that doesn’t mean that physio needs to walk with every patient. Right. Every patient needs proper nutrition care but that doesn’t mean it should necessarily be a dietitian.” [Site E-FG2: Physiotherapist]</i></p> <p><i>I think it’s really important to get down to that front level staff so they understand what the process and what the impact might be but also that they also have an impact as to how it’s going to be rolled out and positive, how those interactions are going to be played out. [Site B-13: Food Service Manager]</i></p> <p><i>Getting feedback from those involved. Whenever I roll out change with my staff, I always get their feedback because they’re so knowledgeable; because they’re the ones actually doing it. [Site C-13: Food Service Supervisor]</i></p>
Involving patients, families and friends in the change process	<i>A large group that would be good to involve is the patients, and or the families. ... They’re sitting here for long periods of time with nothing to do. If they, if we have some way of involving them, I think. And if they understood, because it’s the families who have to sustain whatever plans we put into place when they leave here. [Site B-FG1]</i>
Involving volunteers	<i>We would love to use volunteers. ... that would be wonderful to have them on the unit because at mealtimes, because then they can go in and visit the patients and get them the assistance. Those that don’t need to be fed they can take care of setting them up or maybe helping setting the trays prior to us getting there; that kind of thing. We would love to see volunteers. [Site C-13: Food Service Supervisor]</i>
Obtaining buy-in from stakeholders	<i>They need to understand why they’re doing it and then I always think personalizing it to the client or patient that usually is a pretty good sell. Then I think people will buy in and we could get some sustainability. [Site A-112: Manager]</i>
Embedding change into current practice	

Incorporating small changes slowly	<p><i>So you have to start small, iron out the kinks if you will and then replicate it as you can if humanly possible so. [Site A-I12: Senior Management]</i></p> <p><i>I certainly think that people feel a lot less, I think, angst knowing that they're trialing something for a short period of time and of it is not going to work out we can tweak it and modify it and that it's not something that's for, you know longer periods of time. [Site E-I3: RD, Clinical Site Lead]</i></p>
Benefiting from existing structures and processes	<p><i>... what I can offer is looking at ways of reducing a length of stay by designing systems... how do I connect the process and identify these patients early on so that the discussion, the conversation can happen earlier on a lead time is always money. How I would try to embed this process? ... How I do embed it would be...there would be a way of identifying them right off the bat, upon admission on our board. [Site D-I3: Manager]</i></p>
Accounting for staff perceptions of best practice	<p><i>...when and how we roll this out if we can involve the staff as much as we can to bring them into it, the more they play a part in the pre-rollout the more successful we'll be. [Site B-I5: Clinical Manager]</i></p> <p><i>Yeah, give examples, maybe give some concrete patient examples that they can see that relate to medicine. [Site B-I1: RN]</i></p>
Facilitating the integration of sustainable change	<p><i>So it has to be standardized, right, and it has to be there all the time so, yeah. And part of the problem is there's, you know you're going to have this problem on a ward or - we have patients all scattered throughout the hospital and this ward sometimes has non-medicine patients on it so you have to pick your audience and decide what you want to do. It's totally doable. [Site B-I2: Attending Physician]</i></p>
Accounting for Climate	

Working within the constraints of the hospital structure	<i>... we had to bring more hours back into the department because some of those hours were with housekeeping. ... got involved with the union, reallocating hours, job re-assignments, redevelopment of job routines. There was a lot involved with that. Summary training, because new employees coming in maybe didn't do tray delivery so we had to retrain. There's a lot involved with that. [Site C-13: Food Service Supervisor]</i>
Presenting nutrition as a benefit or value to the hospital	<i>Nursing to patient ratio's gotten lower and lower, higher and higher, lower and lower. Patient and nurse ratio has gotten higher and also can't afford to make it lower. It's bad care. No one says it corporately but we all know it. Even the hospital says they're firing 57 nurses and then [name] gets on the radio and says, "But it won't affect any patient care." Come on. [Site B-12: Attending Physician]</i> <i>I think that we're pretty engaged. As a health region we're engaged and again I think that's one of the benefits of having a smaller health region is initiatives like this can gain a lot of momentum and be shared because they're interdisciplinary, they cross so many different areas and we've had lots of opportunity to talk about it. [Site A-16: RD, Manager]</i>
Building strong relationships within the hospital team	
Using the right amount of communication with the right message	<i>I think that one of the keys if we want to make sure that this is something that's well known and people can anticipate potentially being replicated, is to do a good amount of communication. So not over-communicating but making sure that it at least stays in the forefront of peoples' minds and I don't think we should isolate that just to one group because I know that a more senior leadership level or the people that are directly involved. [Site A-112: Senior Management]</i>
Developing and maintaining trust	<i>Feeling comfortable enough to know who to ask and knowing that it's going to happen. ... And I think the relationship, like KE1 and I, the CCL [Clinical Care Lead] and I have with our staff is that they're very comfortable to come and tell us what they need and how they feel. [Site B-15: Clinical Manager]</i>
Engaging the team	<i>Our group has met several times so we obviously feel comfortable as a group but actually working together on behaviour change and the PDSA [Plan Do Study Act] cycles and all that. [Site E-13: RD, Clinical Manager]</i>

Breaking down individual silos	<i>I like to see allied help because I'm a nurse; my background is nursing. I really like to [see] the allied members of the health team engage the nursing side of it, because so often we're so siloed in our specialties that we don't come together. [Site C-11: RN]</i>
Using communication tools	<i>I have a communication book in my department. If I'm making departmental changes, I always leave them there. I hold huddle meetings when I'm here on site. ... I try to bring people together to go over the issues and the communication book to reach staff that I don't see. Then if it's a huge impact that needs to happen right away, I will call staff even at home and say, "This is changing immediately. This is what's happening." This is what I try to do. [Site C-13: Food Service Supervisor]</i>
Using face to face communication	<p><i>Just speaking from the change management project that we work with, it was a really interesting experience; first for myself on that level for having that many people around that table representing different areas that are touched by nutrition services. I was pleasantly surprised at the input and the feedback from everybody but equally as much surprised that through the discussion there was a lot of aha moments for people. [Site E-13: RD, Manager]</i></p> <p><i>How we can improve communication ... We did a walk around. We met with [name] the manager, found ways to identify to nursing staff whether a patient ate less than half of their tray. We did some brainstorming. [Site A-15: RD, Food Service Manager]</i></p>

6.4.1 Improving nutrition care for patients

To encourage thought development during interviews, participants were asked about what their unit/hospital was doing well regarding nutrition care and what improvements were needed. Answers focused on the need for improvements to patient-centered care, protecting mealtimes, and mechanisms for making sure food was available and accessible to patients.

Participants described the need to provide patient-centered care that focused on the whole person and their individual needs. This philosophy of care was about getting back to basics: *“recognizing that it’s not just about the task that you have to do in front of you but also both the patient’s whole well-being and nutrition”* [Site A-I4: RN, Nursing Management]. Using food intake to understand the overall needs of the patient was also noted; *“That [what is left on their meal tray] tells you everything about their functional status or their mental status or whatever”* [Site B-I2: Attending Physician]. The provision of eating assistance was also mentioned as a way to understand a patient: *“And that’s it’s not just feeding them but there’s a really good time to assess them as well for different pieces there in terms of their nutrition...”* [Site A-I4: RN and Nursing Management]. Thus food and its capacity to centre care in a more person-centred way was a key reason to improve the nutrition practices in hospitals voiced by participants.

Ways to protect mealtimes were also discussed as a key way to improve nutrition care. “Protecting mealtimes” was described as: decreasing interruptions by planning a routine, and ensuring that food was available/accessible. One site was particularly concerned with meal timing and the effect it had on the patient experience and food intake:

If we can say to patients, ‘Meals will be delivered within this 20-minute window, have your family come and help you’, but right now we can say meals are delivered at noon. Well their family might come at noon and lunch is delivered

at 11:20 so it's sitting there cold and the patient doesn't want to eat it anymore.

[Site A-17: RD, Dietetics Manager]

The availability and access of food was a frequent point of discussion including: having food available on the unit; making sure patients are set up to eat; clearing the patient area so the tray was within reach and not surrounded by unappealing items or smells: *"It's just the environment isn't inviting and the commode is right beside the bedside"* [Site A-FG3]; providing encouragement for patients to eat; identifying those in need of eating assistance; making sure packages are opened; decreasing staff breaks during patient mealtimes; and when applicable, accommodating food from outside the hospital. Outside food can be accommodated by: *"Make[ing] room for the families to bring in their food"* [Site E-FG1]. Challenges in food delivery for isolation patients were noted including that the food may get cold or the meal totally missed for the patient. Recommendation for improvement were also given, for example: *"We [now] leave the [isolation patient] meals at the nurses' desk"* [Site C-13: Food Service Supervisor] as a way of reminding the nurse that the tray needed to be delivered to the isolation patient. There was also concern regarding lack of clear communication about NPO status (nothing by mouth). As noted by a food service team member: *"They're [food service staff] fearful of handing out a tray to an NPO patient because it could delay surgeries or have a significant impact on a lot of different things by feeding a patient."* [Site C-13: Food Service Supervisor]. The discussion regarding these specific elements of nutrition care was used as a mechanism to encourage discussion regarding how changes are made within the unit/hospital.

6.4.2 Building a reason to change

At its core, hospital staff need a reason to change their practice before embarking on a change effort. Key improvements described by sites were presented above. In addition to these specific desired changes, participants described benefiting the patient as a key driver for change as well as organizational priorities. Staff and

management had to see the change as valued and important, while considering their current context and what was feasible. Participants also described practical ways for building a reason to change and several facilitators were offered. Finally, it was noted that determining and building capacity for change was foundational before any implementation efforts could begin.

Participants described a variety of drivers or reasons for making change of which the benefit to the patient was most salient: *“I’m up for trying anything as long as it’s for benefit for our patients.”* [Site B-I5: Manager] Other drivers were organizational requirements that led to efficiencies. It was noted that timely discharge from the hospital was a key organizational driver for practice change, as was the need to meet student requirements for internship placements, or other regional-level requirements. As noted in this FG, malnutrition could be described as a “barrier to discharge” which raised hospital costs and affected patient flow to help prioritize the issue and make change:

Identify it [malnutrition] as a risk to “barrier to discharge”, because they [patients] are not eating nutritiously, they’re not healing as quickly as they possibly could be, therefore their discharge is delayed. That makes people pay attention. [Site B-FG2]

In addition to patient benefit and organizational drivers, other facilitators to change described by participants included: linking the change to a valued action, keeping the plan simple, and proving the change was worthwhile. For example, if screening led to the RD seeing a patient sooner and addressing nutrition and food concerns, this could be seen as valuable by nursing, potentially minimizing challenges later in the hospital stay. As noted by this manager, meaningfulness of the changed behaviours was key:

I think if it doesn't have a lot of meaning for people and there's no associated actions tied to it, people don't see it as valuable ... If they can see that value I think that would be very helpful. [Site A-I1: RN, Manager]

Keeping the messaging simple as to what needs to change also supported this step in the change effort, as did continually educating the staff about the issue and what they needed to do. It was also described that enlisting 'believers' in the issue early on could be one factor in building a reason to change. These ambassadors within various disciplinary groups could help spread awareness beyond those championing the effort.

... it's a cultural transformation so like any other cultural transformation you need to start with the believers first. Get that out of the way and then work on the people that are either resisting change or taking a longer time to change. [Site D-I3: Manager]

Further, change needs to be visible on the unit and the ideas need to be marketed in a way that encourages and supports the change.

It's got to be like hands on. It's got to be – it's got to be people that are visible on the floor to see what goes on; not just me reporting it or the charge reporting it. ... they've got to see it. [Site C-I5: Diet Technician/Diet Assistant]

By being evident through personal experience of all staff on the unit, a change was more likely to be seen as worthwhile and thus perpetuated its continuation.

Several practical ways of building a reason to change were also described. For example, data supporting the need to change a process could be used to make the argument for the necessity of improvements, such as malnourished patients being missed because there was no screening process in place. Using their own local data and comparing to a standard to show deficits in practice was an example provided:

... as with anything there's going to have to be that audit-review-feedback loop that is built in so that staff understand that ... it [nutrition] is important and hopefully catch it before the patient is discharged or make sure it's corrected for the next patient. [Site A-12: Senior Management]

Another practical way of building a reason to change was to continually educate people about why the change is important, using short sessions such as huddles or in-services. Reminders, such as posters, were also considered important tools to keep staff engaged and informed.

Finally, building a reason to change also included developing capacity in a variety of ways. Hospital staff highlighted that they needed to be ready to make the change, that change efforts had to be realistic and that the change process had to be normalized. As described by this informant, change was a constant in the hospital and a strong foundation for accepting and making change was required:

It doesn't matter what people want to do, if you don't have the right foundation set, you're going to lose things, so that's the point of it. ... Healthcare is like boxing an octopus, you can't put two hands up there's a lot of other things coming at you so the more you try to predict all these little variables, diets, homecare all that... [Site D-13: Manager]

Staff need a reason to change their practice, and should be supported to do so through changes that are feasible and show clear benefits, particularly to the patients.

6.4.3 Involving relevant people in the change process

When making change, participants discussed needing to have the right people involved at the right level at the right time. Discussions highlighted that everyone (management, front line staff, food service, allied health, patients, families, friends, volunteers etc.) should have a clear understanding of their role in the change

process (improvement of nutrition care) and be brought in at the appropriate time. Departmental silos were a key issue that needed to be addressed, as well as building ownership of nutrition care, particularly mealtimes, rather than deferring accountability. Volunteers, family and patients were noted as being part of the change process by having specific roles and understanding expectations.

All sites discussed the challenges, yet importance, of involving relevant people in the change process. Staff are busy and clinical commitments take priority. Several participants mentioned departmental silos, and with nutrition being relevant across departments, there was a desire to find a way to overcome these silos and have everyone working together. For example, a food service manager discussed her desire and attempts to encourage food service to be treated as part of the unit team, yet often felt her team was excluded. One attempt to overcome this silo was the piloting of a model where the same food service worker delivered and picked up the tray:

Hopefully ... that staff member will become part of the team upstairs but it's very much still hire-keep where the support staff and nutrition belongs to that group are viewed down on and so it's trying to convey the message that, "you know what? You guys [food service staff] play just as an important role as everybody else. Everybody has a role to play and it's different. Mine is different, theirs' is different and it's engaging the staff and making them realize the importance that they do too." [Site B-13: Food Service Manager]

When discussing the involvement of the relevant people, the need for accountability was also mentioned. Accountability was discussed regarding involvement in the change process and following through on designated tasks, as well as in the overall current lack of accountability for meal times: *"There's absolutely no one who's accountable for mealtimes.* [Site A-17: RD, Dietetics Manager] Reasons for this lack of accountability were discussed, and the suggestion was made for how to think of

this as everyone's responsibility: *"It's almost like saying every patient needs to walk but that doesn't mean that physio needs to walk with every patient. Right. Every patient needs proper nutrition care but that doesn't mean it should necessarily be a dietitian."* [Site E-FG2, Physiotherapist] Clarity regarding the responsibility of each staff member was discussed as a method for increasing accountability. Opinions were mixed regarding whether specific tasks should be designated or if everyone should be encouraged to participate in nutrition care.

All sites discussed the potential value of volunteers having a role and supporting nutrition care: *"We would love to use volunteers."* [Site C-I3: Food Service Supervisor] Recruitment challenges were highlighted, as well as capacity and comfort level of the volunteer. *"I think the biggest challenge was just filling that [volunteer] position all the time."* [Site D-I4: Food Service Manager] An area of concern from both staff and volunteers was about providing eating assistance to patients. When eating assistance was removed from the required activities, staff and volunteers were both more comfortable, which also facilitated volunteer recruitment.

Although all sites mentioned changes being for the benefit of the patient, only a few sites mentioned the role of patients, families and friends in the change process. For example, when discussing ways to decrease mealtime interruptions, one RN wanted to find out what patients thought about mealtime interruptions and whether they would rather be interrupted for a test, or have uninterrupted mealtimes. Expectations and perspective of the patients, family and friends needs to be considered when developing an improvement plan.

Diverse stakeholders need to be involved in the change process at various points and their buy-in for change is essential. To obtain buy-in, the justification should be personalized and the need for the change should be clearly visible to the group and individual. *"They [stakeholders] need to understand why they're doing it and then I*

always think personalizing it to the client or patient that usually is a pretty good sell.”
[Site A-112: Senior Management].

6.4.4 Embedding change into current practice

To make changes last, they need to become embedded into current practice. To promote sustainability, participants mentioned that changes should be small and start slowly. The benefits of embedding the changes into existing structures and processes were discussed as ways to decrease the change burden and increase likelihood of a lasting change. Participants mentioned that opinions and perceptions of staff regarding best practice and ways to embed the change needs to be considered, recognizing that opinions may not always match reality or best practice. Yet, it is important to make sure staff opinion is incorporated into the change process to build ownership. Further, to facilitate the integration of sustainable change, the process needs to become part of the routine and be supported by existing processes and evaluation methods.

When embedding change, there is a need for changes to start small, yet have potential for large impact. *“What I’m hoping is that people will identify [in M2E] some simple small changes that will have a maximum impact for the patient.”* [Site E-16: Senior Management] Short pilots were seen as a way to test ideas that can be evaluated, modified and re-trialed. *“So you have to start small, iron out the kinks if you will, and then replicate it as [much as] you can, if humanly possible.”* [Site A-112: Senior Management] Results throughout the change process should be fed back to the staff involved so they can gauge their progress. One RD identified how they planned to embed the subjective global assessment (SGA; the key nutrition assessment tool in INPAC) into current practice:

... the expectation was that we would learn the basic idea of it [SGA] and slowly start to incorporate it in our daily routine. We all agreed on sort of a minimal number of times we would use it say per day and we slowly built that

into people's work routines as they felt more comfortable and became more skilled at using it. [Site E-13: RD, Manager]

Not all changes need to be new initiatives. Many participants mentioned the benefit of using and adapting existing structures and clinical governance processes. For example, all sites discussed embedding nutrition screening into current admission forms. *"...it sounds like it's [CNST] going to be integrated into an already existing process ... I think that's helpful as opposed to making it a separate process. [Site A-11: RN, Manager]* Other current structures that could support embedding of a new practice include changing the role of food service workers so they can be considered part of the unit team, using existing quality improvement teams to support the changes, and tweaking whiteboard systems (a method used in hospital to track patient progress including which specializations need to see the patient before discharge) to incorporate nutrition care activities.

To embed change, it is important to understand staff perceptions and to discuss further when their perceptions do not match the local evidence. Providing education using local data as well as evidence for why the change is needed can help to shift perceptions. For example, misperceptions with respect to standard nutrition care practices that reduced barriers and supported food intake for all patients (i.e. setting up patients for their meal) were noted. There were mixed opinions between interviews in the same sites and even within the same interview, regarding whether nutrition care practices were adequate. For example, one participant indicated patients were always ready for the meal, yet later admitted there was not enough time to get everyone ready and more support was required. One RD felt that the reality of standard nutrition care differed from the staff perception. *"I think people think that they're doing better than they're doing. I think people try and have a good heart but the reality is different than what the perception is."* [Site A-17: RD, Dietetics]

Manager] Local data tracking these care activities can help to align varying staff perceptions with reality and demonstrate a need for change.

Staff are the experts regarding their daily routine and need to be consulted if changes are expected to impact them. “*The more they [staff] play a part in the pre-rollout the more successful we’ll be.*” [Site B-15: Manager] Several strategies were discussed regarding how to bring staff on board, particularly when their perceptions did not match best practice or local evidence. For example, in one site, it was indicated that front line staff had inaccurate information about the food and most staff had not tasted it themselves. “...*Generally, I think staff don’t find it [hospital food] appealing and I think the patients won’t if the staff portray that.*” [Site E-15: RN, Unit Manager] Food service found it frustrating that these staff were encouraging this negative attitude with patients, yet staff did not understand the sourcing (it was local food), production (how the food arrives at the hospital) or even the taste of the food being served. The approach to address this perception was to have management and staff taste the food, along with reminders about the local sourcing and the diet order process. Thus, personal experience is also needed to embed a change.

Other facilitators to embedding change focused on standardizing the process and re-evaluating throughout the embedding stages so there would be an understanding of what change has occurred and what seems to have been embedded into practice. “*It has to be standardized, right, and it has to be there all the time...*” [Site B-12: Attending Physician] For example, when getting screening started, auditing and reporting the screening rates was considered an important way to embed practice. Data could then be followed with discussions with front line staff regarding what further improvements could be made to embed the practice into routine.

6.4.5 Accounting for climate

Typically, context is key and an overarching element to consider, however these discussions went beyond context, to touch upon the overall climate. Climate focuses

on the values of the organisation, including the means, motivation and opportunities for innovation [16]. These values can include the values of the hospital and larger health region, including current policies and regulating bodies. Many participants discussed the need to work within the constraints of the hospital structure, including the requirements of the food service delivery mechanisms, and the regulations of the health region when considering a new practice. To work through these limiting factors, participants highlighted how improved nutrition care needs to be presented as a benefit or value to the hospital, focusing on saving money and engaging the greater system. *“If they think it’ll make the care more efficient and less expensive, I don’t think it’s a tough sell at all.* [Site B-12: Attending Physician]

To work within the given hospital structure, participants discussed the need to navigate complicated processes. One small change might have many different elements that need to be accounted for, such as the inflexibility of the food production and delivery processes as food is typically made and usually plated offsite. Other complicated processes included changing staff roles, routines, hiring, unions etc. which all need to be recognized and considered in an attempt to minimize delays or barriers within the change process. Regarding hospital policy, participants mentioned the need to work within the current policies and work towards improvement when there are gaps. *“Ultimately to have the policy set up so that it becomes a policy within our organization that this is what we do.”* [Site C-13: Food Service Supervisor]

Improvements in the current nutrition care needs to be presented as a benefit to the hospital from a variety of perspectives that account for the current climate. Hospitals are under pressure to have policies that encourage patient-centered care and save money. Change drivers or champions should present the case that prioritizing nutrition is one way to address both patient-centered care and introduce cost savings. This requirement for a change in practice and ways to save money were

addressed, including highlighting evidence that malnourished patients stay longer and cost more. Another strategy was to find ways to benefit the bottom line, such as decreasing waste. “[We need to] *have a bit more of a resource savvy way of going about doing some of those things because there’s huge financial impact to all that waste.* [Site A-19: Manager]

6.4.6 Building strong relationships within hospital teams

An overarching aspect in these discussions was the need for strong relationships, which is considered an underlying concept within all other themes in order for change to be effective. Strong relationships are built on good communication, trust and team engagement. Participants emphasized the need to use the right amount of communication with the right message, as well as the importance of developing and maintaining trust. Many participants discussed the inefficiencies created by departmental silos and ways for this to be overcome. Team engagement in the issue and building an attitude that we ‘are all in it together’ was a way to build relationships. Specific strategies for building strong relationships focused on use of communication tools and the importance of face-to-face communication.

Discussions highlighted the need for the right balance of communication where people are aware of the change but are not overloaded. “... *you have to find a way to do that [educate them] without inundating people so they see beyond it.*” [Site C-11: RN] The message should also indicate that the change *must* happen rather than *might* or *should* happen.

When she first rolled it out it was more about a ‘nice to have’ not a ‘must have’. It was a “Wouldn’t it be nice if we could?” It was almost built-in optionally. Where our tact this time will be much different. It’ll be more about we will have an expectation that you’ll have the table cleaned. We will have an expectation that your patient’s sitting up and ready to eat. [Site B-17: Food Service Manager]

One manager discussed how his team was effective because they had strong communication skills and teamwork. Front line staff trusted they could approach management with a concern, and whenever possible, management would address that concern.

Feeling comfortable enough to know who to ask and knowing that it's going to happen. ... And I think the relationship, ... [we] have with our staff is that they're very comfortable to come and tell us what they need and how they feel.
[Site B-15: Clinical Manager]

Across all sites, engagement was discussed as an important component within the change process. Lack of engagement from the relevant people in the process was often mentioned as a reason that a project lacked sustained impact.

To me the biggest, I guess issue, ... is lack of engagement. People need to understand why you're doing it and they need to, if not agree, at least see the benefit and if you can get – because we need everybody. ... if we can communicate properly to them and give them the information that they need and show them the why you're doing it, right? [Site A-112: Senior Management]

A lack of communication across departments and individuals was also described. In several interviews, a problem was highlighted in one discussion and the solution was mentioned in the next. Unfortunately, many staff were not aware that the solution already existed and so it was not in regular use. Participants highlighted this problem by discussing the individual silos and the need to improve communication channels. When changes do happen, staff should be aware of those changes and be able to use it to their benefit. A lot of effort is wasted if a change is made yet never used because staff were not aware or consulted.

There was a need to recognize the role of other individuals and how they can work together as a team to improve communication, and in turn, impact patient care. “/

really like to see the allied members of the health team engage the nursing side of it, because so often we're so siloed in our specialties that we don't come together."

[Site C-I1: RN] Talking to people directly, face-to-face when possible, was mentioned as one strategy for improved, clear communication and the building of stronger relationships. Group discussions, such as the FG to collect this data, were said to be informative and provided a beneficial contribution to the change process. *"I'm finding this [the FG] very educational. If we can do something like this, even once every 6 months, or something where we're all sitting down and saying what are the issues, how can we do this better.* [Site E-FG1: Physicians' Assistant]

6.5 Discussion

Hospitals are unique locations, where clinical commitments to patients are the priority. However, the clinical importance of adequate nutrition care and its impact on patient-centred care is recognized but not always acted upon (Bell, Bauer, Capra, & Pulle, 2014; Keller et al., 2014; Laur et al., 2015; Tappenden et al., 2013). Raising awareness and providing education about the issue is important, but it is not enough. Hospital processes and systems need to be adapted and strong relationships built with clear channels of communication, so that improvements can become embedded into routine (Brewster et al., 2015). For improving nutrition care practices, dietitians cannot do this alone. Dietitians should work as part of an interdisciplinary team to effect beneficial changes in nutrition care for all patients (Tappenden et al., 2013).

The Nutrition Care Model is designed to visually represent the American Dietetic Association's, Nutrition Care Process (Lacey & Pritchett, 2003). The model focuses on the role of the dietitian and interaction with a patient, while working within a larger system. Within this model, in practice, most of the focus regarding improving nutrition care has been at the individual patient level, focusing on the middle four sections of the circle, including assessment, diagnosis, intervention, monitoring and

evaluation. The results of this study indicate that in order to make change to nutrition care in a hospital setting, more focus should be placed on the outer layers of the circle, and thus the larger hospital system. Communication and collaboration are key when trying to improve practice. A prior study implemented the Nutrition Care Model practice of dietitians charting with standardized terminology as a pilot in two hospitals (Leggat & Dwyer, 2005). Authors recognized that change takes time and requires a variety of strategies including education, feedback, reminders and positive encouragement. The dietitians were most affected by this change in practice, however it appears that little focus was paid regarding the existing climate, determining whether the dietitians were ready for the change, whether other members of the clinical team were informed of the change or about how it would impact their practice. Even within these two hospital Nutrition Care Model pilots, the context and strategies used were different, emphasising the need to look beyond raising awareness or knowledge when changing practice, and also the need to consider the climate, or values, of the organisation (Lacey & Pritchett, 2003).

An article by Leggat and Dwyer, focusing on improving hospital performance, strongly emphasised the need for “good people management” and the impact that this can have on culture change (Leggat & Dwyer, 2005). This emphasis is in line with themes regarding building strong relationships, working as part of a team, and begins to touch upon considering the climate, in order to facilitate the change process or innovation described in the current work. Climate is a broad concept that is difficult to articulate, often misused, and often overlooked during implementation (Weiner et al., 2011). However, positive climate has the potential to significantly impact change, as it includes policies and practices that encourage means, motives and opportunities for innovation and change (Weiner et al., 2011). It is encouraging to see these interview/FG discussions incorporate aspects of climate and recognise the overall impact that it can have on the success of a change or innovation.

Behaviour change strategies within acute care need to be considered during change processes. A review of reviews looking at professional behaviour change in healthcare found that types of interventions could be split into three main categories: persuasive; educational and informational; and action and monitoring (audits, reminders, education etc.) (M. Johnson & May, 2015). These types of interventions are in line with the findings of this study, and are consistent with the Michie et al. Theory of Behaviour Change and the Behaviour Change Wheel (BCW) (Michie et al., 2011). The BCW highlights aspects to be considered when designing behaviour change interventions (Michie et al., 2011), specifically the “sources of behaviour” including capability, opportunity and motivation (COM-B). The BCW was considered when conducting the M2E interviews and FG, and it is recommended that it be consulted during any change or implementation process.

Research on how to implement clinical guidelines in acute care and the findings from this study are consistent, however few studies focus on perspectives from a wide variety of staff/professions and many studies only focus on nurses. A systematic review of nursing interventions designed to normalize implementation of clinical guidelines highlighted the need to: integrate the change into the current workflow; involve and engage the relevant communities of practice and recognize the reason for that engagement; and build shared commitments across professional boundaries (May, Sibley, & Hunt, 2014). Another study interviewed nurses to examine factors that facilitate the effective implementation of clinical guidelines (Bahtsevani, Willman, Stoltz, & Östman, 2010). It was noted by these authors that all staff should be involved in the implementation process; continuous feedback loops should be used; and the change had to be seen as beneficial, balancing priorities and cost (Lacey & Pritchett, 2003). Although there are similarities within the themes and the current study, our research focuses on the perspectives of many hospital staff and management, going beyond the ideas of a single profession. Interprofessional perspectives are needed to overcome departmental silos. As discussed above, few

studies emphasize the importance of the overall climate, which as noted in this study, extends beyond priorities and cost, and includes the overarching values of the hospital.

An additional learning point applicable to practice, was that although the FG were designed for data collection, they ended up being used as a way to engage M2E unit staff prior to implementation of INPAC. It was suggested by several participants involved, that having discussion groups throughout the change process would be helpful to increase staff awareness and engagement. These discussions may be an opportunity to bring staff on board, to include their opinions and further engage them in the change effort. In M2E, short summaries of these results were provided to each site after the site visit so they could consider the staff perspectives during INPAC implementation.

6.5.1 Strengths and limitations

The aim and strength of this study was that it included a variety of perspectives from hospital staff and management, which supported the emphasis on an interdisciplinary approach to nutrition care. Previous research has generally focused on perspectives of individual healthcare professionals, particularly nurses. Canvassing opinions more broadly (for example patients, families, volunteers) would have provided additional depth, and a more comprehensive look at the overall hospital structure, beyond the views of staff and management. This was beyond scope of the current study and is considered worthy of further exploration.

Another strength is that a large number of interviews were collected and data saturation across themes was achieved early in analysis. An *a priori* target for sample size of 3-4 KI interviews and 2 FG per site (15-20 interviews and 10 FG total) was provided to sites and deemed suitable. However, each champion recruited more than the target KIs as there was a desire to represent staff and management perspectives more broadly. All interviews were pre-arranged, with most conducted

during the 2-day site visit, and all scheduled interviews were completed. Due to the quality of data and saturation of themes, no additional or repeat interviews were indicated. As champions selected the interviewees, it was not possible to record how many refused to be interviewed. It was also not possible during the FG to distinguish between those who were unable to attend due to clinical commitments, compared to those who refused to participate. In FG, a M2E champion or research associate was present to take notes. Although FG participants were reminded the conversation remained confidential, the presence of this individual may have influenced the participation or discussion.

Another limitation is that data was not analysed by profession or by site. As the context varied across the five sites, new ideas were observed across all sites prior to reaching saturation, however similar messages were seen throughout data collection which reinforced the approach of looking at all sites and professions as one. This combined approach also encourages and reflects the interdisciplinary approach of implementation and data collection.

Due to the volume of interview data, FG were not sent for transcription, however detailed notes were taken by listening to the audio-recorded discussion, and key sections (i.e., exemplar quotes) transcribed verbatim by CL. Data was not collected with the intention of being generalizable. Yet, the similarity of findings across these five sites increases the external validity of the results. To demonstrate credibility and trustworthiness, methods and results are described in detail, with quotations and additional data presented in table format (Miles et al., 2014). Another limitation is that transcripts were not returned to all KIs for member checking or for further clarification. However, summaries were sent back to each hospital for comment and clarification shortly after data collection to ensure that key components were consistent with their perceptions. In some cases, these summaries were reviewed by the KIs. The final themes were also discussed with the champions and co-

investigators to confirm that the themes resonated with their experience and were further presented in webinars and conferences.

6.6 Conclusion

Hospital staff need a reason to change their nutrition care practices and a significant change driver is patient benefit. Dietitians can facilitate the process by championing the change and working with an interdisciplinary team to provide more comprehensive nutrition care across disciplines. All relevant stakeholders need to be involved to embed change into the current system. Climate, describing the overall values of the hospital, should be considered, as it is an influencing factor in all changes. Change is difficult but achievable and strong relationships within the hospital and teams are important when working towards changing practice.

6.7 Declarations

6.7.1 Ethics approval and consent to participate

Ethical approval for M2E was obtained from the University of Waterloo Research Ethics Board (ORE #20590) and from the ethics committees at each of the five participating hospitals (Niagara Health Ethics Board, Ottawa Health Science Network Research Ethics Board, Health Research Ethics Board of the University of Alberta, Regina Qu'Appelle Health Region Research Ethics Board, Concordia Research Ethics Committee). Written consent was taken before each interview or FG, complemented with a verbal reminder before recording began.

6.7.2 Acknowledgements

The M2E implementation study team includes the following co-investigators (C. Basualdo-Hammond, P. Bernier, L. Curtis, D. Duerksen, P. Douglas, S. Ray, L. Gramlich, M. Laporte), collaborators (L. Dietrich, J. Dubin, K. Jeejeebhoy, A. Maybee, M. Mourtzakis, S. Robbins, H. Truber), champions (M. Atkins, D. Butterworth, S. Obiorah, R. Nasser, M. Stickles-White, M. Tom) and research

associates: (M. Booth, S A. Digweed, Doering, S. Cowan, C. Marcell, L. Vescio). Canadian Malnutrition Task Force has provided in-kind project management through the Director Bridget Davidson who is also part of the research/facilitation team. The Need for Nutrition Education/Innovation Programme (NNEdPro) has specifically supported key aspects of implementation toolkit development and will provide dissemination across its network. Dietitians of Canada, Canadian Nutrition Society and the Canadian Society of Nutrition Managers also support dissemination of this work.

Chapter 7: Part 2. Manuscript 4. The Sustain and Spread Framework: Strategies for sustaining and spreading nutrition care improvements in acute care based on thematic analysis from the More-2-Eat study

Manuscript Published in *BMC Health Services Research*

Laur C, Bell J, Valaitis R, Ray S, Keller H. (2018). The Sustain and Spread Framework: Strategies for sustaining and spreading nutrition care improvements in acute care based on thematic analysis from the More-2-Eat study. *BMC Health Services Research*. 18:930

7.1 Abstract

Background: Successful improvements in health care practice need to be sustained and spread to have maximum benefit. The rationale for embedding sustainability from the beginning of implementation is well recognized; however, strategies to sustain and spread successful initiatives are less clearly described. The aim of this study is to identify strategies used by hospital staff and management to sustain and spread successful nutrition care improvements in Canadian hospitals.

Methods: The More-2-Eat project used participatory action research to improve nutrition care practices. Five hospital units in four Canadian provinces had one year to improve the detection, treatment, and monitoring of malnourished patients. Each hospital had a champion and interdisciplinary site implementation team to drive changes. After the year (2016) of implementing new practices, site visits were completed at each hospital to conduct key informant interviews (n=45), small group discussions (4 groups; n=10), and focus groups (FG) (11 FG; n=71) (total n=126) with staff and management to identify enablers and barriers to implementing and

sustaining the initiative. A year after project completion (early 2018) another round of interviews (n=12) were conducted to further understand sustaining and spreading the initiative to other units or hospitals. Verbatim transcription was completed for interviews. Thematic analysis of interview transcripts, FG notes, and context memos was completed.

Results: After implementation, sites described a culture change with respect to nutrition care, where new activities were viewed as the expected norm and best practice. Strategies to sustain changes included: maintaining the new routine; building intrinsic motivation; continuing to collect and report data; and engaging new staff and management. Strategies to spread included: being responsive to opportunities; considering local context and readiness; and making it easy to spread. Strategies that supported both sustaining and spreading included: being and staying visible; and maintaining roles and supporting new champions.

Conclusions: The More-2-Eat project led to a culture of nutrition care that encouraged lasting positive impact on patient care. Strategies to spread and sustain these improvements are summarized in the Sustain and Spread Framework, which has potential for use in other settings and implementation initiatives.

Trial registration: Retrospectively registered ClinicalTrials.gov Identifier: NCT02800304, June 7, 2016.

7.2 Background

In healthcare, there is increasing understanding of how to implement care improvements and a recognition that sustainability should be considered as a process from the beginning of implementation (Lennox et al., 2018; Moore et al., 2017; Shelton et al., 2018; Straus et al., 2013). The need to implement and sustain improvements is particularly relevant for improving nutrition care practices in hospitals. One in three patients are at nutrition risk on admission to hospital, leading to increased mortality, length of stay, and risk of readmission among other negative outcomes (Agarwal et al., 2013; Allard et al., 2016; Barker et al., 2011). Research has also demonstrated knowledge and implementation gaps in the identification and treatment of malnutrition in hospital (Keller, Allard, Laporte, et al., 2015; Keller, McCullough, Davidson, et al., 2015) and there is a need to sustain and spread improvements when they have a positive impact on patient outcomes and care.

Understanding is lacking regarding ways to sustain improvements, however definitions of sustainability are said to have five key elements: *1) after a defined period of time 2) a program, clinical intervention, and/or implementation strategies continue to be delivered and/or 3) individual behavior change (i.e., clinician, patient) is maintained; 4) the program and individual behavior change may evolve or adapt while 5) continuing to produce benefits for individuals/systems* (Moore et al., 2017). Sustainability frameworks, such as the Dynamic Sustainability Framework, also acknowledge a constantly evolving context (Chambers et al., 2013). However, less is known about specific strategies to sustain and spread improvements once they have demonstrated initial success (Lennox et al., 2018). If other local teams or units could benefit from a successful change, “spread” is encouraged. Spread is defined as making localized changes along a specific care pathway, beyond the initial implementation location (Ilott et al., 2013). Only some of the learning from the initial implementation may apply when spreading to a new location due to differences in context, culture, and other factors. Consequently, re-working through each stage of

implementation, such as following the Knowledge-to-Action framework, is recommended (Graham et al., 2006; Straus et al., 2013). Some spread may occur naturally, such as through sharing ideas with other staff (Straus et al., 2013), but this is not a guaranteed approach to spread. As with sustainability, little is known regarding strategies for spreading change. Sustaining and spreading changes is thought to lead to a culture change, which for purposes here is defined, but not limited to, shared beliefs, values, norms and routines (Parmelli et al., 2011; Scott, Mannion, Davies, & Marshall, 2003).

To address the gaps in hospital nutrition care with the aim of sustaining and spreading success, the More-2-Eat project used participatory action research to support and evaluate the implementation of the Integrated Nutrition Pathway for Acute Care (INPAC) (Keller et al., 2017), a ‘best practice’ pathway for improving nutrition care (Keller, McCullough, Davidson, et al., 2015). To determine the anticipated barriers and enablers to INPAC implementation, key informant interviews (KI) and focus groups (FG) were conducted with hospital staff and management before implementation (late 2015) (Laur, Valaitis, et al., 2017), identifying five themes: building a reason to change; involving relevant people in the change process; embedding change into current practice; accounting for climate; and building strong relationships within the hospital team (Laur, Valaitis, et al., 2017). The aim of this manuscript is to develop a potential framework of strategies to sustain and spread the successful implementation of INPAC.

7.3 Methods

7.3.1 The More-2-Eat project

The More-2-Eat project facilitated implementation of INPAC, an evidence and expert consensus based ‘best practice’ pathway, in a single medical unit in each of five Canadian hospitals in four provinces. The size of the hospitals ranged from 186 to 1100 beds, with the unit size ranging from 27-50 beds. Further details of the More-2-

Eat project, the multi-method data collection, and the hospital characteristics are available elsewhere (Keller et al., 2017; Valaitis et al., 2017). Participatory action research was used to encourage sustainable change; local champions were encouraged to continue to lead and implement further changes, including spread, after project completion (Baum, MacDougall, & Smith, 2006). The Knowledge-to-Action framework (Graham et al., 2006), the Theoretical Domains Framework (Cane, O'Connor, & Michie, 2012), the Consolidated Framework for Implementation Research (Damschroder et al., 2009), the Model for Improvement (Canadian Patient Safety Institute, 2011), and the Normalization Process Theory (May et al., 2009; Murray et al., 2010), were used to support implementation of INPAC (Keller et al., 2017).

In the More-2-Eat project, each hospital unit had a “champion,” research associate(s), and an interdisciplinary site implementation team that planned the best practice activities to implement and integrate into the unit routine. Each unit had one year (Jan-Dec 2016) for implementation; collection of INPAC audit data was reported back regularly to sites (Keller et al., 2017). A community of practice (external researchers and facilitation team) supported champions via monthly telephone calls and used a listserv/e-mail group for questions between meetings. Training for champions and site teams included change management, quality improvement, and behavior change, particularly the Michie et al., Behaviour Change Wheel, recognizing that Capability, Opportunity and Motivation (COM-B) was required to change team behaviour towards best practice (Michie et al., 2011).

7.3.2 Sampling and recruitment

Two-day site visits for KI, FG and small group discussions were conducted in October/November 2016, after implementation. A minimum of 2 FG (4-10 people/group) and 6 interviews were conducted per site; 7 interviews were conducted by phone for participants unavailable during the visit. Purposive sampling was used for interviews so that valuable insight, both positive and negative, could be

elicited; interviews were conducted with champions and research associates, as well as other key team members. All staff on the unit were invited to the FG by the champion or research associates using posters, e-mails, verbal encouragement, and enticement of a free lunch. Small group discussions (2-3 people per group) occurred when FG attendance was limited, or when those invited for individual interviews requested joint interviews. Although similar ideas continued to arise in the discussions after the third site visit, all prearranged KI/FG were completed to provide context specific data. To saturate developing themes on sustainability and spread of INPAC, in January/February 2018, a year after project completion, another round of KI and small group discussions were conducted by telephone with a More-2-Eat project champion and a purposively selected member of the site implementation team from each hospital.

7.3.3 Data collection

CL conducted all KI and FG to allow for increased depth as she had conducted baseline interviews (Fall 2015) and understood the context (Laur, Valaitis, et al., 2017). CL is a female researcher in health studies, with a background in public health nutrition and implementation science and practice. She is not a health professional and not associated with any of the hospitals, although she did support the units to implement INPAC.

All FG occurred around lunchtime, and the environment was made to feel informal; participants could leave at any time as clinical commitments took priority. Written consent was complemented with verbal reminders about the recording and the purpose of the discussion. A More-2-Eat project champion or research associate took notes during the FG and this was explained to the group and included in consent. Discussions used an active interviewing approach and were based on a semi-structured interview guide (Table 7.1) adapted by CL for the profession and role (Holstein & Gubrium, 1995). KI and FG took between 15-75 minutes and were digitally recorded. Context memos for all KI, FG, and sites elaborated on key

observations and reflections. Sites were given a brief summary with key considerations after the site visit and again after the sustainability interviews. As a form of member checking, each site could respond to their summary if they felt it was inaccurate. Verbatim transcription was completed by a professional service for all interviews. FG recordings were not sent for transcription due to the volume of KI data. As a result, FG data were considered complementary in analysis. Key points and quotes from each FG were obtained by listening to recordings a minimum of twice (CL). To interpret the participant codes in the results, I = End of Implementation Phase and S= Sustainability Phase; and sites (hospitals) are labeled as A, B, C, D, E. When more than one profession is provided, this indicates one person holding two roles (i.e. Nurse + Manager).

Table 7.1: Interview guide for post-implementation and sustainability interview.

Post-Implementation Interview Questions	Sustainability Interview Questions
<p>What changes happened over the past year and did it impact:</p> <ul style="list-style-type: none"> - Your practice? The practice of your staff? - What was done day-to-day? - The norm of care on the unit? <p>If no change noticed, why not?</p> <p>What was the impact of these changes on patient care?</p> <p>What and who supported these changes? How?</p> <p>What else would you like to change?</p> <p>Did you receive any nutrition education, and if so, when, what type, delivered by whom?</p> <p>What were the main factors that influenced implementation?</p> <p>What could have been done differently to improve nutrition care?</p> <p>How do you plan to sustain the successful changes?</p> <p>What should be included in a toolkit to help other hospitals starting to improve nutrition care?</p> <p>Do you have any advice for other hospitals starting to improve nutrition care?</p>	<p>Do you think nutrition care is still important on the study unit? In the hospital?</p> <p>Do you think the changes made to improve patient care are part of the routine? How do you know? How did you encourage them to be part of the routine?</p> <p>What happened to the implementation team after More-2-Eat ended? What was the impact?</p> <p>What strategies did you use to maintain focus on nutrition after the year of improvements? Which strategies were effective? Not effective?</p> <p>Did anyone continue to collect data to monitor progress after the end of official data collection? If so, what did you collect? How? Who saw the results?</p> <p>Did you take advantage of any new or existing opportunities to spread nutrition throughout your hospital?</p> <p>Do you think the champion role was sustained? How did it change?</p> <p>How did you continue to engage with stakeholders?</p> <p>What are your goals and next steps?</p> <p>Do you have any advice for other hospitals starting to improve nutrition care?</p>

Note: not all questions were asked of all participants

7.3.4 Analysis

CL conducted initial analysis of interview transcripts, FG notes, and context memos using NVivo 11. The Saldana et al., inductive approach of first and second cycle coding was used, with one idea per first level “code” (Miles et al., 2014). Second level codes were formed by grouping similar first level codes. Post-implementation interviews were analyzed first, and after a review of initial themes and transcripts (n=12 transcripts; 4 per person; reviewed by HK, RV, and JB), it was decided that a final set of interviews a year after project completion (2018) would allow for saturation of themes on sustainability and spread. After line by line coding of these final interviews, thematic analysis was conducted combining both sets of results, and a framework created (Figure 7.1). These results were shared with authors to check against additional transcripts (n=8 2018 transcripts; 2 per person). Triangulation with other findings, including More-2-Eat project data and researcher memos was also used to confirm the themes (Keller et al., 2017; Laur, Keller, et al., 2018; Valaitis et al., 2017).

7.4 Results

A total of $n = 138$ participants were involved (Table 7.2); (Note sustainability participants were also participants in the post implementation phase). Results suggest that several implementation changes were sustained and spread successfully leading to an overall culture change whereby the importance of nutrition care to the recovery of patients was prioritized. Successful implementation included improving processes, perceptions, and ultimately patient outcomes, as described elsewhere (Curtis et al., 2018; Keller, Valaitis, et al., 2018). Based on this success observed by sites, focus shifted to strategies to sustain and spread improvements, which also provided opportunities for implementation of further best practices. One small change was unlikely to lead to a culture change, but a series of changes that were sustained and spread did result in a shift in values towards the importance of nutrition care as indicated in the framework (Figure 7.1).

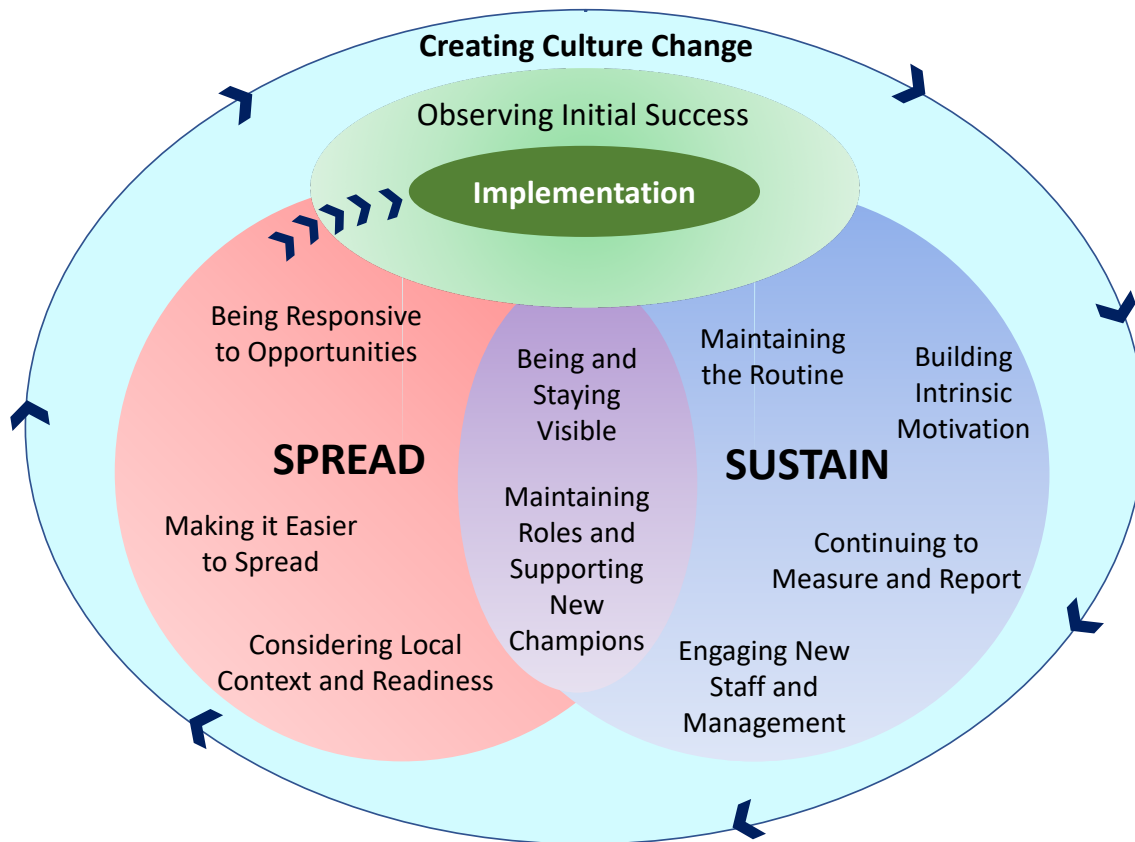


Figure 7.1: The Sustain and Spread Framework

The Sustain and Spread Framework: Once there is initial implementation success, strategies are used to sustain and spread the successful change. Strategies to encourage changes to be sustained or spread are included within each circle, with the two strategies in the middle applying to both sustaining and spreading success. To fully spread into a new setting or unit, a new change goes back to implementation (arrows from the Spread circle back to Implementation) in the new context. Working through several rounds of sustaining and spreading may lead to an overall culture change.

Table 7.2: Participant demographics

Demographic Information		Post Implementation Phase			Sustainability Phase
		Interviews n (%)	Small Group Discussions (≤3 people); n (%)	Focus Groups (4+ people); n (%)	Interviews n (%) + Small Group Discussion*
# of Participants		45	10	71	12
Gender	Female	40 (89%)	6 (60%)	61 (86%)	10 (83%)
	Male	5 (11%)	4 (40%)	9 (13%)	2 (17%)
	Missing Data	0	0	1 (1%)	0
Age Group	<30 years	3 (7%)	2 (20%)	19 (27%)	0
	30-39 years	10 (22%)	2 (20%)	21 (30%)	1 (8%)
	40-49 years	14 (31%)	3 (30%)	13 (18%)	3 (25%)
	50-59 years	13 (29%)	3 (30%)	13 (18%)	5 (42%)
	60+ years	3 (7%)	0	4 (6%)	0
	Prefer not to say	1 (2%)	0	0	1 (8%)
	Missing	1 (2%)	0	1 (1%)	2 (17%)
Profession	Dietitian	16	2	6	5
	Diet Technician/ Diet Assistant	1	0	2	0
	Food Service Supervisor/ Manager	7	1	0	1
	Registered Nurse	9	4	25	2
	Registered Practical Nurse/ Licensed Practical Nurse	1	2	7	0
	Health Care Aide/Personal Support Worker	0	0	5	0
	Physician	2	1	4	1
	Physiotherapist/ Occupational Therapist	0	0	9	0
	Pharmacist	0	0	3	0
	Management	14	2	0	7
	Other ⁺	2	0	10	1
	Missing	1	0	0	0

*Small group discussion, n=2; ⁺Other: researcher, rehabilitation, volunteer coordinator, clinical care lead, administration support, food service worker, nurse educator, discharge planner, speech-language pathologist. *Note: some participants indicated more than one profession, therefore the profession values will not equate to the total number of participants.*

7.4.1 Sustain

All sites experienced a shift from implementation to sustainability. *“With any initiative, the most difficult piece isn't the processes themselves. It's the change management and sustaining those improvements.”* (IA-14:Nurse). Specific strategies to sustain a change included: maintaining the new routine, building intrinsic motivation, continuing to measure and report, and engaging new staff and management.

7.4.1.1 Maintaining the new routine

After a change had started becoming embedded into the routine, sites recognized that effort was still needed to keep it going. *“We have to build it, and then we still have to maintain it and then we'll see the effects.”* (IA-11:Registered Dietitian [RD]). Sites also had to make sure the change was having the desired effect. *“Making sure that what we've set up is actually working. ... You can't just put something in place and hope that it'll continue to run successfully.”* (SC-1:RD+Manager).

To maintain the new routine, key unit staff needed to remain involved in keeping others engaged. *“In addition to a clinical manager, we have nurse educators and clinical care leaders; those are key because they're the ones that are going to be continuing to talk and have the discussions around nutrition care in the absence of clinical nutrition.”* (SB-1:RD+Manager). Supportive unit managers and nurse educators were key to delivering education, answering questions, and providing continued support, reminders and progress updates after the implementation team moved on to other priorities for improvement: *“If you see something falling by the wayside, keep subtly putting it in there again.”* (ID-5:RD).

The change also had to be seen as part of the job, building accountability, such as through performance reviews, or finding ways to standardize the process (e.g., Standard Operating Procedures etc.). Maintaining the new routine was about making

sure staff had what they needed and it was easy. *“I think just making sure that you give them the tools. I mean, they’ll do it if it’s easy and if it’s there.”* (SB-2:Manager).

7.4.1.2 Engaging new staff and management

Participants discussed the challenges of high staff turnover. *“It’s that maintenance and continuing to collaborate with new staff that are coming onboard, be it frontline nurses or new managers or new volunteer coordinators or physicians. It’s a continuous need to remind and raise that awareness.”* (SC-1:RD+manager). For engaging new management it was about giving them some time to understand the new environment and then setting up a brief meeting to explain that nutrition care was prioritized, what had been achieved, and future plans. *“You have to give people a bit of time to kind of get acclimatized to the unit [and then bring them on board]”* (SE-2:RD+Manager). One champion who experienced high turnover, indicated: *“A lot of my work has just been making sure that things carry on with new leaders.”* (SC-1:RD+Manager).

For engaging new staff, integrating key messages into the orientation was a key strategy. *“We also mention it [nutrition] at new hire orientation.”* (SC-2:Nurse Educator). In this way, nutrition care was not seen as “new,” and could be treated as a valued and expected practice on the unit. Nurse educators also supported new staff. *“Our educator, who was part of our team, is doing another round of education and awareness-building because of the [staff] turnover.”* (SC-1:RD+Manager)

7.4.1.3 Building intrinsic motivation

Intrinsic motivation, as noted in the baseline analysis theme of “building a reason to change” (Laur, Valaitis, et al., 2017), is needed to undertake and sustain a change in practice. Those who work in healthcare typically have the intrinsic motivation to help their patients; recognizing that improving nutrition care enhances patient recovery supports this intrinsic motivation.

99% of the people, or higher, who work here want to help people and want to help the patients. So, I think we need to start with making sure that the managers buy in and see that this is really worthwhile doing, and getting some key front line champions onboard that say, 'Yeah, I think this is important. ... I'd like to do it, but I don't want to be the only one doing it, so I'll encourage my colleagues to do it.' (IB-4:Manager).

Recognizing that everyone has a role to play in improving nutrition care for patient benefit was also demonstrated as a way to build intrinsic motivation. Staff were able to see their specific role, and the impact they could have.

We also developed a tool called "Find, Feed, Follow," and it's for every discipline. Our Malnutrition Steering Committee discussed each in an interdisciplinary group, and they each kind of discussed what their role is to find people with malnutrition, to feed them, and to follow. There was a lot of "a-ha" moments with the team, realizing that, "Oh, a piece connects to my world." So, that was valuable. (SE-1:Manager).

Intrinsic motivation was also built by engaging staff throughout the change, including involving them in decisions. *"I think really asking nursing and staff feedback was a good way to start and a good way to continue on through. I think it kept them engaged."* (ID-1:RD). Encouragement when staff were doing well also facilitated continued motivation. *"Recognizing staff for the work that they're doing. When they hear, "This is really good work. Keep it up," ... It starts to become more of an intrinsic motivation to do it, versus, "We're doing this because we have to.""* (IA-12:Nurse). However, with busy hospital staff, intrinsic motivation on its own may not be not enough:

We still have resistance from nursing. I say that, being one. Can't get them to prioritize patient setup or even bedside table setup for us. We've struggled with that. They have multiple competing priorities and will tell you that's not

their first priority. ...We don't feel that that's as important as it is. (IB-9:Manager).

Although intrinsic motivation is important, it may not be sufficient to sustain a change.

7.4.1.4 Continue to measure and report

Data were seen as essential for implementation and sustainability. *"It [data] needs to be local, it needs to be timely and it needs to be in a format where you can see your trend and your results. The reinforcement is extremely important."* (IA-15:Manager).

A strong implementation plan should include collection of data from baseline, throughout implementation, and continue longer term to show if the changes were being sustained. Monthly INPAC audit reports based on chart review completed twice per month served this purpose in More-2-Eat. *"We have to keep auditing. Audits are a huge thing. If you keep auditing and you see that it's fallen to the wayside then you can talk about it more and keep trying to sustain everything that we've started."* (ID-4:RD+Manager). Audits may not need to be collected as regularly as during implementation, however they are still important. *"There needs to be dedicated audits. We need to see where the gaps are. ... I don't think it needs to be at the same frequency, but I think that it's important that we maintain that for momentum."* (IC-4:Nurse+Manager).

Reporting results was also key for sustainability, engagement, and contribute to building intrinsic motivation. *"They can take pride in it [audit results], and then, therefore, I think it's just intrinsically rewarding themselves. And they go, "Well, I'm going to keep doing this because, look at that, I get this..." they get the feedback about it."* (IA-10:Manager). Specific strategies for relaying audit results included huddles, quick chats with individual staff, e-mails, posters etc. *"The audits were the most important thing. Then when they were noticing a dip down in practice, then we would talk about it at huddles. I would send out emails and let them know what the*

compliance was and that they needed to improve that. ” (IC-4:Nurse+Manager). Audit results were also useful for management. *“I always want to see results. I want to see, ok, we’re doing this study, we’re doing it, but I want to see results, and that it’s working. ... What it improved... How?... Show me the numbers...”* (ID-FG1).

7.4.2 Spread

When a change was seen as having a positive impact, it led to the desire for other units and hospitals to consider that improvement. *“I’ve been happy with how it’s starting to seep out to other areas within the organization.”* (IB-8:RD+Manager). A year after project completion, nutrition screening and use of a standardized assessment to diagnose malnutrition (i.e., subjective global assessment; SGA) were used hospital-wide in all sites and had also spread to other local hospitals. Strategies for spreading successful changes included: being responsive to opportunities, considering local context and readiness, and making it easy to spread.

7.4.2.1 Being responsive to opportunities

Other units and hospitals were interested in implementing the successful changes from the pilot units. *“We are still hearing from other units... They’re asking us, ‘When are you going to roll out that form on our unit,’ or, ‘When are you going to roll out that initiative on our unit?’ So, there still is interest out there.”* (SE-2:RD+Manager).

Recognizing that interest, responding, and providing support helped spread and maintain the momentum. *“If the interest or the desire is there, I think what we have to do is kind of capitalize on when that interest is being expressed.”* (IB-8:RD+Manager).

These opportunities could arise from the micro (individuals, unit etc.), meso (hospital etc.) or macro (regional etc.) levels, and each could be utilized in their own way. At the micro level, individual interest could spur change: *“If there’s an interest, they volunteer, than they’ve already met half of the battle by demonstrating their interest.”* (SB-1:RD+Manager). An example of a meso-level opportunity was leadership

demonstrating their support for food and nutrition initiatives. *“This idea of having the executive team deliver meal trays when they're doing rounding with patients would be, I think, a good way to get staff to buy in that, you know, it's not just your responsibility, but we're all kind of doing our part.”* (SE-2:RD+Manager). At the macro level, aligning the regional initiatives provided many opportunities such as materials, resources, and benefits of having similar goals. *“Our healthcare region has probably been the strongest impetus moving things forward.”* (IE-2:RD+Manager). Examples of opportunities being seized included when admission forms were being changed anyways, *“they wouldn't change the forms for us unless they were already being changed”* (IB-4:RD); when a new electronic medical record systems was being set up; or when nutrition could connect to another priority, such as patient safety.

7.4.2.2 Considering local context and readiness

Each unit was unique so local context and readiness needed to be determined before starting full implementation. *“How others should do it has to be driven by what makes the most sense on those units.”* (IB-8:RD+Manager). An individualized approach to spread was encouraged.

I would view it as a unit-by-unit implementation. ... healthcare has its own culture, and change is difficult... you need to sort of make sure that everybody buys in. I've seen far too many projects where we try to do this wholesale implementation, and they fail. So, I think it's much better to do it smaller scale and slow steps, and then, before you know it, it's replicated across the patch and you don't have to worry about selling people because it sells itself. (IA-6:Manager).

Checking for unit readiness was about understanding what was happening to see if it was the right time to encourage implementation in specific units. *“To take a look at if there's readiness. I'd like to be able to promote some of the results that will come*

forth in the upcoming months and years to really start understanding with units as to who's ready, who might like to look at an implementation, and who might like to take a look at making some changes.” (ID-6:Manager).

Units that have expressed interest and had a strong team seemed to be the ones who were ready for implementation.

We find that if singular units have readiness and they have a cohesive team and want to work together and do more, these would be some of the ways that we could approach it and take a look at trying to implement some of the same things and using the tools that were already created to help. (ID-6:Manager).

7.4.2.3 Making it easy to spread

After learning from initial implementation, several meso and macro level changes were used to make it easier for the change to spread. One aspect was understanding the barriers that were faced in initial implementation, and being upfront and working to overcome these earlier in the new setting: *“Just being open and honest and telling them that these are the obstacles that we're going to come across.” (SE-1:Manager).*

Having systems already set up also made it easier for new units. For example, when the screening and referral process was already in the computer system, the focus was on changing behavior so the system was used, rather than setting-up the system. Examples included having screening questions embedded in forms or the malnutrition assessment components *“we actually embedded it [subjective global assessment] into our initial nutrition assessment documentation form. That definitely... oh, yeah, that makes a difference.” (SE-1:Manager);* setting up medication pass (oral nutritional supplementation delivered with medication) with an already available product; or including the best practices in standard operating procedures.

Learning from each other also made it easier. *“I wouldn't mind just being part of helping other units start all of this – like, a little bit of hand-holding because sometimes I find that people need that.”* (IB-11:RD). Another manager indicated the benefits of learning from past experience: *“Whenever I'm looking to roll something new out, I don't want to reinvent the wheel. I want to go to somebody that's tried and true, and steal shamelessly from them and use what I can.”* (IA-6:Manager).

7.4.3 Connecting spread to implementation

To spread a change so it was fully embedded into practice and could be sustained, the implementation process started again in each new location and for each new improvement activity. In Figure 7.1, this theme is represented by the arrows from *Spread to Implementation*. When asked how a change should be rolled out to other units, a participant replied: *“The exact same way as you guys did on this unit. Introducing it to the staff. Making it part of the admission process. Increase awareness.”* (ID-FG2). When spread happened without considering the full change management process, there were more challenges. *“We've gone ahead with MedPass and with screening and SGA and discharge planning [on a new unit], but it needs to be heightened. We're not getting the referrals, and we're pretty sure that the screening isn't being done well. So, it'll be kind of going back to square one and doing more of that team approach and seeing what we could do to influence that.”* (SC-1:RD+Manager). Another participant learned that full implementation was needed in a new location.

We should've gone to the front line staff in the first place, got them to help us build it. ... We just assumed that it would be pretty plug and play. It turned out not to be. So, if I was to do it again, I would've gotten the front line staff to help us. (IB-9:Nurse+Manager).

7.4.4 Sustain and spread

Both sustaining and spreading a nutrition activity required two further strategies, being and staying visible and maintaining roles and supporting new champions.

7.4.4.1 Being and staying visible

Being able to see the change and the people driving it were important for both sustaining and spreading changes. *“I’m just wondering if that presence and visibility [of the project and dietitian] has helped to kind of sustain the changes more so than something more specific, like an education session or an auditing process.”* (SB-1:RD). The change had to stay visible so people would keep talking about it, thus encouraging it to become embedded. *“I think part of it is just through osmosis, right? Like, we talk about it so much, and we do things so much. And sometimes some of the front line staff won’t put two and two together that the osmosis is from us talking about it. But I think that’s when the real benefit is, is that people start just naturally putting things into their day-to-day practice.”* (IB-7:Manager). For a nutrition focused project, visibility included having dietitians on the unit regularly, available for questions, and continuing to talk about success. *“We’re in their faces all the time. We’re on the units all the time.”* (IC-2:RD).

7.4.4.2 Maintaining roles and supporting new champions

A champion was needed throughout implementation and to sustain and spread changes with the support of an implementation team: *“Somebody has to own it. Because if nobody owns it, then it goes by the wayside.”* (IA-11:RD). This champion also supported others to champion specific changes or areas to spread. *“We have a lot of people here who are very good at driving change and driving initiatives that are specific to this unit. I think that it will be important to take those people as champions.”* (IC-4:Nurse+Manager). Involving existing leaders, including those who are seen as leaders by other staff, helped with buy-in and to drive a change. *“You need to get that buy in and you need to scout out who are your leaders or who has*

more input with the staff or who are the staff who's kind of their champion... Then make sure that those people are involved as well.” (SC-2:Nurse Educator).

After initial changes were in place, the implementation team either stayed in place, shrank, or merged into existing teams, such as those focused on changing practice or quality improvement. *“I think our Quality Council is the place to be and the place to bring up what changes you think need to happen and then work on a plan.” (SD-1:RD).* Regardless, developing and maintaining champions was a required strategy to spread or sustain improved nutrition practices.

7.4.5 Creating culture change

While sustaining and spreading successful improvements, a culture change was discussed by participants. *“People are thinking about it, know about it, feel it. There's a presence there, and so that's maybe a start to a change in nutrition culture.” (IB-8:RD+Manager).* People were paying attention to the changes and their impact, particularly for their benefit to the patients. *“I think it's made a big difference. I think hopefully we're preventing people from being readmitted. I think we're seeing the people that we really need to see... I think it's really, really helped improve our patient care.” (IC-2:RD).* This reported culture change was visible in a variety of ways such as: *“people are paying more attention to what people [patients] are eating.” (IE-FG1); “we are more aware of it as a group, particularly the physicians.” (IA-FG2:Physician); “myself and my staff have become more aware of malnutrition as an issue. Conversation comes up more frequently during our discharge rounds and just day-to-day time on the unit. We discuss food much more.” (IB-7:Manager).*

Culture change within administrators was also demonstrated through change in allocation of resources. In one site, it was originally mentioned that *“budgets being so tight, there's no appetite for any investment at all” (IA-6:Manager).* After the More-2-Eat project ended, a request to continue specific nutrition care processes was approved. Dedicated resources to facilitate champion time was also seen as

beneficial. *“The real key, honestly, is being able to have some dedicated resources to continue to follow up and observe and audit and review and look for continuous ideas as to how to improve and engage improvement specialists for you to support that message. The challenge is, however, that resource isn’t readily available.”* (ID-2:Manager). In the More-2-Eat project, a year after the small influx of resources to support data collection and champion time had ended, 2018 interviews indicated most changes had been sustained and spread. *“[Nutrition care] continues to be a culture within our study unit.”* (SB-1:RD+Manager). Changes had become *“embedded into our routines and our relationships”* (SA-3:Manager). It was clear that even though these changes had started as part of a research project, the end of the project did not indicate the end of nutrition care improvements.

I don’t think this thing is ever going to end to be honest... I think this is just a start, and then after the study’s over, we need to continue. That is something that speaks to me loud and clear, that this isn’t something that just stops after the study’s over. We’ve got to keep going and figuring out how we can continue making it important, that nutrition is important, and that food is medicine. (IC-1:RD).

It is apparent that successful implementation, sustaining and spread could lead to what was described as a culture change.

7.5 Discussion

This analysis, although specific to the context of improving nutrition care in hospitals, resulted in the Sustain and Spread Framework (Figure 7.1), which may be applicable to other healthcare implementation initiatives. This framework may be used as a guide for other quality improvement initiatives or policy changes after initial success with implementation, so changes are sustained and spread.

The “implementation” circle of the Sustain and Spread Framework could include any existing framework, including those presented in baseline results (Laur, Valaitis, et

al., 2017), as well as the Knowledge-to-Action framework (Graham et al., 2006), the Model for Improvement (Canadian Patient Safety Institute, 2011), the Normalization Process Theory (May et al., 2009; Murray et al., 2010), or any other model of implementation. These are also the models on which the More-2-Eat project is based (Keller et al., 2017). Within implementation and throughout sustain and spread are the overarching principles of the Theoretical Domains Framework (Cane et al., 2012), the basis for the Behaviour Change Wheel (Michie et al., 2011), that lists interventions and techniques to create change at various levels of influence. The More-2-Eat project champions and research associates were trained on the Behaviour Change Wheel, and results indicate that a variety of strategies were used to change behaviour (McNicholl, Valaitis, Laur, & Keller, 2017).

The More-2-Eat project is in line with Organizational Participatory Research, in which organizational changes and practice improvements are made (Bush et al., 2017). Within Organizational Participatory Research, additional benefits exist that are likely to contribute to sustained change and improved adoption of future changes, as this style of research can empower healthcare professionals and improve their career development, benefitting the individual and organization (Bush et al., 2017). Overall, champions and their teams are key to implementing and sustaining change, which literature also suggests (G. Aarons, Ehrhart, & Farahnak, 2014; Kilbourne, Neumann, Pincus, Bauer, & Stall, 2007; Scott et al., 2003; Shelton et al., 2018; Soo, Berta, & Baker, 2009).

7.5.1 Making lasting improvements to nutrition care

Improvements in hospital nutrition care were driven by a series of related changes that were sustained and spread using overlapping strategies. A strong foundation of implementation led to initial success and then shifted into sustaining and spreading those changes. After determining readiness for spread, implementation started again in new areas, continuing to change staff values. Keeping the initiative visible and having champions maintain their roles and support new champions was essential.

These results are in line with other sustainability literature that suggests organizational factors, funding, support (e.g., champions), and practitioner characteristics (e.g., turnover) are particularly relevant (Shelton et al., 2018).

With all of these elements in place, some sites started to recognize organisational culture change. The reported consistencies across definitions (Parmelli et al., 2011; Scott et al., 2003) were seen throughout the project, including shared beliefs, values, norms and routines among the staff on the More-2-Eat units. As participants reported a shift in the way people throughout the organization thought about nutrition, responded to malnourished patients, and adapted their practices, results were in line with the thinking that changing core values can help shift institutional culture (Davies & Mannion, 2013).

7.5.2 Being flexible

Some sustainability literature describes the tension that can arise between having a change become embedded into routine, while still allowing for future innovations (Shelton et al., 2018; Straus et al., 2013). Sustainability was seen by the More-2-Eat project units as a process, recognizing that even once change is embedded, refinement with implementation cycles are still needed to keep the change going (Canadian Patient Safety Institute, 2011; R Grol, Baker, & Moss, 2002; Straus et al., 2013). Sites allowed for new opportunities or changes to existing processes, yet surprisingly, there was little mention of removing processes that were not working or low value (de-implementation) (Niven et al., 2015; Prasad & Ioannidis, 2014).

Some staff requested a “reprieve” from change, as they wanted a chance to get accustomed to a new process before the next change started. Other staff recognized the hospital environment needs to be continually adapting to best meet patient needs, and requested more “refreshers” to make sure nothing was forgotten. Flexibility within implementation was also considered important to accommodate the busy clinical environment and encourage adoption (Damschroder et al., 2009;

Shelton et al., 2018). Following the More-2-Eat project, INPAC was adapted to be less prescriptive to encourage this flexibility (Keller, Laur, et al., 2018) and More-2-Eat Phase 2 is testing a sustainable model to encourage further spread. To guide anyone interested in making nutrition care improvements, the INPAC implementation virtual toolkit was developed. The toolkit provides specific direction for making improvements and includes key messages, quotes, videos, resources and tools to support implementation of INPAC (Canadian Malnutrition Task Force, 2018).

7.5.3 Strengths and limitations

Particularly in the 2018 interviews, champions or those that had been involved from the beginning were selected for participation based on their ability to reflect on the full process. Since they were intimately involved, in depth interviews were conducted, however their views may not be reflective of others on the unit, including patients and care partners, nor do interviews necessarily reflect the regional perspective. As KI and FG were arranged during two day site visits conducted across Canada, it was not possible to recruit participants only until saturation. As similar themes were seen after the third site, saturation was being approached, however all scheduled interviews were conducted to provide context specific data and increased depth of understanding. Having all data collection and analysis conducted by one researcher was seen as beneficial to encourage continuity across interviews and analysis. Addition of a second analyst may have been beneficial, however other authors reviewed a selection of transcripts, potential themes were discussed and several iterations of the diagram were reviewed throughout analysis.

“Scale,” “Scaling-up” or “Scaling out” are terms typically associated with sustain and spread, implying another approach to increasing the uptake of a change (G. A. Aarons, Sklar, Mustanski, Benbow, & Brown, 2017; Charif et al., 2017; Straus et al., 2013). These terms are not used in this framework as they focus on broader, top-down implementation that is leader-heavy, thus not representative of the process discussed by participants (Shaw, Tepper, & Martin, 2018).

Units, which were selected based on their readiness to change, were provided with a small financial incentive (mainly for data collection (Keller et al., 2017)), and received coaching from a research team, all factors that would not typically be available to a hospital. As the idea of culture change was not considered before analysis, questions were not developed with consideration of culture change principles or theories.

7.6 Conclusion

This study revealed key strategies used to sustain and spread successful changes. Although based on nutrition care improvements, these strategies have been summarized in the Sustain and Spread Framework, which may be useful in other healthcare implementation initiatives. This framework has potential to strengthen the way successful changes are sustained and spread to allow for longer term improvement in patient outcomes.

7.7 Declarations

Ethics approval and consent to participate: Ethical approval for the More-2-Eat project was obtained from the University of Waterloo Research Ethics Board (ORE #20590) and from the ethics committees at each of the five participating hospitals. For the sustainability interviews, all sites agreed to be covered by the University of Waterloo ethics. Written consent was obtained from each participant prior to their interview or focus group.

Acknowledgments: The More-2-Eat implementation study team includes the following co-investigators (C. Basualdo-Hammond, J. Bell, P. Bernier, L. Curtis, D. Duerksen, J. Dubin, B. Liu, P. Douglas, L. Gramlich, M. Laporte, S. Ray), trainees (C. Laur, T. McNicholl, R. Valaitis), collaborators (L. Dietrich, K. Jeejeebhoy, A. Maybee, M. Mourtzakis, S. Robbins, H. Truber), champions (M. Atkins, D. Butterworth, B. Hotson, S. Obiorah, R. Nasser, M. Stickles-White, M. Tom) and research associates: (S. Barnes, M. Booth, A. Digweed, S. Doering, S. Cowan, J.

Murphy, C. Marcell, L. Vescio). Canadian Malnutrition Task Force has provided in-kind project management through its Director, Bridget Davidson who was also part of the research/facilitation team. The NNEdPro Global Centre for Nutrition and Health has specifically supported key aspects of the INPAC implementation toolkit development and provides dissemination across its network. Dietitians of Canada, Canadian Nutrition Society, and the Canadian Society of Nutrition Management also supported dissemination of this work.

Chapter 8: Part 3. Manuscript 5. Building falls and nutrition risk screening programs for older adults in Family Health Teams in North Eastern Ontario

Manuscript submitted for Publication

Laur C, Carew W, Keller H. (2018). Building falls and nutrition risk screening programs for older adults in Family Health Teams in North Eastern Ontario. Submitted for publication.

8.1 Abstract

Objectives: Approximately 30% of those over age 65 living in the community fall at least once each year and a similar proportion are at nutrition risk. Screening is an important component of prevention. The objective of this study was to understand what was required to establish falls and nutrition screening in Family Health Teams (FHTs).

Methods: Interview participants (n=31) were staff/management, regional representatives and clients from 6 FHTs that had started integrating screening. Thematic analysis was conducted.

Results: Themes identified what was required to develop screening programs: setting up for successful screening; making it work; and following up with risk. An overarching theme recognized “it’s about building relationships”.

Discussion: Building a falls and nutrition risk screening program takes effort and is different for each FHT based on their workflow and client population. Determining how to integrate screening into workflow and planning to address identified risk are necessary components.

8.2 Introduction

Approximately 30% of older adults (i.e., 65+ years) living in the community fall at least once each year (Pearson et al., 2014). Falls are associated with morbidity and mortality, are linked to poorer overall health, and can lead to earlier admission to long term care facilities (Ambrose et al., 2015, 2013; American Geriatrics Society and British & Geriatrics Society, 2011; Brown, 1999; Rubenstein, 2006; Rubenstein & Josephson, 2002). Older adults living in the community are also nutritionally vulnerable with 34% at nutrition risk (Ramage-Morin & Garriguet, 2013). Nutrition risk is associated with: level of disability, medication use, living alone, infrequent social participation, and more (Ramage-Morin & Garriguet, 2013). Nutrition and falls risk are associated; poor diet quality can perpetuate muscle mass and strength loss, which can lead to frailty and potentially a fall (Boulos et al., 2016; Chien & Guo, 2014; Lorenzo-López et al., 2017; Vivanti et al., 2009; Westergren et al., 2014). Those with a history of falls typically have more nutrition risk as compared to those that have not fallen (Johnson, 2003; Meijers et al., 2012; Vivanti et al., 2009).

In Ontario, 14 Local Health Integration Networks (LHINs) are responsible for planning, integrating and funding health care services (Ministry of Health and Long-Term Care, 2018). The North East (NE) LHIN is one of the largest geographically, including 44% of Ontario's land mass yet only 4.1% of Ontarians (North East Local Health Integration Network, 2018). The proportion of the population age 65+ in this LHIN is projected to increase from 19% to 30% by 2036, and rates for heavy drinking, smoking, obesity, and chronic disease, including diabetes, are higher than the provincial average (North East Local Health Integration Network, 2018).

A Family Health team (FHT) is a primary health care provider with an interprofessional team approach to provide care (Rosser, Colwill, Kasperski, & Wilson, 2011). The size and composition of each FHT varies and may include family physicians, nurse practitioners, registered nurses, dietitians, occupational therapists and other health professionals (Rosser et al., 2011). There are over 3 million people

enrolled in FHTs in over 200 communities across Ontario. The NE LHIN has 27 FHTs each with an executive director (ED) (North East Local Health Integration Network, 2018).

To support the aging population in Northern Ontario to stay healthy and live independent longer, in 2015, the NE LHIN launched the Stay on Your Feet (SOYF) strategy. The strategy is a population based comprehensive approach to prevent falls by reducing the modifiable risk factors that lead to falls (Kempton et al., 1997; North East Local Health Integration Network, 2018; van Beurden, Kempton, Sladden, & Garner, 1998). SOYF follows the Ottawa Charter for Health Promotion, with a focus on building awareness and skills among older adults and care providers, shifting health care processes to incorporate prevention and developing supportive public policy(s) by engaging multiple partners (Bedard, 2017; van Beurden et al., 1998). The SOYF strategy promotes the use of the Staying Independent Checklist, a falls risk screening tool (North East LHIN, 2018; Rubenstein et al., 2011), and provision of exercise programs designed for older adults (North East Local Health Integration Network, 2018). Funding from IDEAS (Improving & Driving Excellence Across Sectors), a province-wide initiative offered through the University of Toronto, the Ministry of Health and Long-Term Care and Health Quality Ontario (Bedard, 2017; Government of Ontario, 2018), provided electronic tablets for falls screening pilot sites along with a 1-year subscription to the “OCEAN” platform, which the FHTs could decide to renew. OCEAN, by CognisantMD™, is a system that facilitates use of secure client forms, screening tools, and surveys, that can be completed by the client. Results are integrated directly into the Electronic Medical Record (EMR) (CognisantMD, 2018). In 2017, a nutrition screening tool, SCREEN II-AB (Seniors in the Community Risk Evaluation for Eating and Nutrition-II-Abbreviated) was added to the OCEAN tablets. The aim of this study was to understand how FHTs developed a falls and nutrition risk

screening program that included integrating screening into routine practice and facilitating follow-up of at risk clients.

8.3 Methods

8.3.1 Falls and nutrition risk screening

The 12-question Staying Independent Checklist was used by FHTs as it is recommended by SOYF and has been validated against clinical evaluation (Bedard, 2017; Rubenstein et al., 2011). Some sites used two part screening, initially asking about a history of falls, feeling unsteady, and being worried about falling, with yes to any of these three questions leading to the full checklist or referral to a falls risk assessment. Other sites began with the checklist and referred based on the scoring (Bedard, 2017). The follow-up includes a multi-factorial falls assessment, which varies by site and profession completing the assessment (typically a nurse or occupational therapist). Following some success with building the falls risk screening into the routine of pilot FHTs (Bedard, 2017), the next step was to incorporate nutrition risk screening. SCREEN II-AB was selected because it is brief (8-item), self-administered, and the preferred tool for determining nutrition risk in community-living older adults (Keller et al., 2005, 2004; Keller & Østbye, 2003; Power et al., 2018). Both screening tools were embedded into the OCEAN system and SCREEN II-AB started to be used in 2018. As a follow up to nutrition risk screening, a customized handout with suggestions for improvement based on individual responses was developed by a SOYF working group. The handout is to be provided automatically to the clients after completing the nutrition screening on the OCEAN tablet. In addition to this handout, FHTs had to plan how those at risk would be treated. To follow ethical screening, treatment or services must be available for those at risk, such as access to a trained professional (e.g., dietitian, occupational therapist) (Keller et al., 2006; Kondrup, Allison, Elia, Vellas, & Plauth, 2013; Wilson

& Junglier, 1968). Screening with provision of subsequent services or referrals is described here as a screening program (Keller et al., 2006).

8.3.2 Development of interview guides

The focus of interviews was on the considerations and requirements for building a falls and nutrition risk screening program that would work for each FHT. The semi-structured interview guides for FHT staff, management, regional representatives, and clients were informed by several implementation frameworks and theories. Some frameworks focused on the implementation process (Laur, Valaitis, et al., 2017) and behaviour change (Michie et al., 2011). The Consolidated Framework for Implementation Research (Damschroder et al., 2009) and Normalization Process Theory (May et al., 2009, 2015) were also considered. Theories focused on sustaining and spreading effective changes were used including the Sustain and Spread Framework (Laur, Bell, et al., 2018) and the Dynamic Sustainability Framework (Chambers et al., 2013). Questions specific to teamwork were informed by work of Salas and colleagues (Salas et al., 2015; Salas, Sims, & Burke, 2005). Interview questions were reviewed by 2 FHT staff, 1 researcher and 1 regional representative before recruitment of participants. The first interview was used to pilot the questions and minor modifications were made, including the addition of questions on the specific auditing practices used by the FHTs. The final guide (Table 8.1) was adapted during the interviews based on profession/role of the participant and the stage of development of their falls and nutrition screening program in each FHT. Five of the six FHTs were involved in the initial falls screening pilot, with the sixth starting a short time later. Several sites had not maintained the initial falls screening and were restarting, or an original team was piloting falls and nutrition screening in a new site.

Table 8.1: Interview guides for the Family Health Team staff/management, regional representatives and Family Health Team client participants.

Staff/Management Questions	Regional Representative Questions	Client Questions
<p>What does this FHT do well for providing support for older adults at risk of falling? At nutrition risk?</p> <p>What are the challenges with providing care to prevent a fall? Nutrition risk?</p> <p>How is the falls screening program going? What is the process? What are the challenges?</p> <p>What is done to keep this screening going?</p> <p>What was your reaction to nutrition risk screening being added? Why?</p> <p>Who is involved in the discussions about implementing nutrition screening?</p> <p>What is the process for nutrition screening?</p> <p>How is the team working to get nutrition screening to be routine?</p> <p>How do you think the way things work around here is influencing your ability to implement screening?</p> <p>What were the similarities between implementing falls vs nutrition screening? Differences?</p>	<p>How does this LHIN and FHTs provide support for older adults at risk of falling? At nutrition risk?</p> <p>What are the challenges with providing care to prevent falls in your region? Nutrition risk?</p> <p>How is the falls screening program going? What are the challenges?</p> <p>How did you work towards sustaining falls screening?</p> <p>How did it go spreading falls screening to other FHT?</p> <p>Why did you think it was time to add nutrition risk screening?</p> <p>What were the similarities between implementing nutrition screening compared to falls screening? The differences?</p> <p>Who is involved in the wider discussions about implementing and spreading the screening?</p> <p>How is the regional team supporting FHT to integrate nutrition screening into the routine?</p> <p>How do you balance meeting the regional requirements and local FHT requirements when each site is unique?</p>	<p>What sort of things do you do to stay healthy?</p> <p>How did you feel about answering the questions about falling?</p> <p>Were you also asked any questions about food and nutrition? If so, what did you think of answering those questions?</p> <p>Did someone ask you those questions or did you fill them out yourself on the tablet? How easy was it to answer those questions?</p> <p>After you answered the questions, did anyone talk to you about your answers? If yes, who did you speak with?</p> <p>Were you provided any information about falls or nutrition during your visit to the FHT?</p> <p>If so, what information was provided? Did you follow that information?</p> <p>Did you read the material provided? What did you think? If not, why not?</p> <p>Have you made any changes to your lifestyle since receiving this information? If so, what did you change? If not, why not?</p>

<p>What else should know about your organisation, clients, location?</p> <p>What advice do you have for other FHT interested in implementing falls or nutrition screening?</p>	<p>How do you think the wider regional and local organizational culture is influencing the ability of FHT to implement nutrition screening?</p> <p>What else I should know about your region, organisation, clients, location?</p> <p>What advice do you have for other FHT interested in implementing falls or nutrition screening?</p>	<p>Did you go to any of the suggested programs? If not, why not? If so, what did you think about it?</p> <p>Did you speak with an expert about nutrition (dietitian) at the FHT?</p> <p>Would you have liked to receive information about how to prevent a fall? About food and nutrition? If so, what kind of information?</p>
--	--	---

* Note: questions were designed for FHTs that had started falls risk screening in the initial pilot, and were now adding nutrition risk screening. Questions were adapted for FHTs that were implementing falls and nutrition risk screening together.

8.3.3 Sampling and recruitment

FHT criteria for eligibility was determined by a primary care workgroup of the SOYF strategy. Eligibility included: previous participation in the falls risk screening pilot; interest in starting nutrition risk screening; were using a tablet for screening and had at least one subscription to OCEAN; and had access to a dietitian. Final FHT selection of six sites was made in early 2018.

Calls and webinars were conducted with FHTs ED’s and dietitians throughout 2016-18 to encourage participation in the nutrition screening pilot and to provide coaching and opportunities for discussion. Two-day site visits, including interviews and two small group discussions, were conducted at six FHTs in June 2018. Between 2-5 staff/management interviews were conducted per site (n=1 by phone); regional representatives were recruited based on their familiarity with SOYF initiatives in the region, and clients were recruited from three FHTs. Purposive sampling was used so that valuable insights, both positive and negative, could be elicited. In each site, a

representative (ED, dietitian, or receptionist) facilitated FHT staff and client recruitment. Snowball sampling was used when key contacts were identified during a site visit or interview. Some individuals recruited declined participation due to lack of time or permission to participate; due to the recruitment strategy, the number of people who declined is unknown.

8.3.4 Data collection

CL conducted all interviews (15-70 minutes each) at each location to allow for increased depth of understanding regarding the FHT and its location. While spending a minimum of 2 days in each location, CL created context memos regarding the FHT and broader community, such as proximity of other healthcare services, availability of food, access to public transportation, and any visible ways a community aimed to support their older adults who were at nutrition or falls risk. CL is a female researcher, and PhD candidate in health studies with a background in public health nutrition and implementation science/practice, and experience conducting interviews with health professionals. All digitally recorded interviews occurred during work hours and participants could leave at any time.

8.3.5 Analysis

After all interviews were completed, a preliminary summary was sent to all sites with key points for consideration. As a first-level form of member checking, each FHT was requested to respond to the summary if they did not feel it was an accurate representation of their screening process and program. The table of key characteristics and screening program for each site was checked with FHT contacts. Verbatim transcription was completed by a professional service for interviews with FHT staff and management. Summaries and verbatim quotes were used for the client interviews. One researcher (CL) conducted initial analysis of interview transcripts and context memos using NVivo 12. The Saldana et al., inductive approach of first and second cycle coding was used, with one idea per first level

“code” (Miles et al., 2014). Second level codes were formed by grouping first level codes that had the same ideas. After line-by-line coding, thematic analysis was conducted and a heuristic created (Figure 8.1). These anonymous results were shared with HK to check against transcripts (n=3), and with WC to compare with her experience with the NE SOYF strategy. Results were presented by webinar to representatives from participating FHTs to confirm themes and inform the priority areas for next steps. This manuscript uses the term “client” to refer to an individual who receives care from the FHT. Several interview participants used “patient” and “client” interchangeably.

8.3.6 Ethics

Ethical approval was obtained from the University of Waterloo Research Ethics Board (ORE #22965). The NE LHIN agreed all FHTs were covered by the University of Waterloo ethics. All participants signed written consent forms before the interview and were verbally reminded that it would be audio recorded.

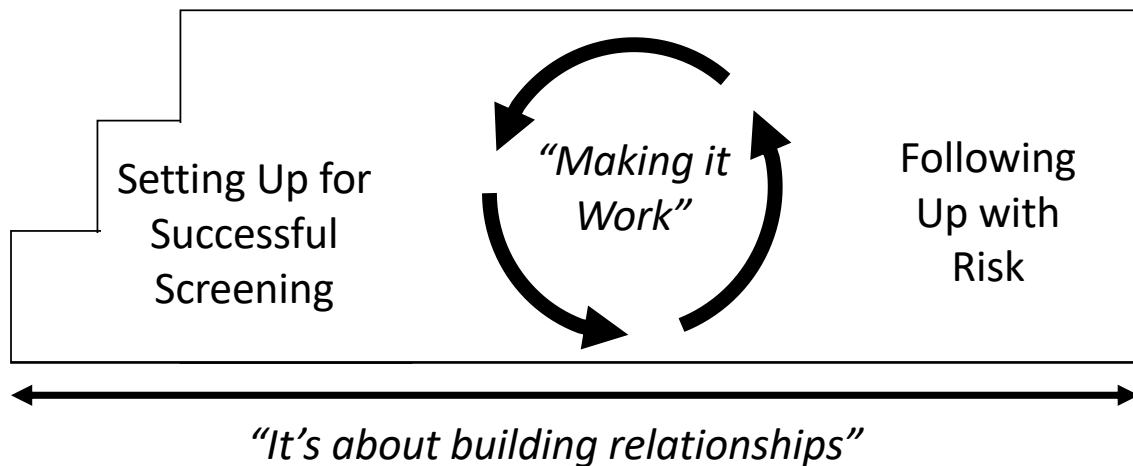


Figure 8.1: Summary of the steps for building a falls and nutrition risk screening program in Family Health Teams

8.4 Results

A total of 29 interviews with 31 participants (2 small group discussions) were conducted with FHT staff and management (20 interviews; n=21), regional representatives and quality improvement specialists (n=3) and clients (6 interviews; n=7). Demographics for FHT staff, management, clients and regional representatives are provided in Table 8.2. Details regarding the screening process for each FHT are in Table 8.3. Participants described three steps in building a screening program: needing to set up for successful screening; making it work by building a system customized for their team; and facilitating at risk clients to attend follow-up. An overarching theme was the need for strong relationships and to work as a team, recognizing that FHTs are uniquely positioned to support their clients in prevention of injury and need to connect to organizations with shared values. Additional quotes for each theme are provided in Table 8.4 and summarized in Figure 8.1.

Table 8.2: Demographics of Family Health Team staff, management, regional representatives and clients

Demographic Information		Interviews; n (%) [*]
Family Health Team staff, management and regional representatives		
# of Participants		24
Gender	Female	22 (92%)
	Male	2 (8%)
Age Group	<30 years	7 (29%)
	30-39 years	5 (21%)
	40-49 years	6 (25%)
	50-59 years	4 (17%)
	60+ years	1 (4%)
Time in Current Role	<6 months	1 (4%)
	~ 1 year	8 (33%)
	~ 2 years	1 (4%)
	~ 3 years	0
	3+ years	14 (58%)

Profession	Dietitian Registered Nurse Executive Director Office Administration (receptionist, office manager etc.) Other	6 (25%) 3 (12.5%) 5 (21%) 5 (21%) 5 (20.8%)
Client Interview Demographics		
# of Participants		7
Gender	Female Male	5 (71%) 2 (29%)
Age Group	65-70 years 71-75 years 76-80 years 81-85 years	1 (14%) 3 (43%) 2 (29%) 1 (14%)
Time at Current Family Health Team	<6 months ~ 1 year ~ 2 years 2+ years	2 (29%) 0 0 5 (71%)
Spoke with at last visit	Dietitian Physician Registered Nurse Nurse Practitioner	1 (12.5) 2 (25%) 4 (50%) 1 (12.5)
Highest Level of Education	Some high school (e.g., 9 through 12) Graduated high school Some post-secondary education (e.g., college, university) Graduated post-secondary	2 (20%) 4 (40%) 3 (30%) 1 (10%)
Living Situation in the Community	live alone live with spouse live with other family/friends	2 (29%) 4 (57%) 1 (14%)

*Includes 1 small group discussion with n=2;

*Includes 1 small group discussion with n=2; *Note:* Some participants selected more than one response so values may not add up to 100%.

Table 8.3: Family Health Team characteristics by case

Site	# physicians	When did Falls Risk Screening Start?	When did Nutrition Risk Screening Start?	How are falls risk screening questions asked?	Who conducts the multi-factorial falls assessment?	Who conducts the nutrition risk screening?	How is the RD informed if a person screened at high risk?	Criteria for Nutrition Risk Screening	Other Comments
1	7	Restarted ~2-3 months before interviews	Same time as falls screening	On tablet by "runner" (who takes vitals)	OT (shared between 2 sites)	OT	Referral from OT	65+ and at falls risk	Started recently so still figuring out the process.
2	1	Restarted ~2-3 months before interviews	Same time as falls screening	On tablet by Health Promoter	Health Promoter	Health Promoter	Recommended by Health Promoter	65+ and at falls risk	Still deciding final process. A different process was used originally, but stopped when funding for previous health promoter ended
3	1	~3 years ago	Within the past month	By the client before an appointment	OT (shared between 2 sites)	By client before an appointment	RD referral after screening	All clients 65+	Challenges with RD capacity as many are screening at nutrition risk
4	3	~2-3 months before interviews; (team had previous experience with set up)	Started with "Stand Up" participants; ~ 2-3 months	Everyone 65+ who sees the nurse is screened for falls risk	Nurse	By client before falls risk appointment	Before falls assessment	65+ who see the nurse + at falls risk	As only those who see the nurse are screened, there is some discussion about a "blitz" to screen remaining clients

			before interviews						
5	4	Unknown	~2-3 months before interviews	Answered on tablet by everyone 65+ (currently for 1 physician)	Nurse	Answered on tablet by everyone 65+ (currently for 1 physician)	ALL screen responses go to the RD who checks for high risk	All clients 65+	The plan is to adapt so only high risk screens are sent to the RD. Those at high risk and have diabetes are referred to the diabetes RD
6	6	Feb 1, 2018	~2-3 months before interviews	Long falls questionnaire completed before appointment	Nurse	By nurse during falls risk follow-up appointment	Positive screens sent to the RD	Over 55+ at falls risk	Originally asked the brief falls questionnaire but too many false negatives so now use the longer version. 55+ is used due to a large Indigenous population.

Abbreviations: RD – Dietitian; OT – Occupational Therapist;

Table 8.4: Summary of themes and applicable quotes based on interviews

Theme	Quotes
<p>Setting Up for Successful Screening: Being able to demonstrate the importance of falls and nutrition screening to FHT staff, management, and clients, then seeking opportunities to support the screening process.</p>	<p><i>“If we can prevent a fall of an elder, then we’re going to increase their health outcomes. Because we know through research, through evidence, we know that when an elder falls, then they tend to become frail and their outcomes are generally not very positive. So if we can back the system up and go upstream and say, “Let’s prevent it here,” then we do so.”</i> S6 I5 (ED)</p> <p><i>“I often stress that the tablets help increase patient engagement. It makes them more of a member of their healthcare team. So they’re giving their responses, and they can see directly how that impacts that encounter that they will have with the healthcare provider.”</i> I1 (Quality Improvement)</p> <p><i>“One of the questions in the falls risk screen is, “Do you sometimes feel sad and lonely?” You know what? If they say yes, we want to connect them with Mental Health. That’s not necessarily something that we would pick up just in a general appointment. You don’t ask those questions. So, I think the screening is really important. It leads to other things.”</i> S3 I1 (ED)</p> <p><i>“We had been using OCEAN previously here at [FHT] before the falls prevention pilot. So there was already knowledge, and they were just looking for ways to expand it. So the falls prevention was just a natural way. And it also came with the tablet and subscription. So kind of, it enables teams to test the technology out and ways that they might use it, and then decide, do I want to continue it? And [FHT] had decided to continue it.”</i> I1 (Quality Improvement)</p> <p><i>“I do recall feedback from staff in the past, that “Why are we involved in this when we didn’t have capacity to do it?” But the view was always “We should be looking at it, and had we not even started, we wouldn’t have got the [grant name] award, we wouldn’t have got the funding for the OT [occupational therapist].” So I guess that’s another piece of this, is that you have to work outside of what you think might possible, which I guess that is what a culture of change is, right?”</i> S1 I5 (ED)</p>

<p>Making it Work: Building a system that works for your team</p> <p>The workflow for each FHT will be different and needs to meet the needs of the staff and clients. To complete the workflow, the customizability of the technology is used, and clients need to be supported to answer the screening questions, and a system in place for those at risk.</p>	<p><i>“If they're not sure kind of how it works with their providers in terms of the multifactorial... because a lot of times, they get pushed back because people are thinking, “I already have so much to do. I can't possibly take this on.” So, it helps to hear from someone who's doing it. We're a small team. We have very limited resources. So, if we can do it, you can do it. [laughs]” S3 I1 (ED)</i></p> <p><i>“I usually go to the providers and say, “Hey, want to do this? Want to try this out? Are you willing?” And the answer generally is yes, right? So I don't typically run into any barriers to that. The only challenge if you want to say is figuring out how. Everybody's like, “Yeah, let's do this, but how? How does it fit in? How do we make these things happen? What's the workflow?” S6 I5 (ED)</i></p> <p><i>“The IT department really wanted to get a really good understanding of what this was and how it was going to work. ... So, taking the time to set up specific parameters around what the functionality of the tablet is... What was that going to look like? Who was going to be responsible for cleaning it? Cost of replacement? Staff knowledge on how to triage out who should be essentially receiving the tablet and for what? For the reception staff, the reminder to actually be giving them out, and what that was going to look like. When were we going to determine when the screener would be appropriate?” S5 I3 (ED)</i></p> <p><i>“I would recommend letting the patient know “Can you please come ten minutes early” in order to complete this screen. Kind of give them a heads up and know that the doctor wants it done, so come early.” S5 I2 (Office Administration)</i></p> <p><i>“It [nutrition screening] makes it much easier for me to sell the dietary part now after they read those questions, or I read them for them, and they answer them. You know, when you ask them “Do you ever skip a meal?” They might think they don't, but then when actually are thinking about it, they're like “Well, sometimes.”... I think it [nutrition screening tool] just does a better job than I did and, certainly, is a better entry point into them seeing her [the dietitian].” S6 I3 (Nurse)</i></p> <p><i>“I do a weekly column in [name of newspaper], a local newspaper. So, any of our programs and services – so, the screen tool, the falls prevention screening, anything like that – I will include in an article. ...We're always trying to keep things visible and keep that awareness out there at all times.” S3 I1 (ED)</i></p> <p><i>“It [the handout] gives them some immediate feedback, even for the ones that aren't high risk. ... They get one check that they aren't high risk and they might not see anyone after that. That's the extra added benefit</i></p>
---	---

	<p><i>of doing the screen. Not only are we identifying the high risk that do need that extra support, but someone might learn something along the way that aren't high risk." S5-I1 (Dietitian)</i></p> <p><i>"Until we actually did some reading about it [falls prevention], it didn't feel like it was our problem because we have so many other things to deal with, and quite frankly there's not a lot of time to add in this upstream work, which is exactly what this is. But now that we have [OT], we can further make this happen the way it should." S1 I5 (ED)</i></p>
<p>Following Up With Risk: Once clients have been identified as at falls or nutrition risk, they need to be supported to attend appropriate follow-up, such as an appointment at the FHT, and/or to attend a community based program, such as "Stand Up".</p>	<p><i>"You just see if the patients are engaged. ... I think the program[s] kind of speaks for themselves. If it's something that is working for patients they're going to continue to sign up and come." S2 I1 (Dietitian)</i></p> <p><i>"When I was trained to do it [Stand Up], I wasn't sure what the validity of the whole program was going to be. I've been involved in it now for four years, and have seen major, major results. ... I refer everybody to that program, whether they think they need it or not. We are now getting people in that program who don't have any balance issues or any issues with their stability per se, but they are getting prepared for future, which is good." S6 I3 (Nurse)</i></p> <p><i>"Some people wouldn't be willing to come see a dietitian yet. They may not be ready for that change. They may have other health goals that are more important right now." S6 I6 (Dietitian)</i></p> <p><i>"We don't have public transportation here, so if you don't drive or don't know anybody who drives or can't get a ride, you're not going to come. If you have to pay somebody to come here to do a screening, ah, not going to do it." S6 I5 (ED)</i></p> <p><i>"We're starting a walking group shortly that specifically targets our geriatric population that cannot walk long or far or fast or anything. We do a bit of an education piece with them, but part of it is just to get them out and going." S6 I5 (ED)</i></p> <p><i>"When I think about SCREEN II and I think about falls risk, it's from clinical assessment to community intervention. Public Health are community intervention. If we're identifying people, they need to have easy access to resources in the community. That's where Public Health comes in." I1 (Regional)</i></p> <p><i>"But the engagement of the patient in terms of the spread for us was themselves. They are the greatest</i></p>

	<p>advocates for the program.” S6-I5 (ED)</p>
<p>“It’s about building relationships” I1 (Regional) Building strong relationships and working as a team, including the impact of screening on teamwork</p>	<p><i>“It goes back to relationships. Mainly the relationships. I find that people do want to participate in working together in a group setting. It’s interesting to see how things happen. Sometimes you’re surprised by what people agree to do. [laughs] I find that when we do meet though, like to work on things like this, it’s almost empowering too because everyone has an opinion. It doesn’t matter what your title is, you all have an opinion when you’re working as a QI [quality improvement] team.” S1 I5 (ED)</i></p> <p><i>“Having a relationship with a person makes it easier to approach them with... the importance of personal relationships and actually not just emailing all the time or talking on the phone but actually knowing somebody, who they are, and seeing their face and having the connection I think helps to make this work easier.” I2 (Regional)</i></p> <p><i>“In terms of that partnership, we all say the words. We say, we should be collaborating. We should be partnering. And every document we produce has those buzz words in it. But why don’t we actually do it? ... Even if I wanted to, I don’t know who to call. And so we were saying that maybe there needs to be sort of a grassroots thing where all the frontline sort of providers get together and we just... even if it’s just a day of sort of reporting on projects that you’re doing. At least that might give people an idea of what’s going on in the area. And then if you have similar interests or similar projects, who you can connect with.” S4 I1 (Dietitian)</i></p> <p><i>“I think we’d like to function as a multidisciplinary team and I think identifying with the programs, identifying with the physician lead who’s responsible from an IHP perspective, and then working together on moving a program forward will help to create that multidisciplinary approach. I think our team members are really busy. I think they’re pulled in different directions. ... It’s tough to integrate fully when the whole team’s not here all the time. ... Unless you’re needing to focus on a specific shared goal, it’s hard to build a multidisciplinary team. I think everybody’s like collegial and friendly, but to say we’re really functioning as a multidisciplinary team, we got work.” S1 I5 (ED)</i></p> <p><i>“I suppose it depends on the team. I think when you use the screening tools and things that that, especially if it was a team that didn’t communicate well, you now have to communicate more about this. You do, because “This is coming up, and I have to talk to you about this, that and the other thing.” I think that it</i></p>

	<i>could potentially strengthen communication. It is interdisciplinary, most of the time, the screenings. It would require more conversations surrounding that. If you had a weak communication, it could strengthen it, I would think.” S5 I1 (Dietitian)</i>
--	--

FHT – Family Health Team; ED – Executive Direction; QI – Quality Improvement

8.4.1 Setting up for successful screening

Participants described the need to set up for successful screening by demonstrating the importance of falls and nutrition risk identification and prevention to FHT staff, management, and clients. First, screening needed to be seen by the team and the client as a benefit to the client's care. *"I would say it's about patients first, and it's about helping people understand that they don't have to fall, that they can do things to make sure they can live independently and stay active and vibrant in their community."* I1 (Regional) Using evidence based screening tools was thought to help clients by *"identifying needs within the seniors that they wouldn't have otherwise identified"* I1 (Quality Improvement); as well as making clinical appointments more efficient, *"if we can move that [answering checkbox questions] into the hands of the patient [before the appointment], then they [the physician or allied health] have more time to focus on the actual patient encounter instead of the computer."* I1 (Quality Improvement) Due to the practical nature of the tools, clients also recognized the importance and benefits of screening. As one noted:

I got half way through it [nutrition questions on tablet] and I realized, umm, it was an awakening call because I realized how poorly I was beginning to eat. So it was a positive experience for me. But I also knew by the end of it that I was in trouble. That I would be getting a call from somebody. S2 I3 (Client)

Demonstrating the importance of screening to prevent of falls and other adverse events also laid a strong foundation on which to build the reason for screening. FHTs have a unique and valuable role in disease and injury prevention and health promotion, including through screening. *"We shouldn't be in the business of chronic disease management, we should be in the business of health and wellness as a society."* S1 I5 (ED) However, if the steps in screening through to referral did not happen, this was discouraging for staff as it did not lead to a proactive change for the client. For example, as described by a team member, *"I asked the one girl before I came in [to the interview] "Any input?" She said...you asked. She finds it a waste of time, she feels like no one looks at it, no one follows up on it, and the tablets don't always work."* S5 I2 (Office Administration) Setting up for success means that the full

process from screening through to referral is planned, negotiated and acted out to benefit the clients.

Setting up screening for success was also about seeking opportunities and being innovative, such as participating in pilot projects or connecting with existing practices. *“We also talked about doing, like, flu shot clinics when they’re here sitting and waiting, that ten minutes after they got the shot, that we can optimize that time to do screening.”* I1 (Quality Improvement) Opportunities also came through using and sharing existing resources (tablets, customized handouts, funding etc.). *“We’ve developed the tools and they’re available for anyone to use.”* I1 (Regional) There were several examples of sharing funding, including sharing allied health time across sites. *“Although one person gets funding for it, all three FHTs get access to it.”* I1 (Quality Improvement) Such sharing of resources provided the capacity for FHTs to develop a screening program that promoted follow through for at risk clients.

In recognizing the need to monitor progress, the 27 FHT ED’s agreed to submit standardized outcomes in their mandatory reports to the ministry, including for falls risk. *“We work[ed] together to create a standardized list of indicators and one of the common things was falls. So yes, we are measuring that and we’re tracking our data on falls.”* S2 I5 (ED) The setting up of this standardized system aimed to facilitate monitoring of change over time for prevalence of risk and provision of support.

Getting started with screening sometimes required the endorsement and support from others outside of the particular FHT. Promotion of falls and nutrition risk prevention from reputable organisations helped to build a foundation for screening: *“If the Association of Family Health Teams is recommending that you do it, then it’s probably more likely to move in that direction.”* I2 (Regional) Looking to exemplars and other FHTs also provided an incentive: *“I think there may start to be a bit of peer pressure once they realize the things that other teams are able to achieve. I mean, eventually you’re going to become a late adopter and sort of get pressured into the system.”* S4 I1 (Dietitian) Sometimes garnering support and resources from a regional agency was a way to get screening started and once initiated it was

considered an important part of care. This dietitian also indicated *“I always suggest that they approach their LHIN or their health unit, someone else who might have that mandate of falls prevention and might be able to contribute to paying for the services. Even if it’s just a pilot to get it started. We found here that once our staff and physicians saw how it [the tablet system] worked, they wanted to keep using it.”* S4 I1 (Dietitian)

8.4.2 Making it work

When starting to build the screening program the FHT had to figure out how to *“make it work”* I1 (Quality Improvement) for their particular service; a ‘cookie-cutter’ approach was recognized as not being sufficient. Every FHT was unique and the screening process needed to adapt to their own workflow. *“They [FHTs] don’t have the same workflows because of different people and different patient loads. So, it’s really dependent on the team and how they’re built and what the capacity is for this.”* I1 (Regional) The emphasis was on starting small and following quality improvement methodology, testing out the workflow and adapting as needed. *“Implement slowly and learn from that and evaluate it as you go.”* S1 I5 (ED)

Each FHT had to determine their own screening process, and this required decision making and negotiation on how the screening would look. When planning the workflow, key decisions needed to be made on who would be screened (over age 65, only those at falls risk etc.), when (in the waiting room, during a falls risk appointment, etc.) and by whom or who would facilitate the process (clients themselves, by allied health in a different appointment etc.). One FHT *“decided we wanted to screen all patients 65 and older [for nutrition risk], not just our high-risk falls people, ... we know that a lot of our seniors have issues with nutrition. They don’t necessarily score high for falls risk. So, I didn’t want to lose anybody in that process.”* S3 I1 (ED) In another site *“the nutrition screening was more of a follow-up screen from the falls screen.”* S6 I6 (Dietitian) Other examples are provided in Table 8.3.

Once these process decisions were made, the tablet needed to be *“customized to the workflow of the team.”* I1 (Quality Improvement) A common phrase when

discussing the technology was: *“I’m told it can be done, but I just don’t know how”* S5 I2 (Office Administration), suggesting that it took some time for communication and planning around the tablet to make screening work. Those implementing screening (the “change team”) needed to figure out what was technically possible and what would work best for their workflow. *“We have to figure out ways to have the process work. So we have to do it and then evaluate it to make sure it’s as efficient as we can make it.”* S1 I5 (ED) Sites that had gone beyond the initial set-up found that their screening process was easy to use, and what was learned along the way encouraged other FHTs to get started. *“Once all the kinks have sort of been worked out of this process and it’s easy and simple to do, I’m hopeful that the others will come on board.”* I2 (Regional)

As clients are a key part of the team, a component of making it work was ensuring that clients were informed about why they were being asking these questions, and to understand that their FHT was using screening to support them to stay independent in their own homes. *“I think people just need to be... Have their attention drawn to it [falls and nutrition risk].”* S6 I1 (Client) Clients also needed to feel comfortable with using that tablet technology, as it was integral to the screening process for FHTs. However, there were mixed opinions about how easy it was for clients to use the tablets. Clients discussed the importance of technology in their lives: *“A lot of seniors, that’s how they keep in touch with their families. They’ll have an iPad or computer – oh yeah!”* S2 I3 (Client), indicating *“I bet ya 90% of people would be able to use it [the tablet in the FHT].”* S2 I3 (Client) One client indicated, *“The tablet is a bit of a hard thing to use, only because of the contrast issues for those with low vision.”* S6 I2 (Client) With a little support, clients became more comfortable using the tablet: *“[I went] over the first couple of questions with them [the client] and showed them how to input the information. And they realize how easy it is, and then they sit down and complete the rest.”* S4 I4 (Office Administration)

Part of developing a screening program was determining the workflow and how those identified as at risk would be treated. *“If we start to do these risk assessments and they’re at risk, if we don’t have somewhere for them to go for care and management, then that’s unethical.”* S1 I5 (ED) The support available for those at

risk varied based on staffing, capacity, and availability of FHT and community resources. One site has originally started screening for falls risk but then stopped until they were able to provide enough support for at risk clients. Some sites modified the process based on their capacity. For example, switching the falls risk questions so the longer version was used on all clients, leading to more appropriate referrals, indicating that it *“will be a more accurate reflection of who we do need to see. ... I think we’re going to get to the people that we actually can do something about.”* S6 I5 (ED) Another strategy for ensuring time for those at risk was *“to put predetermined spots in my schedule [for clients at falls risk]”* S4 I3 (Nurse), and have trainees conduct follow-up assessments.

8.4.3 Following up with risk

Once clients had been identified as at falls or nutrition risk they needed to be supported to attend the organized follow-up, such as an appointment at the FHT (with a nurse, occupational therapist, dietitian etc.), and/or to attend a community based program, such as “Stand Up.” Stand Up is *“an exercise program for older adults with concerns about balance or mobility”* S4 I1 (Dietitian) that also includes a section about nutrition delivered by a dietitian. Participants mentioned their clients were not always interested in or understood why they were being asked to a follow-up appointment. *“I think the biggest challenge with some of our elderly people ... is a matter of getting them in for another appointment. It’s like pulling teeth to get them to come in. ... They want to know what is going to help them and what is the benefit for them to come in and do this.”* S6 I3 (Nurse) One site indicated, *“I think the main thing that was discouraging is that all these people are testing positive for falls but, I would say, 90% decline an appointment... We have very, very low numbers on people that actually want the falls prevention appointment.”* S5 I2 (Office Administration) Many reasons for lack of follow-up were suggested.

I think it comes back to the greatest barriers and the reason why it doesn’t happen is the social determinants of health, honestly. Education is not that high here. We have a huge unemployment rate. All of those factors come into play to the point where how can it be important to them? ... And there’s also

the fear. There's a great deal of fear, and how do you combat that? Right? If you can't get to them, how do you combat it? You can't. So you do what you can. S6 I5 (ED)

To encourage more clients to attend follow-up, one participant indicated that, *"I'm not sure they [the clients] understand that there's a lot of things that we can do to minimize their risk and actually keep them there [at home]. ... I think if they did have a bit of information before they came in, that might help."* S6 I3 (Nurse) FHT staff who book the appointments were an important source of information for the clients when making their decision to attend the follow-up. *"If we [staff booking the appointment] can't sell it, why are they are going to want to go to it."* S5 I2 (Office Administration) Suggestions to improve this process included ensuring that the staff booking the appointments had *"information on what's going to happen in the falls prevention appointment, because I know we've been asked that. We kind of say "No, she's going to go over things with you." But, really, we don't know. We don't know what she's talk about and what she does."* S5 I2 (Office Administration) Some sites have developed a script for office administration that could also be used by any member of the FHT staff as a guide when speaking with at risk clients as a way to incorporate key messages into the conversation and help mitigate some of the fear. *"Our dietitian had created a script for what the front office could use to communicate."* S1 I5 (ED) Having allied health ask the questions during their falls risk follow-up appointment was also suggested to encourage follow-up.

Another reason for lack of follow-up may be due to concern regarding whether clients understood the role of a dietitian. When ask if she thought people know what a dietitian does, one client responded: *"No! Absolutely not! I think most people figure that the dietitian is just there to tell you what to eat and how you're eating wrong."* S6 I1 (Client) Further explaining the role of a dietitian and increasing their visibility in the community was thought to support follow-up attendance with a dietitian for those at nutrition risk.

The customized handout available with SCREEN-II-AB was seen as valuable for all clients, at risk or not. By using the handout, those who were not at risk were

provided helpful suggestions for prevention, and those at risk received specific feedback for why they should see a dietitian. *“I think it [the handout] might even be more worthwhile for the patient, because that way they’re not just filling it out and being done with it, they actually get the reason for doing it.”* S5 I2 (Office Administration) For those at risk, seeing their answers was thought to help them to understand why it would be beneficial to see a dietitian. There was mixed opinions regarding the benefit of creating a customized handout for those at falls risk. Some staff indicated they already used an individualized approach, only providing relevant resources to the client. Another participant indicated: *“I think it [falls risk handout] will be immensely helpful for the team”* I1 (Quality Improvement), with potential for the same benefits to improve follow-up as the nutrition handout. When asked about the value in receiving the individualized handout, one client indicated: *“Absolutely, because I’m trying to change things ... I think that would be really, really helpful.”* S5 I6 (Client)

Strong relationships among all staff and clients was described as impacting screening and follow-up compliance. One participant compared the relationship between two sites, indicating that at a site with stronger relationships with their clients, older adults were less likely to decline to answer screening questions or attend follow-up:

Our admin staff in [FHT name] have a really good relationship with all our patients. ... I would see it being more of a possibility for someone to decline to do the screening here just because of who’s asking them, because they don’t have that same connection. S1 I2 (Dietitian)

Several FHTs ran their own falls risk support programs and/or connected clients with other local opportunities. *“If they have questions they can ask me right at the visit or any time I see them and then I tell them about all our programs that we’re doing. ... If there’s anything that’s applicable outside of what we offer that might be good for our patients then we just tell them about that program.”* S2 I4 (Allied Health) Stand Up was mentioned frequently, with one client indicating *“the Stand Up program is excellent. I would advise anyone over 70 to take it”* S6 I1 (Client), and that, *“it [Stand*

Up] gave you strength in the exercises. Showed you the proper way to get up when you fall. ... I do some of those exercises still.” S6 I2 (Client) A nurse involved indicated, “It’s unreal how the social aspect [of Stand Up] is getting people out of their... they’re feeling down in the dumps and just coming twice a week with people that are now their new friends, is making a huge difference.” S4 I3 (Nurse) Unfortunately, Stand Up was “a bit resource-intensive” I2 (Regional) as it is a 12 week program, 2.5 hours per week, and run by health professionals, thus needs time, space and money to operate, and transportation was an issue for many participants.

Another program mentioned frequently was “From Soup to Tomatoes,” where an instructor broadcast and recorded an exercise program for older adults to be viewed from anywhere, including their own home. “Now they have all the exercise classes on a USB. It’s sustainable because it’s peer-led older adults coming together in a donated location, and they just invite all their friends. They do exercise when they want, for how long they want, and how often they want.” I1 (Regional) Another benefit “is we really are promoting it as a peer-led initiative, so you physically come together with your peers so that there’s that reduced... the social isolation. What we’re hearing is that if Mrs. Smith doesn’t show up for exercise class in [location], everybody notices she’s not there, and someone takes on the responsibility of following up and seeing if she’s okay. So, it’s community care.” I1 (Regional) At the point of interviews, nutrition has been included in Stand Up, but few community nutrition programs were available. Based on the benefits to clients beyond physical activity, similar community-based activities focused on nutrition were encouraged.

When a FHT is running a program and recruiting participants, it was noted that “around here it’s a lot of word of mouth.” S2 I4 (Allied Health) Other strategies were also used to promote attendance. “We’ve done actual personal invitations. ... [with a letter saying] “Your doctor is recommending that you attend this program,” and that is the key.” S3 I1 (ED) There are many identified barriers to attending a follow-up appointment or programs, including transportation, cost and the weather, which were particularly strong barriers in Northern Ontario. “You can have all these nice classes, but when it’s like minus 30 outside and there’s a storm and stuff like that, then

people who are more at risk of falls, well, they don't really want to adventure out." S1 I3 (Allied Health) Another participant indicated that when setting up a new program, *"trying to make most of my programs either low cost or free of cost is my number one goal."* S2 I4 (Allied Health) FHTs also connected with other community organisations and programs, such as other FHTs, the Public Health Units or local gyms to work together to meet the needs of their population. Some of these models should be considered in developing nutrition focused community activities for those at risk.

8.4.4 *"It's about building relationships"*

Throughout all of these themes is the need for FHTs to build strong relationships and work as a team to meet the needs of their clients.

The thing is, and it's not a secret, it's about building those relationships, it's about non-competition, it's about looking what's best for all. We're all going to benefit from this. There's not a downside to these things. In fact, what happens to one place is going to be better for the next place and the next place. So that is the key to the success. It's the relationships and the mutual respect and the trust that, when we come together, we want the best for our patients. S6 I5 (ED)

These relationships were essential within the FHTs, working together as a team and with others in the community, all learning from each other and sharing resources, ideas, and staff in a non-competitive environment. There was emphasis on having FHTs, the LHIN and Public Health Units work together since they share a common goal. *"We're both [FHTs and Public Health Unit] in the same business seeing the same patients, so there's no reason that we shouldn't be trying to work on things together to come up with creative solutions in a rural environment where we're under-resourced. We need to maximize everything that we have."* S5 I3 (ED) There were mixed views on the strength of these connections. *"I know there's often a disconnect across say primary care, public health and the other sort of healthcare sectors, that generally we just kind of work in our silos. We might have the same goals and the same objectives, but we're not necessarily working on them together."*

S4 I1 (Dietitian) The dietitian further indicated: *“I think the challenge is that often we don’t know who to call. ... we’re kind of working on the same things, but we don’t really know what each other is doing or who is in each office.”* S4 I1 (Dietitian) Another participant indicated: *“People already know who everybody is and who’s working on what and how to contact people”* I2 (Regional) so perception on the strength of relationships depended on the community and those involved in making these linkages.

Within the FHTs, there was a need to work as a team, treating each other as equals. When implementing screening, the whole team needed to be aware and know their role. *“I think the definition of the relationship needs to be clear in that it’s not just the champion or the management... It’s everyone involved. ... If we are looking at that patient, they are key driver in the success and the spreadability of anything that we do.”* S6 I5 (ED) It was also thought to be easier to implement and sustain something new such as falls and nutrition risk screening when the full team could see the benefit. *“Trying to get the whole team involved as much as possible and have everyone understand.”* S1 I2 (Dietitian) The culture of the team played a role and each FHT was different. *“We have one small team in a rural community, and the culture is different because of the leadership and the lack of buy-in by the physicians, whereas other teams have much more positive culture, might have buy-in by one physician, or two, but they’re all making it happen.”* I1 (Regional)

Screening was mentioned to have an impact on teamwork in two ways. For one, screening using an evidence-based tool helped connect the team and have more appropriate referrals. *“I think it’s [screening] a good excuse to refer within our own team, because sometimes you get in your little chute and just do your thing.”* S6 I3 (Nurse) It was also explained that use of the tool helped build trust. *“It’s about trust, and having standardized tools would help because then you’d know that these things are being done, and they would help build the trust.”* I1 (Regional) The process of implementing screening also improved teamwork. *“I think working together on whatever project it might be just automatically sort of brings the team a little bit closer together and helps to build some communication.”* S1 I2 (Dietitian) When asked if screening changed the way the team worked, a participant indicated *“I think*

it, sometimes, brings awareness to our inner professional practice in that it helps us understand better what our colleagues are looking at, and what are they assessing. ... That then broadens our knowledge and our awareness of those factors, if we're screening." S6 I6 (Dietitian)

Key components within teamwork were effective communication, trust and having shared values.

It starts with trust. It starts with the ability to agree that you're going to look at something and know that you don't have all the answers, but together you'll figure it out, even if you fail a little bit, as long as you pick up and keep on trying some more. And when you have a team of people that actually care about the same thing and just care about trying to make something work, you can go far. It may take time, but you can make a difference. So yeah, you can't do this work in isolation. There's no way. S1 I5 (ED)

When asked for advice for other FHTs thinking about starting nutrition screening, one participant answered:

Please do. Add the nutrition screening in some way, shape or form to your practice. Whatever that looks like will be different based on your organization's need, your population's needs and your location, but I think it's a great thing to be pursuing, and I think it should be pursued, which is why I'm now making the effort to try and find opportunities to incorporate it in the other places where I work. S6 I6 (Dietitian)

8.5 Discussion

FHTs in this study started building a falls and nutrition risk screening program by setting up for success with a strong foundation, figuring out how to make the process work for their specific team and workflow, and encouraging at risk clients to attend a follow-up appointment or program. Throughout, there was the need to work effectively as an interdisciplinary team and to build strong relationships with other individuals and organisations with shared values and goals. The screening program aimed to support older adults so falls and nutrition risk could be identified and

preventative interventions provided and utilized. FHTs have a valuable role in prevention and this study provides guidance for others working towards developing their own screening program.

In setting up an ethical screening program for falls and nutrition risk prevention, resources within the FHTs were needed, including having a trained or relevant allied health professional as part of the team with the capacity to provide follow-up for clients screened at risk (Kondrup et al., 2013). Having these trained professionals was part of *setting up for successful screening and making it work*. Beyond these appointments with allied health, connections to community programs provided additional support (i.e. attendance at Stand Up or Tai Chi class that had the facilities and instructors to run the course). Setting up these connections was part of *making it work*, facilitating *follow-up with those at risk*, and strengthened through *building relationships*. Although teams did not have the opportunity to fully develop these connections for those at nutrition risk as they were only at the beginning stages of developing a screening program, learning from successful exercise and falls prevention activities (e.g., including a socialization component, bringing the program to the older adults where they live etc.) will promote successful uptake.

Community activities are essential for screening programs in primary care. Even when follow-up appointments were available for a falls assessment or to see a dietitian with the FHT, many at risk older adults declined this medical visit follow-up. In acute care, when risk is identified, treatment is provided or initiated when the patient is hospitalized. Providing services to meet the needs at risk clients in the community is more difficult, as this at minimum requires a new appointment with a member of the team; clients often have challenges attending such appointments. As demonstrated in this study, activities provided to the older adults where they live or in other accessible locations where they are already visiting (e.g., recreation centre) is one strategy to promote follow-up. For those at nutrition risk in this study, a customized handout not only met the need for follow-up but also demonstrated to the client the types of strategies they could undertake, potentially with further guidance and counselling by a dietitian.

FHTs suggested strategies to facilitate follow-up including having an initial phone conversation to discuss next steps, connecting follow-up appointments with pre-existing appointments, etc. Declining follow-up has been reported in other studies, with one indicating 66% of dietitians reported clients at nutrition risk “sometimes/often” decline an appointment with a nutrition professional (Craven et al., 2016). As well, when learning that they were at nutrition risk post screening, older adults have reported they were surprised or upset by the results, others were unconcerned, and some did not understand what it meant to be at risk (Reimer, Keller, & Tindale, 2012). For some clients, education, such as through the customized nutrition handout, may be the start of behaviour change (Southgate, Keller, & Reimer, 2010) and may be the preferred post screening activity (Keller, Haresign, & Brockest, 2007). Screening practices should also include monitoring of those at risk (Kondrup et al., 2013), however this is more difficult in the community than in acute care as follow-up and monitoring are more challenging when clients live at home. Regular re-screening is also encouraged (Kondrup et al., 2013), and several of the FHTs in this study had or were planning to re-screen annually.

Sites recognized the benefits of collaboration with individuals and organisations with shared values and goals for healthcare post screening. For example, community services and programs provided or supported by other organisations could benefit clients screened at risk in FHTs. Opinions were mixed regarding the strength of that collaboration, particularly with Public Health Units. These varied opinions may be due to differences in the awareness of collaborations, as within a FHT some participants indicated strong collaborations, of which others were unaware. The relationship between primary care and public health has been explored indicating ways it can be mutually beneficial and strategies for collaboration (Martin-Misener et al., 2012; Stevenson Rowan, Hogg, & Huston, 2007; Valaitis et al., 2018). The current study reinforces the importance of such collaborations, as not all clients at risk can be met with or want individualized primary care treatment. Relatively few participants in this study were from Public Health Units and further interviews with health professionals in this sector would increase understanding of how collaboration can be fostered with primary healthcare clinics.

A comprehensive project exploring the implementation and sustainability of a falls prevention program with general practitioners (GPs) is underway in Australia in the *Integrated Solutions for Sustainable Fall Prevention (iSOLVE)* project (Clemson, 2018; Clemson et al., 2017). iSOLVE is similar to this work in that it includes screening of clients over 65, using tablets with the Staying Independent Patient Checklist, among other components (Clemson et al., 2017). The evaluation of iSOLVE is a large study (28 general practices) exploring practitioner practices to reduce client falls, cost effectiveness, and change in use of medications known to increase falls risk. iSOLVE also included allied health interviews that indicated falls prevention was complex, with challenges of: working with clients with varied needs; working with allied health with varied understanding of roles; competition; and communication (Liddle et al., 2018). Forthcoming results from iSOLVE, including outcomes, barriers and facilitators to falls prevention program implementation and sustainability, will likely be applicable to the FHT falls prevention and screening programs.

Although a key component of this study was use of the tablet system, many of the same strategies are thought to apply to building any screening program. Not all FHTs have access to tablets, however they are becoming more common in healthcare, with literature suggesting that older adults have overall high ratings for satisfaction with using tablets, including helpfulness and usability (Ramprasad et al., 2017).

8.5.1 Strengths and limitations

The FHTs in this study were at different stages of setting up their screening program. Some FHTs had been conducting falls risk screening for several years and were able to discuss how they sustained the program. Others had started during the initial falls pilot but recently restarted when support for those at risk became available, and thus falls and nutrition risk screening were beginning simultaneously. This variation in stages provided the opportunity to explore perspectives from the first steps through to how a program was sustained long term. This variation may have limited depth of understanding for each stage, particularly in understanding

how screening was sustained, however saturation of themes was still achieved around building a screening program in FHTs.

Client opinions were included and provided a unique perspective, however they were not from all FHTs as client recruitment was a challenge for some sites, particularly those at the early stages of building their program. Some client participants had been screened, however not always as part of a FHT process. Several clients who were participants were not at risk, thus had not experienced the full ethical screening program to attend a follow-up appointment, nor attended community programs. However, client participants were still aware and had opinions about reasons why some clients may decline follow-up, and their experience with various programs, particularly for falls prevention. Further interviews with at falls and/or nutrition risk clients who accept and decline follow-up would add further insight.

FHTs in the NE LHIN may have different experiences than those in more urban areas. For example, one FHT in a small community benefited from strong relationships with their clients, however food access was a challenge as the small grocery store was only open in the summer, and the next closest was a 45 minute drive. Comparison between urban and rural FHTs was not made since these FHTs typically had large catchment areas that included clients from rural and urban areas, making comparison difficult. Differences in collaboration with services in more urban centres may have resulted in further findings with respect to building a screening program that is linked to these services in the community.

Mapping qualitative findings to quantitative data was not within the remit of this study. Further analysis should explore how many older adults were: screened for falls and/or nutrition risk; were at risk; attended a follow-up appointment; and attended a community program. Further exploration is also needed for if/how sites without a dietitian would ethically screen for nutrition risk.

8.6 Conclusion

With the high prevalence of falls and nutrition risk among older adults living in the community, building and sustaining a screening program is an important aspect of

FHT care. Primary care providers have a unique opportunity to identify those at risk and link the client to prevention resources and programs. FHTs indicated the need to set up for success, to make the process work for them, and to follow up with those at risk, recognizing the beneficial impact of strong relationships, collaboration and teamwork. Understanding how FHTs implement their falls and nutrition risk screening can help support other FHTs interested in supporting the needs of their older adult clients in this way.

Chapter 9: Discussion

When implementing nutrition care practices in any healthcare setting, much can be learned from the health professionals involved in the changes. When these changes are connected with theories about implementation (e.g., the K2A cycle, Normalization Process Theory), behaviour change (e.g., the Theory of Behaviour Change), and change management (e.g., the Kotter model, PDSA cycles), it can lead to a strong foundation for sustainable change. When theory is not used, changes may be more challenging to implement and sustain. This dissertation focuses on Implementation Practice to improve nutrition care in healthcare settings, drawing on and contributing to Implementation Science theories and frameworks.

In Part 1 of this dissertation, the malnutrition KAP questionnaire was developed as an evaluation and implementation tool for use with hospital staff. Strategies for implementing, sustaining and spreading nutrition care improvements in hospital following INPAC were described in Part 2, using interviews and focus groups with hospital staff and management at three time periods. In Part 3, health professional perspectives were sought from a new context, FHTs, to explore their initial steps of setting up falls and nutrition risk screening programs. Part 1 and 2 were based on the M2E implementation project, which trained hospital champions on how to apply implementation, behaviour change and change management theories to encourage sustainable change. Training was not provided to FHTs, which used change management theories and tools including PDSA cycles, but may have benefited from use of implementation and behaviour change theories.

9.1 Implications for implementation practice

Advancements in the field of Implementation Practice for nutrition care and falls prevention are beneficial for patients. Patients benefited from the M2E project as it improved patient outcomes and the culture of nutrition care in the five hospital units, with more staff and management considering nutrition care throughout their routines (Curtis et al., 2018; Keller, Valaitis, et al., 2018; Laur, Bell, et al., 2018). The KAP results also reflect some of this change, as both the paired and unpaired groups of

staff had an increase in their understanding that nutrition was important to every patient's recovery and was a high priority at their hospital (Laur, Keller, et al., 2018). As a strong foundation for implementation had been set-up and was supported by theory, the nutrition care processes that had been implemented were able to continue and spread to other units and hospitals (Laur, Bell, et al., 2018).

To make these results easy for hospitals to understand and apply, learnings from Part 1 and 2 were used to create the "how" section of the online INPAC implementation toolkit, a website that focuses on what nutrition care improvements can be made and how, following INPAC. In the toolkit, the "how" section is called *Necessary ingredients to make change in nutrition care*. Participant quotes and key concepts are summarized into four sections: *Get Ready*, *Buy-in and Engagement*, *Adopt*, and *Keeping It Going* (Canadian Malnutrition Task Force, 2018; Keller, Laur, et al., 2018). To understand and evaluate the nutrition care perspectives of hospital staff, the KAP questionnaire and scoring are available in the toolkit along with encouragement for these results to be used to inform staff training and involvement in the changes. The KAP questionnaire has also been used for other hospital malnutrition research, for needs assessments and evaluation of training programs (Eglseer, Halfens, & Lohrmann, 2018). An online community of practice available through linking via the toolkit, facilitates the opportunity to ask questions of M2E champions, researchers and other interested hospital representatives. The toolkit is hosted by the Canadian Malnutrition Task Force at m2e.nutritioncareinCanada.ca.

In Part 3, primary care providers, specifically those at FHTs, have a unique opportunity to identify those at falls and nutrition risk and link their clients to prevention resources and programs. The FHTs in this project discussed steps for setting up their falls and nutrition risk program that will be useful for other FHTs adopting this screening. However, the FHT steps could benefit from further focus on applying implementation and behaviour change theory to support sustained implementation.

9.2 Comparing implementation practice between hospitals and Family Health Teams using implementation, behaviour change and change management theories as guides

9.2.1 Using the Knowledge-to-Action (K2A) cycle to guide implementation

There were several similarities and differences in the nature of care and the implementation strategies used by hospitals and FHTs. The M2E project relied on each step of the K2A cycle to guide implementation (Graham et al., 2006; Laur & Keller, 2015), while the FHTs were less guided by theory. For *Knowledge Creation*, both M2E hospitals and FHTs knew the evidence regarding the need to screen for nutrition risk (and falls risk for FHTs) and started with knowledge tools. M2E hospitals had several knowledge tools and the INPAC pathway to bring them together, while FHTs only had the screening tools and the customized nutrition handout, and thus no pathway to follow. In the *Action Cycle*, the initial steps were considered by both settings. Adapting to context was recognized in hospitals by the theme “account for climate”, and in FHTs by “making it work” for their unique site. Hospitals focused extensively on barriers to knowledge use, through use of the KAP questionnaire, focus group discussions, data collection (e.g., M2E INPAC audits, local audit or evaluation of a specific change), and “involving relevant people in the change process”. FHTs also involved relevant people, and in “setting up for successful screening” and “making it work” they were able to identify some of their barriers through discussions and group meetings, and by starting small and testing the suggested process.

In the K2A cycle, tailoring interventions was also used in both settings with hospitals “embedding change into current practice” and “accounting for climate” and FHTs “making it work”. For example, in hospitals, determining whom would ask the screening questions was a relatively simple implementation activity, but embedding nutrition screening questions into the EMR was a challenge and typically only achieved if the hospital admission form was being changed outside of the M2E project. In FHTs, the ability to include the screening questions on the tablets that directly imputed results to the EMR was an almost automatic activity to support

screening, while deciding on the appropriate workflow for completion of the screening required more implementation work.

Another example of tailoring that also addressed some of the differences in the nature of care between these two settings was through the provision of treatment for those at risk. Patients admitted to hospital were more likely to receive treatment as the treatments were already assembled as part of the hospital care (e.g., dietitian referral, nutrient dense food), and it was only upon discharge that provision of nutrition care became more difficult. In FHTs, even when treatment was available (e.g., dietitian available to consult), many at risk clients declined follow-up and much more emphasis was needed on facilitating follow-up so those at risk would have their needs met. The 2017 Stay on Your Feet evaluation report of the original falls risk pilot indicated that only 19% of clients at falls risk attended follow-up assessment and treatment counselling (Bedard, 2017). The report suggests that this number was low because follow-up was difficult to include in the FHT routine. When self-management is the focus of care, as in the primary care context, the way that care activities are implemented requires consideration of how to stimulate motivation of the client and understand their barriers to self-management and follow-through with recommendations. The results from the current study suggest that further tailoring of the screening program is needed based on the growing understanding of why clients decline service (i.e., transportation issues vs. lack of motivation). Creation of new tools in the K2A cycle (e.g., referral map and identification of barriers) is likely required to promote uptake of self-management activities and other interventions in primary care.

Differences in the implementation processes between the two settings become more apparent at the monitoring stage of the K2A cycle. In FHTs, a large initiative had recently been conducted to standardize the quality indicators on the forms sent to the Ministry to include falls risk. This change meant that data regarding number of people screened and receiving treatment for falls risk was being regularly documented. However, this data was typically kept at the reporting and managerial level, and not provided as feedback to other FHT members to monitor and guide the implementation of their screening program. Some FHTs recognized the need for

increased transparency and feedback of this data and saw the potential to build upon this system now that falls risk data was being collected more regularly. More work was needed for regular monitoring of nutrition screening in FHTs. In M2E hospitals, data collection through a monthly INPAC audit (chart audit following INPAC, including number of people screened, receiving assessment, had their food intake monitored etc. (Keller et al., 2017)) was a key feature of the implementation process. Collecting this data and reporting it back to the change team and those on the hospital unit impacted by the change, allowed staff to monitor their own progress and recognize when more attention was needed to a specific area. For example, if screening rates started to decrease, a renewed effort (reminders, quick chats during huddles) could be made to restore screening rates, and the impact of their efforts may be seen in the audit results the following month. The success of M2E suggests that collecting baseline audit data before starting a new change and then continuing to collect data and share progress results to those involved is needed to stimulate and sustain change.

In the K2A cycle, evaluation of outcomes was also lacking in FHTs, and although it was still the early stages of set-up for most FHTs, there was little mention of evaluation, other than client feedback regarding their exercise programs. Regular evaluation was conducted in the M2E hospitals through both the research project that looked at overall outcomes, and several hospitals conducting their own evaluations for specific initiatives. Evaluation techniques used by hospitals included their own audits of use of a new tool or system, and quick discussions to seek feedback on the process. For the last stage in the cycle, Sustain Knowledge Use, only those FHTs who had previously sustained falls risk screening were able to comment on sustainability specific to falls screening. Several FHTs did mention the need to sustain screening once it was in place, however themes regarding this topic did not reach saturation. M2E hospitals were able to build a strong foundation drawing upon implementation, behaviour change and change management theories, however still discussed the challenges of sustainability when there are so many competing priorities.

9.2.2 Using behaviour change and other implementation theories

Behaviour change theory can also be used to compare the implementation experience between the FHTs and M2E hospital settings. M2E hospital champions and research assistants received training about behaviour change, particularly using the behaviour change wheel (Keller et al., 2017; Michie et al., 2011), while FHTs did not have this opportunity. M2E hospitals used capability, opportunity and motivation as a guide when planning their changes and worked through these three components when a change was struggling to become embedded into the routine. For example, to set up screening, the capability was provided through brief training on use of the screening tool and referral system, testing out the process with a few staff before expanding to every patient on the unit. The opportunity was created by either setting up a system for paper-based screening or embedding the questions into the EMR so it was easy to complete and refer. Motivation was provided to all staff through patient stories and local data to demonstrate the severity of the problem with their own patients and what could be provided for those identified at risk. If screening rates started to drop off, sites explored which of the capability, opportunity, and motivation factors were lacking. In paper-based screening, for example, it was found that the person who creates the admission packs had not been included in the changes and therefore the screening questions were not being included regularly in the pack; thus the “opportunity” for screening was not always available. Once this process was fixed and the opportunity to complete the screening questions provided, improved rates of screening at admission were found.

In FHTs, although not trained on behaviour change, some components of the broader Theoretical Domains Framework, which is intricately connected to capability, opportunity and motivation, were used (Atkins et al., 2017). For example, FHTs were or planned to increase knowledge about the prevalence of nutrition and falls risk, and the belief about the consequences for both the impact of risk and how the FHTs could provide prevention and treatment options. The overall goal to benefit the patients was clear (in FHTs and hospitals), as was the need to consider the environmental context and resources (Atkins et al., 2017). Many of these concepts

were also considered in the hospitals, although were typically streamlined into capability, opportunity and motivation.

When the behaviour change strategies from the FHTs and M2E were viewed from the perspective of the 93 techniques in the Behaviour Change Techniques taxonomy (Michie et al., 2013), many of the technique grouping were covered. Both FHT and M2E sites used *Goals and Planning*, including goal setting (behaviour and outcome), problem solving, and action planning. *Feedback and Monitoring* was conducted through the M2E audits while education sessions in both settings were *Shaping Knowledge*, such as through instructions on how to perform the behaviour. Other grouping covered included *Natural Consequences* (information about health consequences provided through education); *Comparison of Behaviour* (social comparison through M2E champion calls); *Associations* (prompts/cues through sticker reminders to record body weights); *Repetition and Substitution* (behavioural practice/rehearsal of asking screening questions); *Comparison of Outcomes* (credible source of the Canadian Malnutrition Task Force); *Reward and Threat* (material and social incentives with the aim to work towards self-incentive and intrinsic motivation); and *Antecedents* (restructuring of the physical environment by placing nutrition screening into an existing system). Although direct mapping of the interview transcripts to the behaviour change taxonomy has not been completed, this mapping could provide further detail into the behaviour change strategies used for improving nutrition care in hospital and FHT settings.

Normalization Process Theory was also considered as it focuses on making an active change including coherence or sense-making, cognitive participation, collective action, and reflexive monitoring (May et al., 2015), and was evident in both settings, especially hospitals. For coherence, staff in hospitals and FHTs differentiated between the benefit for the patients of using an evidence-based screening tool versus ad hoc referral, and working as a team helped to build a shared understanding. Cognitive participation was evident in the building of a culture that focused on nutrition care and risk prevention, recognizing that everyone had a specific role in both settings. The collective action was about the work being done, using PDSA cycles, and slowly building the change into the routine. Reflexive

monitoring included what people understood about the impact of the change, whether it was part of the routine, appreciated by other staff, or if further changes needed to be made to provide the expected benefit (May et al., 2015). For example, if the FHT found resistance to falls and nutrition risk screening because of increased workload without the intended benefits, they reconfigured their process to make it more suitable to their existing workflow. In hospitals, management discussed the changes through “osmosis” where they worked toward embedding nutrition care into the overall unit, particularly through regularly discussing nutrition and asking about the nutrition care of all patients. By increasing this visibility of nutrition care both staff and management recognized the impact, discussed the benefits, and decided what else was needed.

The Consolidated Framework for Implementation Research (Damschroder et al., 2009) was also used for theoretical positioning in M2E. This framework guided the M2E implementation process, interview questions, and analysis of results, and development of interview questions for FHTs. Applicability of the Consolidated Framework for Implementation Research to the M2E project and the FHT screening is included in Table 9.1.

Table 9.1: Mapping the Consolidated Framework for Implementation Research constructs to the More-2-Eat and Family Health Team projects

<i>Consolidated Framework for Implementation Research Constructs</i>	Applicability to the More-2-Eat project and developing the falls and nutrition risk screening programs in Family Health Teams
Intervention Characteristics: Intervention Source; Evidence Strength and Quality;	M2E: There is strong evidence regarding the need to improve nutrition care in hospitals, and the process for detection and treatment is provided through INPAC (intervention source; evidence strength and quality). INPAC allows for adaptability to each unit and encourages implementation of small components slowly working toward implementation of the full pathway. Many tools are available for use, making it easier to apply.

<p>Relative Advantage; Adaptability; Triability; Complexity; Design Quality and Packaging; Cost</p>	<p>FHT: There is strong evidence in the need to identify falls and nutrition risk in the community setting, and screening tools are available. As there is no standardized process (such as INPAC), the screening program needed to be worked out by each FHT. Stakeholders recognized the advantage and the flexibility in adapting to their setting, however the ethical screening program may seem complex to implement among other competing priorities.</p>
<p>Outer Setting: Patient Needs and Resources; Cosmopolitanism; Peer Pressure; External Policies and Incentives</p>	<p>M2E: The outer setting is recognized most directly through the theme of the need to “account for climate”, including the values and beliefs of the organization as well as the policies. The need for patient benefit was clear, while also staying within the constraints of the organization and resources.</p> <p>FHT: As with hospitals, each FHT wanted to benefit the clients, while also meeting the external pressures of resources and policies. There was an element of peer pressure across the FHTs, recognizing that no one wanted to be a late adopter. Being cosmopolitan was also key for the FHTs, who recognized the need for relationships with other organizations with shared values and goals.</p>
<p>Inner Setting: Structural Characteristics; Networks and Communications; Culture; Implementation Climate; Readiness for Implementation</p>	<p>M2E: The need for strong networks and communication was evident in the M2E hospitals, both through formal and informal channels. Although the culture of the inner setting is mentioned here, M2E results suggest the values are relevant at both the individual, unit and wider levels. The climate and readiness were also key for starting a new change and for spreading to a new unit. For example, some M2E units selected their priorities based on the readiness of the unit. If there were already several unit level changes happening, some change teams opted to focus on different aspects of INPAC that wouldn't have as much of a direct impact on the unit, until the unit was ready for the change.</p> <p>FHT: The inner setting of a FHT mainly focused on the structural characteristics and communication, which in some cases were seen as connected. For example, one FHT mentioned that communication was strong in their mid-size FHT because of the way the building had been designed (open offices surrounding a large table used for meetings and lunch) to encourage regular communication.</p>

<p>Characteristics of Individuals:</p> <p>Knowledge and beliefs about the Intervention;</p> <p>Self-efficacy;</p> <p>Individual Stage of Change;</p> <p>Individual Identification with Organization;</p> <p>Other Personal Attributes</p>	<p>M2E: The knowledge and beliefs about the intervention among hospital staff was acknowledged and quantified through the KAP questionnaire which was used as an implementation and evaluation tool. The individual stages of change were also recognized, which the hospital change team also connected with capability, opportunity and motivation, recognizing which aspect of behaviour change was needed to encourage individual level changes among the staff. Other personal attributes were also utilized as many staff recognized the need to improve nutrition care, yet needed the opportunity and for the change to be easily embedding into their routine.</p>
	<p>FHT: Knowledge and beliefs about the intervention were a key starting point in the FHTs as if falls and nutrition screening were implemented, staff, particularly those encouraging follow-up, needed to believe that the screening would identify those who would benefit from treatment. For example, one site found they were having follow-up appointments with too many clients who had a fear of falling yet had no other risks, thus felt much of their time was spent with clients they could not help. By increasing the specificity of the screening, those conducting follow-up reported a change in the clients risk level and felt that more could be done.</p>
<p>Process:</p> <p>Planning;</p> <p>Engaging;</p> <p>Executing;</p> <p>Reflecting and Evaluating</p>	<p>M2E: Process was a huge component of changing practice in the M2E hospitals, including planning each step, engaging relevant individuals and groups, including opinion leaders, champions, and other change drivers. Following through, or executing that plan, adapting as needed, was facilitated through use of PDSA cycles. Evaluation was a key component of M2E through INPAC audits as well as hospital led implementation strategies. Although reflecting on the changes may not have always been recognized by hospital, the monthly champion calls encouraged reflection and allowed it to inform future plans.</p>
	<p>FHT: Process was also a significant component of changing practice in the FHTs in terms of planning their screening program, thinking through the workflow, and engaging with relevant stakeholders. PDSA cycles were strongly encouraged by the Stay On Your Feet strategy and team members. Some FHTs were still in the piloting stages, thus had not reached full execution or evaluation.</p>

9.2.3 Using change management theory and tools

Using change management theories and tools was discussed in both FHTs and M2E hospitals. The use of these theories appeared to vary between the settings for application of the theory, going beyond just discussing the need to use change management. The most common change management tool used by hospitals and FHTs was the PDSA cycle. Both settings found this was an easy way to work through each change in a small, step-by-step approach, rather than getting discouraged by large and seemingly ambitious goals. In FHTs, PDSA cycles were promoted by the Stay on Your Feet strategy, and used as a way to “test for continuous quality improvement” (Bedard, 2017). In both settings, participants mentioned the need to use change management strategies, including PDSA cycles, raising awareness, having a change team, planning an overall vision, and understanding the barriers. At the time of the FHT interviews, some of these strategies were suggestions rather than steps that had been taken for the screening program development.

M2E champions and research assistants were trained on the Accelerated Kotter 8 Step Model of change management (Kotter International, 2017) as described in relation to M2E in Figure 9.1. Although this model worked as a guide, it was adapted to meet the needs of the team, as not all aspects were relevant in a hospital setting while other pieces were missing. For example, having steps run concurrently and continuously was seen as an advantage, as long as the changes were following a plan and remained within the capacity of the change team. The terminology of a “volunteer army” was not well received and it was recognized that having a core change group that draws on relevant people as needed may be more effective than an “army.” The flexibility aspect was appreciated, as was the need for champions, however the framework lacked recognition of champions on specific projects, nor that there may also be “unofficial” leaders that should be consulted that would not fit within the traditional leadership hierarchy. Capitalizing on opportunities was evident in the “being responsive to opportunities” theme, however the focus on rushing on these opportunities was not always seen as beneficial. Readiness needed to be considered by hospital units before capitalizing on the opportunity (Kotter International, 2017).

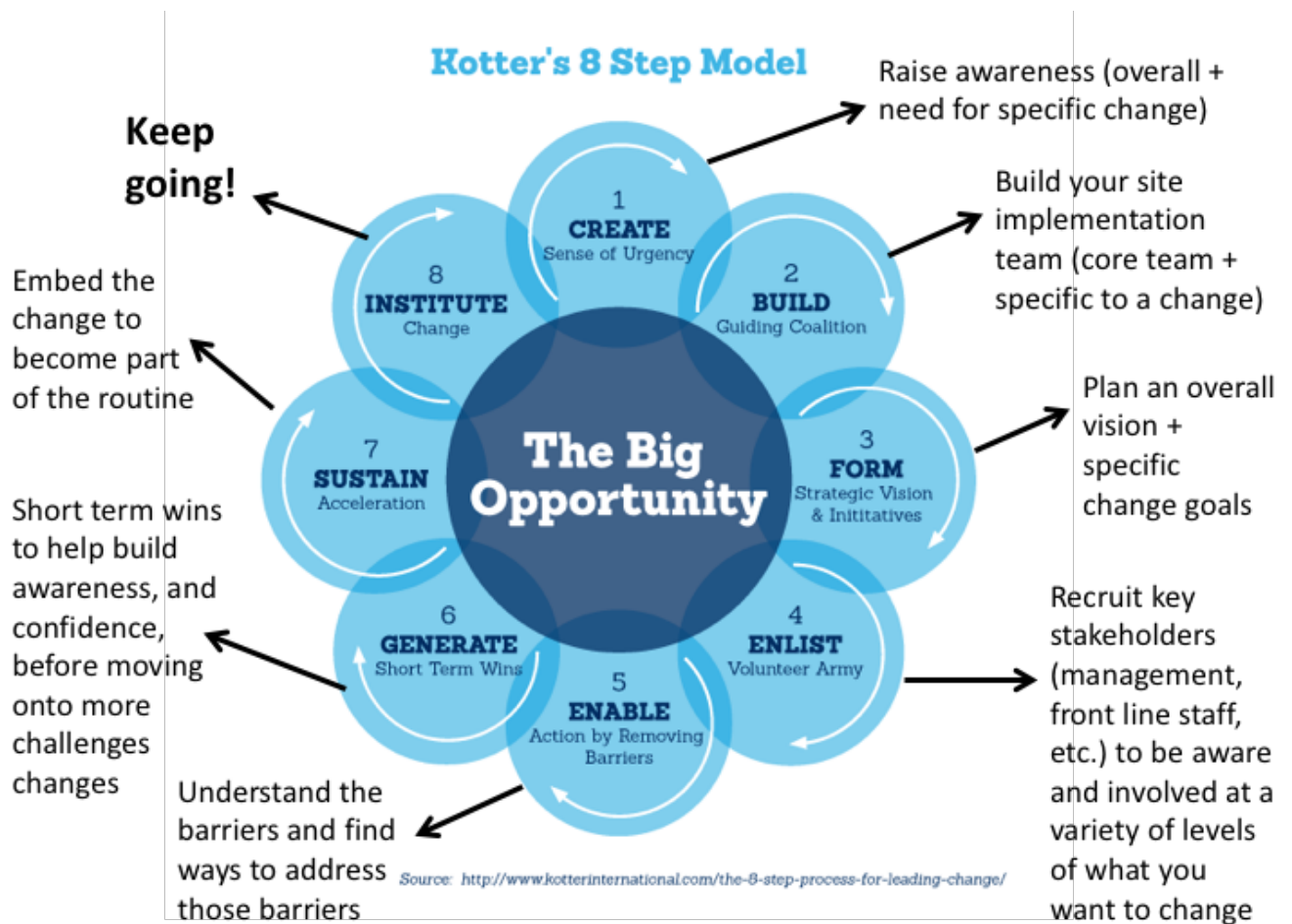


Figure 9.1: Mapping the implementation strategies from More-2-Eat to the Kotter 8 Step Model of Change Management.

Adapted from (Kotter International, 2017)

An interesting factor regarding the use of theory demonstrated in both settings was the use of the concepts of existing theory or methods without using the specific terminology. For example, hospital management would often discuss using PDSA cycles regularly (using the PDSA name), however if staff were asked about PDSA specifically, they were unaware of the term. When the PDSA was explained to them, the staff recognized using the process all the time, but did not know what it was called. The hospital change team also mentioned this regarding behaviour change techniques, using capability, opportunity and motivation, but recognized that others

would be unaware of the various change management techniques being used or what they were called. In FHTs, several interviews with Executive Directors mentioned their own framework or “motto” that they followed. Upon explanation, these models were typically similar to other change management techniques, however these were more individualized and not typically recognized throughout the FHT.

Using implementation, behaviour change and change management theories and tools is thought to help strengthen the change process by providing a guide and facilitating inclusion of a variety of perspectives. The use of these theories facilitated M2E hospitals, leading to more sustainable change that was fully embedded. In the FHTs, change management was mentioned, however further inclusion of implementation and behaviour change principles should encourage the falls and nutrition risk screening process to be sustained.

9.3 Promoting interdisciplinary teamwork

A common thread throughout this dissertation is the need for strong teamwork when implementing nutrition care practices in any setting. Everyone had a role to play in improving nutrition care and having a multi- and/or interdisciplinary approach helped clarify roles, promote teamwork and potentially improved outcomes (Laur et al., 2015; Ross, Mudge, Young, & Banks, 2011; Tappenden et al., 2013). Although multi-, inter-, and transdisciplinary working are often used interchangeably, the Choi et al approach of treating these concepts on a continuum is used for this discussion (Choi & Pak, 2006). In the hospitals and FHTs, teams were typically multi- or interdisciplinary, indicating staff worked together but stayed within their professional roles (multidisciplinary) and worked towards a coordinated approach to a coherent whole (interdisciplinary) (Choi & Pak, 2006).

A lot of research has been conducted regarding team functioning, particularly by Salas and colleagues who have focused on understanding teamwork from the perspectives of the military, aviation, and sports teams among others. They have applied many of those concepts to help understand the healthcare setting (Salas et al., 2008, 2015, 2005). As the literature in this field is so vast, key concepts were

consolidated into the 9C's for effective teams: cooperation, conflict, coordination, communication, coaching, cognition, composition, context and culture (Salas et al., 2015). These 9C's are interconnected with the other implementation, behaviour change and change management theories, as each directly or indirectly recognized the need for strong communication and teamwork.

Concepts of the 9C's were identified throughout this dissertation, particularly in the qualitative work with staff and management in both settings. *Cooperation* was always key and was built into the relationship themes for hospital and FHT results, recognizing the need to work together to effectively change practice. Although *conflict* was rarely mentioned, there were efforts to avoid conflict through multiple consultations, using local data as evidence and involving relevant people in the change process so that the final change made sense for all impacted. *Coordination* and *communication* were also evident, particularly driven by a champion (impacting *coaching*), with a small team to support the changes and ensure everyone knew their role and tasks.

The *composition* of the team, particularly the change team, was mentioned frequently in FHTs and hospitals, making sure it contained a core group who worked well together, adding in team members relevant to specific topics as needed. In both hospital and FHT settings, there were several types of interconnected teams. Teams at the hospital unit and FHT level were pre-determined, and their feedback was essential to understand the workflow. When a change team was organised, such as for M2E and for setting up screening in FHTs, a champion drove the change and new team members were included as needed. For example, when a hospital change team was looking at how nutrition care was included in the discharge process, a discharge planner and a social worker were invited to join the team. All staff were encouraged to advise the change team, such as by attending meetings, answering quick questions, piloting new forms, and providing feedback, so composition of the team could change regularly. Particularly in M2E, other teams were also consulted and in some cases the change team merged with an existing team, such as a Quality Improvement team to encourage sustainability, yet changed the composition. In FHTs there was typically a smaller number of staff than in hospitals, making it

more common for most staff to be included in the discussions about making an improvement.

The *context* in which the team was situated was also mentioned, recognizing the external pressures and other factors that may have an impact, such as competing priorities or even physical space to facilitate or hinder communication. The *culture* of the facility was considered throughout. For example, although all FHTs valued teamwork, some had been able to promote a culture of equality and trust that allowed all staff, including physicians and administrative staff, to have their opinions treated equally during team meetings, encouraging open discussion from a variety of perspectives. For hospitals and FHTs, the need for strong relationships within teams was an overarching theme.

As FHTs are a relatively new way of working, literature has explored how they function as interprofessional teams (Gocan, Laplante, & Woodend, 2014; Gotlib Conn, Oandasan, Creede, Jakubovicz, & Wilson, 2010; Howard, Brazil, Akhtar-Danesh, & Agarwal, 2011; Oandasan et al., 2009; San Martín-Rodríguez, Beaulieu, D'Amour, & Ferrada-Videla, 2005). Although it was indicated that collaborative team functioning had not “reached its full potential” (Gocan et al., 2014), another study suggested that this change would take time (Gotlib Conn et al., 2010). This recognition of the need for improvement in interprofessional teams is also discussed in the FHT interviews, as some sites described strong interdisciplinary teamwork, while others suggested further work was needed. The culture of the team, leadership, and EMR functioning have been found to have more of an impact than the size of the practice (Howard et al., 2011).

Based on the findings from this work, teamwork has significant impact on making nutrition care improvements and setting up screening programs. Connecting an understanding of teamwork to behaviour change may strengthen the implementation process. In hospital and FHT settings people do not work in isolation and thus the impact of the team will also impact the behaviour of an individual. Connecting an understanding of the teamwork evidence to implementation and change management theories may facilitate sustainable change by considering the impact

on and influence of these team factors, and how changes in the team will also impact the implementation process.

9.4 Application of developed implementation, sustain and spread frameworks

Before data collection in the FHT project (Part 3) began, it was thought that many of the themes from Part 2 would be relevant to the FHT screening program, and potentially to other settings. As the FHTs were more focused on initial screening set-up rather than sustainability, framework validation was not part of the project design nor a focus of the interviews. However, during some FHT interviews, many of the themes of the Sustain and Spread Framework were mentioned unprompted, and upon showing the framework to the participant, it was clear there would be some overlap between the hospital findings and what was being experienced in FHT. In subsequent interviews, when appropriate, the Sustain and Spread Framework was shown to participants to see if there was resonance. The framework was well received, with each participant expanding on areas they felt they did well and where they knew they needed to put more emphasis. For example, one participant saw the champion as essential but recognized they needed to continue to measure and report their progress. It was also noted by FHT participants that the need for strong relationships was missing from the Sustain and Spread Framework. During the line-by-line coding and thematic analysis it was recognized that all themes of the baseline hospital results (Chapter 6) were also mentioned by FHT participants, thus capturing the focus on relationships and further demonstrating the potential applicability of both frameworks to the community setting.

Preliminary deductive mapping was conducted of the FHT results to both Part 2 frameworks. This analysis activity indicated that although the frameworks had potential applicability, further validation was needed as most FHT were too early in the stages of implementation. This deductive mapping did however demonstrate aspects that came across as particularly strong for FHTs in their various stages of setting up for screening. In the implementation framework (Chapter 6), “building a reason to change” came across strongly in all FHT interviews. FHTs needed the evidence on why falls and nutrition risk prevention and treatment were beneficial to

their clients and that support would be in place for those at risk. The reason to change was further enhanced when the clients recognized and appreciated the screening program. “Building strong relationships within the team” was also particularly relevant, which connects both to the need for strong teamwork and for connections to other organizations with shared values and goals.

Within the Sustain and Spread Framework (Chapter 7), FHTs particularly resonated with the theme regarding “being responsive to opportunities”. For example, participating in the falls risk pilot was seen as an opportunity as it provided the tablet and OCEAN subscription. One FHT further supported this opportunity by purchasing tablets and subscriptions for all remaining FHTs. Provision of these tablets was seen as a catalyst for those who had not previously been screening. Having strong champions at the regional, FHT and patient levels, was also seen as essential to drive falls and nutrition risk prevention, particularly through setting up a screening program.

In the M2E hospitals, a nutrition culture change was recognized, however in the FHTs there was a different type of culture change, and it was difficult to determine if it was due to screening implementation or other FHT factors. Baseline data for FHTs was not available to show change over time, and it was too early to see a cultural shift in nutrition care. However, an emerging change was described by participants for FHTs to focus on prevention, rather than chronic disease management. Culture change was also recognized in the benefits of building a team based on trust and equality. After implementing evidence-based screening, participants mentioned improvements in teamwork, making more referrals to better support their clients.

Although further work is needed to validate the Part 2 frameworks in other settings, the FHT input suggest there may be some applicability to the community setting and future efforts can be directed to considering this in other healthcare settings and beyond nutrition care activities.

9.5 Implications for implementation science

Understanding how these nutrition care improvements occurred in the hospital and FHT settings has beneficial impact for the field of Implementation Science,

particularly in the development of the frameworks in Part 2 which may be applicable to other settings and topics areas. There are many implementation and sustainability frameworks, however none were able to adequately map to the experiences of these hospital or FHT participants. For this reason, the new frameworks may provide useful guides to these settings, particularly for hospitals when summarized through the INPAC toolkit.

A systematic review of barriers and facilitators to hospital based interventions summarized results into three domains: system (environmental context, culture, communication etc.); staff (attitudes, awareness, skills and role awareness etc.); and intervention (ease of integration, safety, evidence base, etc.) (Geerligs, Rankin, Shepherd, & Butow, 2018). Careful design and pre-planning were encouraged to support sustainable implementation (Geerligs et al., 2018). These results are supportive for the findings in this dissertation from both settings, including the need to involve staff, make sure the interventions are easy to embed into the routine, and to recognize the importance of context and culture. This review also highlights that many studies stopped after the initial intervention, demonstrating the gap in our current understanding of sustainability.

This dissertation can benefit the field of Implementation Science as sustainability is difficult and often poorly studied (Chambers et al., 2013; Geerligs et al., 2018; Moore et al., 2017; Proctor et al., 2015; Schell et al., 2013; Tricco et al., 2016). The experience of M2E with two years of follow-up led to the Sustain and Spread Framework presented in this dissertation and extends our current understanding of sustainability. Literature on sustainability has typically focused on definitions and conceptualization. Although several useful frameworks exist, such as the Dynamic Sustainability Framework (Chambers et al., 2013), little research has explored specific strategies for maintaining existing success. Although both Part 2 frameworks provide actionable strategies that are easy for hospitals to understand and use, based on experience from that setting the Sustain and Spread Framework is unique in its focus on specific strategies to sustain and spread changes. The frameworks can be used as guides and reminders for hospitals, and potentially other settings, when implementing a change and to keep it going. They also provide a way to

highlight potential gaps in their process, such as the experience with the FHT staff that recognized the need to focus more on continuing to measure and report. By including strategies for sustaining and spreading successful changes in hospital, this dissertation advances the field of Implementation Science, particularly how to implement, sustain and spread healthcare improvements.

9.6 Ensuring methodological rigor

Within qualitative analysis, demonstrating credibility and trustworthiness is essential, particularly when relying on researcher interpretation of the findings (Miles et al., 2014). The researcher will always have bias, however there are methods for reducing or recognising this bias to demonstrate the credibility and trustworthiness of the results (Miles et al., 2014). Although approaches to methodological rigor are introduced generically in Chapter 3, each of the Miles et al 13 tactics are explained in Table 9.2 within the context of the M2E and FHT qualitative data.

Table 9.2: The Miles et al (2014) tactics for ensuring validity and trustworthiness in the data. Examples of how these were within the More-2-Eat and Family Health Team projects. (Miles et al., 2014)

Miles et al. Tactic	Part 2 and 3 Action/Response
Checking for representativeness	<ul style="list-style-type: none"> • Sampling of “information rich” participants with both positive and negative views. • A large number of interviews. • Critically reviewed the results with other people/co-authors (the researcher may be too close to the results).
Checking for researcher effects	<p><i>Avoiding bias from researcher effect on the site:</i> the intentions of the researcher were clear for participants (why they are there, what will happen to the data); and other information was collected (website, posters, other public documents).</p> <p><i>Avoiding bias from the site’s effect on the researcher:</i> had a wide variety of participants (from food service worker to upper management in hospital; administrative staff, dietitian and executive directors in FHTs); included those who were resistant to change; background and historical information</p>

	about the site provided by M2E Champions/RA or FHT management/staff; kept research questions in mind at all times.
Triangulation	<p><i>Types of data to compare:</i> interviews; focus groups (M2E only) observations/context notes; background (online search); other results (M2E only); regular webinars or calls (both)</p> <p><i>Sites:</i> Comparison was made across the five hospital sites and across the six FHTs. As similar results were found across the sites, it reinforced the external validity of the data within each setting. M2E results were also triangulated with other M2E results, including monthly coaching calls and quantitative data collected through the INPAC audit.</p>
Weighting the evidence	<i>Keep in mind who is speaking.</i> Everyone’s opinion was important, however responses were considered within their context, including their stage in the change process and their level of involvement. For example, if administrative staff who book follow-up appointments say that many people are declining follow-up, this may be taken with more weight than a nurse who does not see the patients at that stage (unless additional quantitative information is available to back up either statement).
Checking the meaning of outliers	<i>Outliers helped to build a better explanation of the results.</i> Outliers can be opinions that are distinct from other interviews. For example, in one M2E interview an innovative method for food intake monitoring was mentioned to be underway and expectations were high regarding impact. On further discussion with others directly involved, most were either not aware of this intervention nor did they agree that consensus had been reached. Identification of this outlying statement highlighted some of the communication challenges and the need for clarity regarding upcoming interventions.
Using extreme cases	<i>Keep in mind the context of the conversation.</i> For example, if a person who is very supportive of the FHT, nutrition care, etc., has a negative comment, that negative comment may hold more weight than a negative comment from someone who believes “everything” is wrong. Vice versa may also be true, keeping in mind the context and other underlying factors.
Following up surprises	<i>Reflections were made and recorded regarding “surprises” in the discussions.</i> For example, it was a surprise to the interviewer that most physicians (including those on the M2E change team) did not know anything about malnutrition, however were eager to learn more about prevalence, risk and

	<p>diagnosis. Addressing this lack of physician awareness led to a key implementation activity for many of the M2E sites. In the FHTs, it was a surprise when it was recognized that falls screening was only beginning, as the initial recruitment strategy indicated that most sites had been included in the falls pilot. This understanding changed the approach of the interviews as more discussion was about setting up both falls and nutrition risk screening, rather than just adding nutrition into an existing falls risk program.</p>
Looking for negative evidence	<p>There were many inconsistencies in the qualitative data in both settings. The researcher was careful to explain both sides of these inconsistencies in the results. For example, many hospital participants initially said that they do not see any problems in nutrition care, while others (or the same person on a different point in the same interview) highlighted many issues in this area. In FHTs, some participants highlight the lack of relationship with public health unit, while the next interview indicated a strong relationship. These discrepancies and potential explanation are provided.</p>
Making if-then tests	<p>The “if-then” test seems to be particularly relevant to the overall findings for each section regarding the need for strong relationship and teamwork. <i>If</i> there are strong relationships and teams are functioning well, <i>then</i> it will impact all other themes, and improve the implementation process. <i>If</i> teams do not have strong teamwork, <i>then</i> making these changes becomes more difficult.</p>
Ruling out spurious relations	<p>Particularly with the large quantity of data from the M2E hospitals, spurious relations were ruled out as they would not fit within themes. For example, much of the initial interviews focused on what needed to change, which were boiled down to a single theme.</p>
Replicating a finding	<p>Replication of findings is not done at the site level in M2E (the second and third rounds of data collection were focused on examining change and sustainability, not replication). However, (keeping in mind that the context is different) the approach is replicated across all five sites, thus could be used as method of replicating findings and comparing results. Replication of findings was not conducted directly in the FHTs with only one round of interviews, however similar themes were found throughout the multiple sites.</p>
Checking out rival explanations	<p>By recognizing all possible scenarios, rather than immediately following one path, rival explanations were monitored throughout data collection and teased out during analysis. This method was best used during data collection when following</p>

	through with negative evidence and surprises, by having the researcher make notes and bring up these topics in subsequent interviews.
Getting feedback from participants	After completion of the focus groups and interviews at each time point in each setting, a summary of the results (before analysis) was sent to each site (hospital and FHT respectively). Those involved (M2E champions, FHT executive directors etc.) had the opportunity to indicate if any of the results did not make sense in their setting. Results in all projects were also presented in webinars with participants, providing opportunities for comment.

9.7 Strengths and limitations

Strengths and limitations for specific projects are included within each chapter. For Part 1, time restrictions of the M2E project limited the extent of the development and validation work that could be conducted for the KAP questionnaire. However, this evaluation tool also became a valuable implementation tool as sites could learn about the nutrition KAP of their own staff. Implementation strategies could be tailored to their KAP results and also compared to the results of other M2E hospitals.

In Part 1 and 2, having the external driver of being part of the M2E research project may have impacted the generalizability of results. Some teams suggested that involvement in research added an extra level of accountability (needing to report their progress at monthly M2E calls), visibility (nutrition was discussed more regularly, dietitians were on the unit more often to deliver education and collect data), and receiving regular data from the M2E team was beneficial for their progress. However, since sites said these factors were important, they have been used as the drivers for M2E Phase 2. Phase 2 (described in 9.8 Next Steps) recognizes the need to: connect with others (development of the community of practice), collect and use local data (an INPAC audit registry has been developed), and learn from those who have gone before (INPAC toolkit). Being part of a research study may decrease the generalizability of these findings, however, learning how to continue that accountability projected by a structured research project may help other hospitals interested in INPAC implementation. Some sites have taken a

different approach to involvement in a research study. One hospital indicated that they had used the research as a lever to encourage staff to initially change practice and were still using M2E in this way at least year after the project had officially ended.

Although the addition of patient, family/friends and/or care partner perspectives on nutrition care in general (food availability, taste etc.) in hospital may have been valuable for other aspects of M2E (other studies are currently underway to understand this perspective) and should be included in further work, patients were unlikely to be aware of the internal workings of hospital structure, thus were not consulted in Part 1 or 2 of this dissertation. During the implementation process, many hospital champions mentioned either seeking patient feedback directly, or considering the feedback from patients provided through other staff. Champions were then able to tailor the intervention based on patient input in this way. Patient involvement is encouraged to further understand and align with their needs and ensure that initiatives provide better patient care from the patient's perspective.

The initiation and research set-up process was different in FHTs than for M2E. M2E had a large number of academics, researchers and knowledge users advising throughout this large project. The FHTs did not. The Stay on Your Feet strategy had already placed a lot of focus on healthy aging in the NE LHIN, particularly falls risk screening over the past several years. The Stay on Your Feet team were interested to understand how FHTs would add nutrition risk screening so other sites could learn by their example. Although this is a realistic set-up to meet the needs of knowledge users, it placed focus on understanding the processes FHTs used rather than trying to strengthen it using implementation and behaviour change theories. Unlike M2E, researchers did not formally support FHTs to implement nutrition risk screening, however used it as an opportunity to learn from their experience. As all FHTs were located in the NE LHIN, a more rural area of Ontario, results may not be generalizable to FHTs in more urban settings, however key concepts are anticipated to be more widely applicable.

9.8 Next steps

Next steps for hospital nutrition care improvements are underway in M2E Phase 2. Phase 2 took the most important components from Phase 1 and designed a project that aims to sustain and spread the Phase 1 success. The Phase 2 components include: collecting audit data through a self-serve registry that allows hospitals to collect their own data and then automatically create their own reports to see the results that can be shared with the team; peer support provided through an online community of practice; and the online INPAC implementation toolkit which includes learning and tools from Phase 1 on what to change and how. In Phase 2, four of the Phase 1 sites, and six new hospitals across Canada are testing this sustainable model. New hospitals considering INPAC implementation need to have readiness for change including organizational and team/unit support, capacity to work through the change process effectively to encourage sustainable change, access to resources (such as the INPAC toolkit), and interest in involving a range of health professionals.

External support for Phase 2 is provided through the Canadian Malnutrition Task Force with the intention that the tools created in M2E Phase 1 and 2 will be used to continue to support hospitals with INPAC implementation after research funding is complete. Other hospitals are also encouraged to begin INPAC implementation and can draw on the toolkit and other existing resources for support. Collection of audit data centrally, such as the system used for Phase 2 is designed to allow for longitudinal data collection that can show change over time while also supporting hospitals to track their own progress. Ideally, this registry will continue after Phase 2 is complete and be opened for other hospitals to use, however the logistics of this opportunity are still to be explored. Further consideration of an economic analysis could also add value to this initiative.

The next steps for Part 3 include sharing the lessons learned from FHTs to support others interested in falls and/or nutrition risk screening and at-risk follow-up. FHTs only had the knowledge tools (the screening tools and customized nutrition handout) without a pathway for screening. For this reason, a large part of their learning focused on building the screening program. Understanding how these programs

were built in six unique FHTs, with varying size, access to allied health, and community resources, allows other FHTs to see what needs to be considered in developing their own program, and select what might be relevant to their own setting and workflow. As all FHTs in this study had access to a dietitian, another step will be to explore if and how FHTs or other primary care settings without access to a dietitian are able to address nutrition risk within their older adult population. Results from this study will be shared widely, particularly through a representative of the NE LHIN who is able to facilitate change based on these results.

Next steps in Implementation Science include further validation of the Part 2 frameworks in other settings and with other topic areas. Part 3 begins to demonstrate that the frameworks are potentially applicable in the community setting, however further validation is required. It is also anticipated that the Part 2 frameworks, particularly the Sustain and Spread Framework, will be applicable to other topic areas. For example, as nutrition care is a component of patient safety, a focus on implementing patient safety initiatives may use the suggested strategies and lead to an overall culture change towards improved patient safety.

Dissemination of results has occurred throughout this work and will continue. Use of the KAP questionnaire is encouraged through the toolkit and in Phase 2 sites. Key themes from Part 2 have also been shared with Phase 2 sites and more widely disseminated through the Canadian Malnutrition Task Force along with other academic dissemination methods. Globally, a modified version of INPAC is being implemented in 11 hospitals in Queensland, Australia (Bell et al., 2018), using the strategies outlined in Part 2 to encourage sustainable implementation and to facilitate spread of successful interventions. In the UK, key learning points from M2E are being applied, with further connection to healthcare professional education to encourage spread of successful changes. Further initiatives are being supported and encouraged as the success of M2E continues to be disseminated.

Further understanding of scaling up will also be beneficial to explore what strategies are needed to expand beyond a unit to unit level, and if there are similarities between larger scaling up and the unit level spread. There is much to learn

regarding how to implement, sustain and spread healthcare improvements, all with the aim to benefit the patient.

Chapter 10: Conclusion

Knowledge translation of evidence-based practice is key for improving patient care and there is much to learn from the health professionals involved. When these changes are connected with theories about implementation (the K2A cycle, Normalization Process Theory), behaviour change (the behaviour change wheel), and change management (the Kotter model, PDSA cycles), it can lead to a strong foundation for sustainable change. The three parts of this dissertation work together to demonstrate healthcare professional perspectives on making improvements in the hospital and FHT settings, and how using theory can support these improvements. When theory is not used, changes may be more challenging to implement, sustain and spread.

The impact of this dissertation is already evident when considered as a component of the M2E project, which did improve nutrition care in five hospital units across Canada. Understanding how these changes were made and how to spread to other units and healthcare settings, will continue to increase the impact of this work. Tools, such as the KAP questionnaire are already being used by hospitals and other researchers, while Part 2 frameworks are being applied to support work underway in Australia and the UK. The frameworks have potential to strengthen implementation in hospital and support successful changes to be sustained and spread to allow for longer term improvement in patient outcomes.

As shown repeatedly by M2E participants and as was beginning in FHTs, changing healthcare practices is hard but it is possible, especially with the use of theory and tools designed to support implementation, sustainability and spread.

Bibliography

- Aarons, G. A., Sklar, M., Mustanski, B., Benbow, N., & Brown, C. H. (2017). "Scaling-out" evidence-based interventions to new populations or new health care delivery systems. *Implementation Science*, 12(1), 111. doi.org/10.1186/s13012-017-0640-6
- Aarons, G., Ehrhart, M., & Farahnak, L. (2014). The implementation leadership scale (ILS): development of a brief measure of unit level implementation leadership. *Implementation Science*, 9(1), 45. doi.org/10.1186/1748-5908-9-45
- Agarwal, E., Ferguson, M., Banks, M., Batterham, M., Bauer, J., Capra, S., & Isenring, E. (2012). Nutrition care practices in hospital wards: results from the Nutrition Care Day Survey 2010. *Clinical Nutrition*, 31(6), 995–1001. doi.org/0.1016/j.clnu.2012.05.014
- Agarwal, E., Ferguson, M., Banks, M., Batterham, M., Bauer, J., Capra, S., & Isenring, E. (2013). Malnutrition and poor food intake are associated with prolonged hospital stay, frequent readmissions, and greater in-hospital mortality: results from the Nutrition Care Day Survey 2010. *Clinical Nutrition*, 32(5), 737–745. doi.org/10.1016/j.clnu.2012.11.021
- Allard, J., Keller, H., Jeejeebhoy, K., Laporte, M., Duerksen, D., Gramlich, L., ... Lou, W. (2016). Malnutrition at hospital admission: contributors and effect on length of stay: a prospective cohort study from the Canadian Malnutrition Task Force. *Journal of Parenteral and Enteral Nutrition*, 40(4), 487–497. doi.org/10.1177/0148607114567902
- Allard, J., Keller, H., Teterina, A., Jeejeebhoy, K., Laporte, M., Duerksen, D., ... Davidson, B. (2015). Factors associated with nutritional decline in hospitalised medical and surgical patients admitted for 7 d or more: a prospective cohort study. *The British Journal of Nutrition*, 114(10), 1612. doi.org/10.1017/S0007114515003244
- Ambrose, A. F., Cruz, L., & Paul, G. (2015). Falls and fractures: a systematic approach to screening and prevention. *Maturitas*, 82(1), 85–93.

doi.org/10.1016/j.maturitas.2015.06.035

Ambrose, A. F., Paul, G., & Hausdorff, J. M. (2013). Risk factors for falls among older adults: A review of the literature. *Maturitas*, 75(1), 51–61.

doi.org/10.1016/j.maturitas.2013.02.009

American Geriatrics Society and British, & Geriatrics Society. (2011). Summary of the updated American Geriatrics Society/British Geriatrics Society clinical practice guideline for prevention of falls in older persons. *Journal of the American Geriatrics Society*, 59, 148–157. doi.org/10.1111/j.1532-5415.2010.03234.x

American Society for Parenteral and Enteral Nutrition. (2015). *A.S.P.E.N. Adult Nutrition Care Pathway*. Retrieved from www.nutritioncare.org/uploadedFiles/Documents/Malnutrition/ASPEN_Adult_Nutrition_Care_Pathway.pdf

Association of Family Health Teams of Ontario. (2015). What is a Quality Improvement Decision Support Specialist (QIDSS)? Retrieved August 12, 2018, from <http://www.afhto.ca/measurement/whats-a-qidss/>

Atkins, L., Francis, J., Islam, R., O'Connor, D., Patey, A., Ivers, N., ... Michie, S. (2017). A guide to using the Theoretical Domains Framework of behaviour change to investigate implementation problems. *Implementation Science*, 12(1), 77. doi.org/10.1186/s13012-017-0605-9

Bahtsevani, C., Willman, A., Stoltz, P., & Östman, M. (2010). Experiences of the implementation of clinical practice guidelines – interviews with nurse managers and nurses in hospital care. *Scandinavian Journal of Caring Sciences*, 24(3), 514–522. doi.org/10.1111/j.1471-6712.2009.00743.x

Barker, L., Gout, B., & Crowe, T. (2011). Hospital malnutrition: prevalence, identification and impact on patients and the healthcare system. *International Journal of Environmental Research and Public Health*, 8(2), 514–527. doi.org/10.3390/ijerph8020514

Baum, F., MacDougall, C., & Smith, D. (2006). Participatory action research. *Journal*

of Epidemiology and Community Health, 60(10), 854–857.

- Bedard, A. (2017). *Falls prevention in primary care: assessment to intervention (project report)*.
- Bell, J., Bauer, J., Capra, S., & Pulle, C. R. (2013). Barriers to nutritional intake in patients with acute hip fracture: time to treat malnutrition as a disease and food as a medicine? *Canadian Journal of Physiology and Pharmacology*, 91, 489–495. doi.org/10.1139/cjpp-2012-0301
- Bell, J., Bauer, J., Capra, S., & Pulle, R. (2014). Multidisciplinary, multi-modal nutritional care in acute hip fracture inpatients - results of a pragmatic intervention. *Clinical Nutrition*, 33(6), 1101–1107. doi.org/10.1016/j.clnu.2013.12.003.
- Bell, J., Young, A., Hill, J., Banks, M., Comans, T., Barnes, R., & Keller, H. (2018). Rationale and developmental methodology for the SIMPLE approach: A Systematised, Interdisciplinary Malnutrition Pathway for implementation and Evaluation in hospitals. *Nutrition & Dietetics*, 75(2), 226–234. doi.org/10.1111/1747-0080.12406
- Boulos, C., Salameh, P., & Barberger-Gateau, P. (2016). Malnutrition and frailty in community dwelling older adults living in a rural setting. *Clinical Nutrition*, 35(1), 6–11. doi.org/doi: 10.1016/j.clnu.2015.01.008.
- Bounoure, L., Gomes, F., Stanga, Z., Keller, U., Meier, R., Ballmer, P., ... Kondrup, J. (2016). Detection and treatment of medical inpatients with or at-risk of malnutrition: Suggested procedures based on validated guidelines. *Nutrition*, 32(7–8), 790–798. doi.org/10.1016/j.nut.2016.01.019
- Braun, V., & Clarke, V. (2013). *Successful qualitative research* (1. publ.). Los Angeles [u.a.]: SAGE.
- Brewster, A. L., Curry, L. A., Cherlin, E. J., Talbert-Slagle, K., Horwitz, L. I., & Bradley, E. H. (2015). Integrating new practices: a qualitative study of how hospital innovations become routine. *Implementation Science*, 10(1), 168. doi.org/10.1186/s13012-015-0357-3

- Brown, A. P. (1999). Reducing falls in elderly people: A review of exercise interventions. *Physiotherapy Theory and Practice*, 15(2), 59–68. doi.org/10.1080/095939899307775
- Burns, E., Stevens, J., & Lee, R. (2016). The direct costs of fatal and non-fatal falls among older adults — United States. *Journal of Safety Research*, 58, 99–103. doi.org/10.1016/j.jsr.2016.05.001
- Bush, P., Pluye, P., Loignon, C., Granikov, V., Wright, M., Pelletier, J.-F., ... Repchinsky, C. (2017). Organizational participatory research: a systematic mixed studies review exposing its extra benefits and the key factors associated with them. *Implementation Science*, 12(119). doi.org/10.1186/s13012-017-0648-y
- Butterworth, C. (1974). Malnutrition in the hospital. *Journal of the American Medical Association*, 260(6), 879. doi.org/10.1001/jama.1974.03240060049034.
- Campbell, A., Spears, G., & Borrie, M. (1990). Examination by logistic regression modelling of the variables which increase the relative risk of elderly women falling compared to elderly men. *Journal of Clinical Epidemiology*, 43(12), 1415–1420.
- Canadian Institutes of Health Research. (2017). Knowledge translation at the Canadian Institutes of Health Research. Retrieved July 30, 2018, from www.cihr-irsc.gc.ca/e/29418.html
- Canadian Malnutrition Task Force. (2018). INPAC implementation toolkit. Retrieved August 27, 2018, from m2e.nutritioncareincanada.ca/
- Canadian Patient Safety Institute. (2011). Improvement frameworks: getting started kit. Retrieved from <http://www.saferhealthcarenow.ca/EN/Interventions/Pages/default.aspx>
- Cane, J., O'Connor, D., & Michie, S. (2012). Validation of the theoretical domains framework for use in behaviour change and implementation research. *Implementation Science*, 7(1), 37. doi.org/10.1186/1748-5908-7-37
- Chambers, D. A., Glasgow, R. E., & Stange, K. C. (2013). The dynamic

sustainability framework: addressing the paradox of sustainment amid ongoing change. *Implementation Science*, 8(1), 117. doi.org/10.1186/1748-5908-8-117

- Chan, J., & Carpenter, C. (2015). An evaluation of a pilot protected mealtime program in a Canadian hospital. *Canadian Journal of Dietetic Practice and Research*, 76, 81–85. doi.org/doi: 10.3148/cjdpr-2014-035.
- Charif, A. Ben, Zomahoun, H. T. V., LeBlanc, A., Langlois, L., Wolfenden, L., Yoong, S. L., ... Legare, F. (2017). Effective strategies for scaling up evidence-based practices in primary care: a systematic review. *Implementation Science*, 12(1), 139. doi.org/10.1186/s13012-017-0672-y
- Chien, M.-H., & Guo, H.-R. (2014). Nutritional status and falls in community-dwelling older people: a longitudinal study of a population-based random sample. *PLoS ONE*, 9(3), e91044. doi.org/10.1371/journal.pone.0091044
- Child, S., Goodwin, V., Garside, R., Jones-Hughes, T., Boddy, K., & Stein, K. (2012). Factors influencing the implementation of fall-prevention programmes: a systematic review and synthesis of qualitative studies. *Implementation Science*, 7(1), 91. doi.org/10.1186/1748-5908-7-91
- Choi, B. C. K., & Pak, A. W. P. (2006). Multidisciplinarity, interdisciplinarity and transdisciplinarity in health research, services, education and policy: 1. Definitions, objectives, and evidence of effectiveness. *Clinical and Investigative Medicine*, 29(6), 351–364.
- Clemson, L. (2018). iSOLVE. Retrieved August 31, 2018, from <http://fpow.sandbox.sydney/>
- Clemson, L., Mackenzie, L., Roberts, C., Poulos, R., Tan, A., Lovarini, M., ... White, F. (2017). Integrated solutions for sustainable fall prevention in primary care, the iSOLVE project: a type 2 hybrid effectiveness-implementation design. *Implementation Science*, 12(1), 12. doi.org/10.1186/s13012-016-0529-9
- CognisantMD. (2018). CognisantMD. Retrieved July 2, 2018, from <https://www.cognisantmd.com/>
- Contento, I. (2010). *Nutrition education: linking research, theory and practice* (2nd

- ed.). Burlington, MA, USA: Jones & Bartlett Learning.
- Corish, C. A., & Kennedy, N. P. (2000). Protein-energy undernutrition in hospital inpatients. *British Journal of Nutrition*, *83*, 575–591.
- Craven, D., Pelly, F., Isenring, E., & Lovell, G. (2017). Barriers and enablers to malnutrition screening of community-living older adults: a content analysis of survey data by Australian dietitians. *Australian Journal of Primary Health*, *23*(2), 196. doi.org/10.1071/PY16054
- Craven, D., Pelly, F., Lovell, G., Ferguson, M., & Isenring, E. (2016). Malnutrition screening of older adults in the community setting: Practices reported by Australian dietitians. *Nutrition & Dietetics*, *73*(4), 383–388. doi.org/10.1111/1747-0080.12269
- Curran, G. M., Bauer, M., Mittman, B., Pyne, J. M., & Stetler, C. (2012). Effectiveness-implementation hybrid designs. *Medical Care*, *50*(3), 217–226. doi.org/10.1097/MLR.0b013e3182408812
- Curtis, L., Bernier, P., Jeejeebhoy, K., Allard, J., Duerksen, D., Gramlich, L., ... Keller, H. (2017). Costs of hospital malnutrition. *Clinical Nutrition*, *36*(5), 1391–1396. doi.org/10.1016/j.clnu.2016.09.009
- Curtis, L., Valaitis, R., Laur, C., McNicholl, T., Nasser, R., & Keller, H. (2018). Low food intake in hospital: patient, institutional, and clinical factors. *Applied Physiology, Nutrition, and Metabolism*, *43*(12), 1239–1246. doi.org/10.1139/apnm-2018-0064
- Daly, K. J. (2007). *Qualitative methods for family studies & human development*. Sage Publications. doi.org/10.4135/9781452224800
- Damschroder, L. J., Aron, D. C., Keith, R. E., Kirsh, S. R., Alexander, J. A., & Lowery, J. C. (2009). Fostering implementation of health services research findings into practice: a consolidated framework for advancing implementation science. *Implementation Science*, *4*(50). doi.org/doi: 10.1186/1748-5908-4-50
- Davies, H. T. O., & Mannion, R. (2013). Will prescriptions for cultural change improve the NHS? *BMJ*, *346*, f1305. doi.org/10.1136/BMJ.F1305

- Detsky, A., Baker, J., Johnston, N., Whittaker, S., Mendelson, R., & Jeejeebhoy, K. (1987). What is subjective global assessment of nutritional status? *Journal of Parenteral and Enteral Nutrition*, *11*(1), 8–13.
- Donker, D., Hasman, A., & van Geijn, H. (1993). Interpretation of low kappa values. *International Journal of Bio-Medical Computing*, *33*, 55–64.
- Duerksen, D., Keller, H., Vesnaver, E., Allard, J., Bernier, P., Gramlich, L., ... Jeejeebhoy, K. (2015). Physicians' perceptions regarding the detection and management of malnutrition in Canadian hospitals: results of a Canadian Malnutrition Task Force survey. *Journal of Parenteral and Enteral Nutrition*, *39*(4), 410–417. doi.org/0148607114534731.
- Duerksen, D., Keller, H., Vesnaver, E., Laporte, M., Jeejeebhoy, K., Payette, H., ... Allard, J. (2016). Nurses' perceptions regarding prevalence, detection, and causes of malnutrition in Canadian hospitals: results of a Canadian Malnutrition Task Force Survey. *Journal of Parenteral and Enteral Nutrition*, *40*(1), 100–106. doi.org/0148607114548227.
- Eccles, M., Grimshaw, J., Campbell, M., & Ramsay, C. (2003). Research designs for studies evaluating the effectiveness of change and improvement strategies. *Quality and Safety in Health Care*, *12*, 47–52. doi.org/10.1136/qhc.12.1.47
- Eglseer, D., Halfens, R. J. G., & Lohrmann, C. (2018). Use of an electronic malnutrition screening tool in a hospital setting: effects on knowledge, attitudes and perceived practices of healthcare staff. *British Journal of Nutrition*, *120*(02), 150–157. doi.org/10.1017/S0007114518001447
- Feilzer, M. Y. (2010). Doing mixed methods research pragmatically: implications for the rediscovery of pragmatism as a research paradigm. *Journal of Mixed Methods Research*, *4*(1), 6–16. doi.org/doi.org/10.1177/1558689809349691
- Fleischer, A. R., Semenic, S. E., Ritchie, J. A., Richer, M., & Denis, J. (2015). The sustainability of healthcare innovations: a concept analysis. *Journal of Advanced Nursing*, *71*(7), 1484–1498. doi.org/10.1111/jan.12633
- Fried, L., Tangen, C., Walston, J., Newman, A. B., Hirsch, C., Gottdiener, J., &

- McBurnie M A. (2001). Frailty in older adults evidence for a phenotype. *The Journals of Gerontology Series A: Biological Sciences and Medical Sciences*, 56(3), M157.
- Gaboreau, Y., Imbert, P., Jacquet, J., Marchand, O., Couturier, P., & Gavazzi, G. (2013). What key factors influence malnutrition screening in community-dwelling elderly populations by general practitioners? A large cross-sectional survey of two areas of France. *European Journal of Clinical Nutrition*, 67(11), 1193–1199. doi.org/10.1038/ejcn.2013.161.
- Geerligs, L., Rankin, N. M., Shepherd, H. L., & Butow, P. (2018). Hospital-based interventions: A systematic review of staff-reported barriers and facilitators to implementation processes. *Implementation Science*, 13(36). doi.org/10.1186/s13012-018-0726-9
- Gillespie, L. D., Robertson, M. C., Gillespie, W. J., Sherrington, C., Gates, S., Clemson, L. M., & Lamb, S. E. (2012). Interventions for preventing falls in older people living in the community. *Cochrane Database of Systematic Reviews*. doi.org/10.1002/14651858.CD007146.pub3
- Gocan, S., Laplante, M., & Woodend, K. (2014). Interprofessional collaboration in Ontario's Family Health Teams: a review of the literature. *Journal of Research in Interprofessional Practice and Education*, 3(3). doi.org/10.22230/jripe.2014v3n3a131
- Goodwin, V., Jones-Hughes, T., Thompson-Coon, J., Boddy, K., & Stein, K. (2011). Implementing the evidence for preventing falls among community-dwelling older people: A systematic review. *Journal of Safety Research*, 42(6), 443–451. doi.org/10.1016/j.jsr.2011.07.008
- Gotlib Conn, L., Oandasan, I., Creede, C., Jakubovicz, D., & Wilson, L. (2010). Creating sustainable change in the interprofessional academic family practice setting: an appreciative inquiry approach. *Journal of Research in Interprofessional Practice and Education*, 1(3). doi.org/10.22230/jripe.2010v1n3a29

- Government of Ontario. (2018). IDEAS - Improving & Driving Excellence Across Sectors. Retrieved September 24, 2018, from <https://www.ideasonario.ca/>
- Graham, I., Logan, J., Harrison, M., Straus, S., Tetroe, J., Caswell, W., & Robinson, N. (2006). Lost in knowledge translation: time for a map? *Journal of Continuing Education in the Health Professions*, 26(1), 13–24.
- Grol, R., Baker, R., & Moss, F. (2002). Quality improvement research: understanding the science of change in health care. *Quality & Safety in Health Care*, 11(2), 110–111. doi.org/10.1136/qhc.11.2.110
- Grol, R., & Grimshaw, J. (2003). From best evidence to best practice: effective implementation of change in patients' care. *Lancet (London, England)*, 362(9391), 1225–1230. doi.org/10.1016/S0140-6736(03)14546-1
- Health Services Research Information Central. (2018). *Dissemination and Implementation Science*. Retrieved from https://www.nlm.nih.gov/hsrinfo/implementation_science.html
- Hedman, S., Nydahl, M., & Faxén-Irving, G. (2016). Individually prescribed diet is fundamental to optimize nutritional treatment in geriatric patients. *Clinical Nutrition*, 35(3), 692–698. doi.org/10.1016/j.clnu.2015.04.018
- Hickson, M., Connolly, A., & Whelan, K. (2011). Impact of protected mealtimes on ward mealtime environment, patient experience and nutrient intake in hospitalised patients. *Journal of Human Nutrition and Dietetics*, 24(4), 370–374. doi.org/10.1111/j.1365-277X.2011.01167.x.
- Hiesmayr, M., Schindler, K., Pernicka, E., Schuh, C., Schoeniger-Hekele, A., Bauer, P., & et al. (2009). Decreased food intake is a risk factor for mortality in hospitalized patients: The nutritionDay survey 2006. *Clinical Nutrition*, 28(5), 484–491. doi.org/10.1016/j.clnu.2009.05.013
- Holst, M., Beermann, T., Mortensen, M., Skadhauge, L., Lindorff-Larsen, K., & Rasmussen, H. (2015). Multi-modal intervention improved oral intake in hospitalized patients. A one year follow-up study. *Clinical Nutrition*, 34(2), 315–322. doi.org/10.1016/j.clnu.2014.05.001

- Holstein, J. A., & Gubrium, J. F. (1995). *The Active Interview*. Thousand Oaks, CA: Sage Publications, Inc. doi.org/10.4135/9781412986120
- Hopewell, S., Adedire, O., Copsey, B. J., Boniface, G. J., Sherrington, C., Clemson, L., ... Lamb, S. E. (2018). Multifactorial and multiple component interventions for preventing falls in older people living in the community. *Cochrane Database of Systematic Reviews*, (7). doi.org/10.1002/14651858.CD012221.pub2
- Howard, M., Brazil, K., Akhtar-Danesh, N., & Agarwal, G. (2011). Self-reported teamwork in family health team practices in Ontario: organizational and cultural predictors of team climate. *Canadian Family Physician Medecin de Famille Canadien*, 57(5), e185-91.
- Hulley, S., Cummings, S., Browner, W., Grady, D., & Newman, T. (2013). *Designing Clinical Research* (4th ed.). Philadelphia, PA: Lippincott Williams & Wilkins.
- Huxtable, S., & Palmer, M. (2013). The efficacy of protected mealtimes in reducing mealtime interruptions and improving mealtime assistance in adult inpatients in an Australian hospital. *European Journal of Clinical Nutrition*, 67(9), 904–910. doi.org/10.1038/ejcn.2013.126
- Ilott, I., Gerrish, K., Pownall, S., Eltringham, S., & Booth, A. (2013). Exploring scale-up, spread, and sustainability: an instrumental case study tracing an innovation to enhance dysphagia care. *Implementation Science*, 8(1), 128. doi.org/10.1186/1748-5908-8-128
- Ivers, N., Jamtvedt, G., Flottorp, S., Young, J., Odgaard-Jensen, J., French, S., ... Oxman, A. (2012). Audit and feedback: effects on professional practice and healthcare outcomes. *Cochrane Database Systematic Reviews*, 6(CD000259).
- Ivers, N., Sales, A., Colquhoun, H., Michie, S., Roy, R., Francis, J., & Grimshaw, J. (2014). No more 'business as usual' with audit and feedback interventions: towards an agenda for a reinvigorated intervention. *Implementation Science*, 9(14). doi.org/10.1186/1748-5908-9-14.
- Jeejeebhoy, K. (2012). Malnutrition, fatigue, frailty, vulnerability, sarcopenia and cachexia: overlap of clinical features. *Current Opinion in Clinical Nutrition &*

- Metabolic Care*, 15(3), 213–219. doi.org/10.1097/MCO.0b013e328352694f
- Jeffcott, S. (2014). *The spread and sustainability of quality improvement in healthcare*. Retrieved from www.healthcareimprovementscotland.org
- Johnson, C. (2003). The association between nutritional risk and falls among frail elderly. *The Journal of Nutrition, Health & Aging*, 7(4), 247–250.
- Johnson, M., & May, C. (2015). Promoting professional behaviour change in healthcare: what interventions work, and why? A theory-led overview of systematic reviews. *BMJ Open*, 5(9). doi.org/10.1136/bmjopen-2015-008592
- Kaliyaperumal, K. (2004). Guideline for conducting a knowledge, attitude and practice (KAP) study. *AECS Illumination*, 4, 7–9.
- Keller, H. (2007). Promoting food intake in older adults living in the community: a review. *Applied Physiology, Nutrition, and Metabolism*, 32(6), 991–1000.
- Keller, H., Allard, J., Laporte, M., Davidson, B., Payette, H., Bernier, P., ... Gramlich, L. (2015). Predictors of dietitian consult on medical and surgical wards. *Clinical Nutrition*, 34(6), 1141–1145. doi.org/10.1016/j.clnu.2014.11.011
- Keller, H., Allard, J., Vesnaver, E., Laporte, M., Gramlich, L., Bernier, P., ... Payette, H. (2015). Barriers to food intake in acute care hospitals: A report of the Canadian Malnutrition Task Force. *Journal of Human Nutrition and Dietetics*, 28(6), 546–557. doi.org/10.1111/jhn.12314
- Keller, H., Brockest, B., & Haresign, H. (2006). Building capacity for nutrition screening. *Nutrition Today, Clinical & Community Trials*, 41(4).
- Keller, H., Goy, R., & Kane, S. (2005). Validity and reliability of SCREEN II (Seniors in the Community: Risk Evaluation for Eating and Nutrition, Version II). *European Journal of Clinical Nutrition*., 59(10), 1149–1157. doi.org/10.1038/sj.ejcn.1602225
- Keller, H., Haresign, H., & Brockest, B. (2007). Process evaluation of Bringing Nutrition Screening to Seniors in Canada (BNSS). *Canadian Journal of Dietetic Practice and Research*, 68(2), 86–91. doi.org/10.3148/68.2.2007.86

- Keller, H., Laur, C., Atkins, M., Bernier, P., Butterworth, D., Davidson, B., ... Bell, J. (2018). Update on the Integrated Nutrition Pathway for Acute Care (INPAC): post implementation tailoring and toolkit to support practice improvements. *Nutrition Journal*, 17(1), 2. doi.org/10.1186/s12937-017-0310-1
- Keller, H., Laur, C., Valaitis, R., Bell, J., McNicholl, T., Ray, S., ... Team., T. M.-2-E. (2017). More-2-Eat: evaluation protocol of a multi-site implementation of the Integrated Nutrition Pathway for Acute Care. *BMC Nutrition*, 3(13). doi.org/10.1186/s40795-017-0127-5
- Keller, H., & McCullough, J. (2018). The My Meal Intake Tool (M-MIT): Validity of a patient self- assessment for food and fluid intake at a single meal. *The Journal of Nutrition, Health & Aging*, 22(1), 30–37. doi.org/10.1007/s12603-016-0859-y
- Keller, H., McCullough, J., Davidson, B., Vesnaver, E., Laporte, M., Gramlich, L., ... Jeejeebhoy, K. (2015). The Integrated Nutrition Pathway for Acute Care (INPAC): Building consensus with a modified Delphi. *Nutrition Journal*, 14(63). doi.org/10.1186/s12937-015-0051-y
- Keller, H., & Østbye, T. (2003). Nutritional risk and time to death; predictive validity of SCREEN (Seniors in the Community Risk Evaluation for Eating and Nutrition). *Journal of Nutrition, Health & Aging*, 7(4), 274.
- Keller, H., Østbye, T., & Goy, R. (2004). Nutritional risk predicts quality of life in elderly community-living Canadians. *The Journals of Gerontology. Series A, Biological Sciences and Medical Sciences*, 59(1), M74. doi.org/10.1093/gerona/59.1.M68
- Keller, H., Valaitis, R., Laur, C., McNicholl, T., Xu, Y., Dubin, J., ... Bell, J. (2018). Multi-site implementation of nutrition screening and diagnosis in medical care units: success of the project More-2-Eat. *Clinical Nutrition*, 1–9. doi.org/10.1016/j.clnu.2018.02.009
- Keller, H., Vesnaver, E., Davidson, B., Allard, J., Laporte, M., Bernier, P., ... Gramlich, L. (2014). Providing quality nutrition care in acute care hospitals: perspectives of nutrition care personnel. *Journal of Human Nutrition and*

Dietetics, 27(2), 192–202. doi.org/0.1111/jhn.12170.

- Keller, H., Vesnaver, E., & McCullough, J. (2015). *INPAC and support tool development. TVN Catalyst Project 2014-2015 - research site report.*
- Keller, H., Xu, Y., Dubin, J., Curtis, L., Laur, C., & Bell, J. (2018). Improving the standard of nutrition care in hospital: mealtime barriers reduced with implementation of the Integrated Nutrition Pathway for Acute Care. *Clinical Nutrition ESPEN*, 28, 74–79. doi.org/10.1016/j.clnesp.2018.09.075
- Kempton, A., Garner, E., Van Beurden, E., Sladden, T., McPhee, L., Steiner, C., ... Welsh, C. (1997). *Stay on Your Feet: final report 1992-1997.* Lismore. Retrieved from <https://nswlhd.health.nsw.gov.au/health-promotion/files/2014/01/93.pdf>
- Kilbourne, A., Neumann, M., Pincus, H., Bauer, M., & Stall, R. (2007). Implementing evidence-based interventions in health care: application of the replicating effective programs framework. *Implementation Science*, 2(1), 42. doi.org/10.1186/1748-5908-2-42
- Kimber, K., Gibbs, M., Weekes, C. E., & Baldwin, C. (2015). Supportive interventions for enhancing dietary intake in malnourished or nutritionally at-risk adults: a systematic review of nonrandomised studies. *Journal of Human Nutrition and Dietetics*, 28(6), 517–545. doi.org/10.1111/jhn.12329
- Kondrup, J., Allison, S., Elia, M., Vellas, B., & Plauth, M. (2013). ESPEN Guidelines for Nutrition Screening 2002. *Clinical Nutrition*, 22(4), 415–421.
- Kotter International. (2017). *8 Steps To Accelerate Change.* Retrieved from www.kotterinc.com/8-steps-process-for-leading-change/
- Kotter, J. (1996). *Leading Change.* Retrieved from <https://www.kotterinc.com/book/leading-change/>
- Kris-Etherton, P. M., Akabas, S. R., Bales, C. W., Bistrrian, B., Braun, L., Edwards, M. S., ... Horn, L. Van. (2014). The need to advance nutrition education in the training of health care professionals and recommended research to evaluate implementation and effectiveness. *American Journal of Clinical Nutrition*, 99(5 Suppl), 66S. doi.org/10.3945/ajcn.113.073502.

- Lacey, K., & Pritchett, E. (2003). Nutrition Care Process and Model: ADA adopts road map to quality care and outcomes management. *Journal of the American Dietetic Association*, 103(8), 1061–1072. doi.org/10.1053/jada.2003.50564
- Landis, J., & Koch, G. (1977). The measurement of observer agreement for categorical data. *Biometrics*, 33(1), 159–174.
- Laporte, M., Keller, H., Payette, H., Allard, J., Duerksen, D., Bernier, P., ... Teterina, A. (2015). Validity and reliability of the new Canadian Nutrition Screening Tool in the 'real-world' hospital setting. *European Journal of Clinical Nutrition*, 69(5), 558–564. doi.org/10.1038/ejcn.2015.47
- Laur, C., Bell, J., Valaitis, R., Ray, S., & Keller, H. (2018). The Sustain and Spread Framework: strategies for sustaining and spreading nutrition care improvements in acute care based on thematic analysis from the More-2-Eat study. *Health Services Research*, 18(930). doi.org/doi.org/10.1186/s12913-018-3748-8
- Laur, C., Butterworth, D., Nasser, R., Bell, J., Marcell, C., Murphy, J., ... Keller, H. (2018). Impact of facilitated behaviour change strategies on food intake monitoring and body weight measurements in acute care: case examples from the More-2-Eat study. *Nutrition in Clinical Practice*. doi.org/10.1002/ncp.10207
- Laur, C., Curtis, L., Dubin, J., McNicholl, T., Valaitis, R., Douglas, P., ... Keller, H. (2018). Nutrition care after discharge from hospital: an exploratory analysis from the More-2-Eat study. *Healthcare*, 6(1), 9. doi.org/10.3390/healthcare6010009
- Laur, C., & Keller, H. (2015). Implementing best practice in hospital multidisciplinary nutritional care: an example of using the knowledge-to-action process for a research program. *Journal of Multidisciplinary Healthcare*, 8, 463–472. doi.org/10.2147/JMDH.S93103
- Laur, C., & Keller, H. (2017). Making the case for nutrition screening in older adults in primary care. *Nutrition Today*, 52(3), 129.
- Laur, C., Keller, H., Curtis, L., Douglas, P., Murphy, J., & Ray, S. (2018). Comparing hospital staff nutrition knowledge, attitudes, and practices before and 1 year after improving nutrition care: results from the More-2-Eat implementation

project. *Journal of Parenteral and Enteral Nutrition*, 42(4), 486–796.
doi.org/10.1177/0148607117718493.

- Laur, C., Marcus, H., Ray, S., & Keller, H. (2016). Quality nutrition care: measuring hospital staff's knowledge, attitudes, and practices. *Healthcare*, 4(79).
- Laur, C., McCullough, J., Davidson, B., & Keller, H. (2015). Becoming food aware in hospital: a narrative review to advance the culture of nutrition care in hospitals. *Healthcare*, 3(2), 393–407. doi.org/10.3390/healthcare3020393
- Laur, C., McNicholl, T., Valaitis, R., & Keller, H. (2017). Malnutrition or frailty? overlap and evidence gaps in the diagnosis and treatment of frailty and malnutrition. *Applied Physiology, Nutrition, and Metabolism*, 42(5), 449–458. doi.org/10.1139/apnm-2016-0652
- Laur, C., Valaitis, R., Bell, J., & Keller, H. (2017). Changing nutrition care practices in hospital: a thematic analysis of hospital staff perspectives. *BMC Health Services Research*, 17(1), 498. doi.org/10.1186/s12913-017-2409-7
- Leggat, S. G., & Dwyer, J. (2005). Improving hospital performance: culture change is not the answer. *Healthcare Quarterly*, 8(2), 60–66. doi.org/15828569
- Lennox, L., Maher, L., & Reed, J. (2018). Navigating the sustainability landscape: a systematic review of sustainability approaches in healthcare. *Implementation Science*, 13(1), 27. doi.org/10.1186/s13012-017-0707-4
- Liddle, J., Lovarini, M., Clemson, L., Mackenzie, L., Tan, A., Pit, S., ... Willis, K. (2018). Making fall prevention routine in primary care practice: perspectives of allied health professionals. *BMC Health Services Research*, 18(1), 598. doi.org/10.1186/s12913-018-3414-1
- Lim, S. L., Ong, K. C. B., Chan, Y. H., Loke, W. C., Ferguson, M., & Daniels, L. (2012). Malnutrition and its impact on cost of hospitalization, length of stay, readmission and 3-year mortality. *Clinical Nutrition*, 31(3), 345–350. doi.org/10.1016/j.clnu.2011.11.001
- Lindorff-Larsen, K., Rasmussen, H., Kondrup, J., Staun, M., Ladefoged, K., & Scandinavian Nutrition Group. (2007). Management and perception of hospital

- undernutrition—A positive change among Danish doctors and nurses. *Clinical Nutrition*, 26(3), 371–378. doi.org/10.1016/j.clnu.2007.01.006
- Liu, L.-K., Lee, W.-J., Chen, L.-Y., Hwang, A.-C., Lin, M.-H., Peng, L.-N., & Chen, L.-K. (2015). Association between frailty, osteoporosis, falls and hip fractures among community-dwelling people aged 50 years and older in Taiwan: Results from I-Lan longitudinal aging study. *PLOS ONE*, 10(9), e0136968. doi.org/10.1371/journal.pone.0136968
- Lorenzo-López, L., Maseda, A., de Labra, C., Regueiro-Folgueira, L., Rodríguez-Villamil, J. L., & Millán-Calenti, J. C. (2017). Nutritional determinants of frailty in older adults: A systematic review. *BMC Geriatrics*, 17(1), 108. doi.org/10.1186/s12877-017-0496-2
- Lovarini, M., Clemson, L., & Dean, C. (2013). Sustainability of community-based fall prevention programs: A systematic review. *Journal of Safety Research*, 47, 9–17. doi.org/10.1016/J.JSR.2013.08.004
- Macleod, M. R., Michie, S., Roberts, I., Dirnagl, U., Chalmers, I., Ioannidis, J. P. A., ... Glasziou, P. (2014). Biomedical research: increasing value, reducing waste. *Lancet (London, England)*, 383(9912), 101–104. doi.org/10.1016/S0140-6736(13)62329-6
- Maher, L., Gustafson, D., & Evans, A. (2010). NHS Sustainability Model Guide. *NHS Institute for Innovation and Improvement*. Retrieved from http://www.qihub.scot.nhs.uk/media/162236/sustainability_model.pdf
- Manser, T. (2009). Teamwork and patient safety in dynamic domains of healthcare: a review of the literature. *Acta Anaesthesiologica Scandinavica*, 53(2), 143–151. doi.org/10.1111/j.1399-6576.2008.01717.x
- Martin-Misener, R., Valaitis, R., Wong, S., MacDonald, M., Meagher-Stewart, D., Kaczorowski, J., ... Team, the S. P. H. C. through P. H. and P. C. C. (2012). A scoping literature review of collaboration between primary care and public health. *Primary Health Care Research & Development*, 13(04), 327–346. doi.org/10.1017/S1463423611000491

- May, C., Mair, F., Finch, T., Macfarlane, A., Dowrick, C., Treweek, S., ... Montori, V. M. (2009). Development of a theory of implementation and integration: Normalization Process Theory. *Implementation Science*, 4(1), 29. doi.org/10.1186/1748-5908-4-29
- May, C., Rapley, T., Mair, F., Treweek, S., Murray, E., Ballini, L., ... Finch, T. (2015). Normalization Process Theory on-line users' manual, toolkit and NoMAD instrument. Retrieved from <http://www.normalizationprocess.org>
- May, C., Sibley, A., & Hunt, K. (2014). The nursing work of hospital-based clinical practice guideline implementation: An explanatory systematic review using Normalisation Process Theory. *International Journal of Nursing Studies*, 51(2), 289–299. doi.org//dx.doi.org/10.1016/j.ijnurstu.2013.06.019
- McCluskey, A., & Lovarini, M. (2005). Providing education on evidence-based practice improved knowledge but did not change behaviour: a before and after study. *BMC Medical Education*, 5(1), 40. doi.org/10.1186/1472-6920-5-40
- McCullough, J., Marcus, H., & Keller, H. (2017). The Mealtime Audit Tool (MAT) – Inter-rater reliability testing of a novel tool for the monitoring and assessment of food intake barriers in acute care hospital patients. *The Journal of Nutrition, Health & Aging*, 21(9), 962–970.
- McNicholl, T., Valaitis, R., Laur, C., & Keller, H. (2017). The More-2-Eat project: using theory to explain behaviour change techniques in a hospital setting. *Applied Physiology, Nutrition, and Metabolism*, 42(5), S33. doi.org/10.1139/apnm-2017-0134
- Meehan, A., Loose, C., Bell, J., Partridge, J., Nelson, J., & Goates, S. (2016). Health system quality improvement: impact of prompt nutrition care on patient outcomes and health care costs. *Journal of Nursing Care Quality*, 31(3), 217–223. doi.org/10.1097/NCQ.000000000000177
- Meijers, J. M., Halfens, R. J., Neyens, J. C., Luiking, Y. C., Verlaan, G., & Schols, J. M. (2012). Predicting falls in elderly receiving home care: the role of malnutrition and impaired mobility. *The Journal of Nutrition, Health & Aging*, 16(7), 654–658.

- Meyers, D., Durlak, J., & Wansersman, A. (2012). The Quality Implementation Framework: A synthesis of critical steps in the implementation process. *American Journal of Community Psychology*, *50*(3–4), 462–480. doi.org/10.1007/s10464-012-9522-x.
- Michie, S., Richardson, M., Johnston, M., Abraham, C., Francis, J., Hardeman, W., ... Wood, C. (2013). The behavior change technique taxonomy (v1) of 93 hierarchically clustered techniques: building an international consensus for the reporting of behavior change interventions. *Annals of Behavioral Medicine*, *46*(1), 81–95. doi.org/10.1007/s12160-013-9486-6
- Michie, S., van Stralen, M., & West, R. (2011). The behaviour change wheel: a new method for characterising and designing behaviour change interventions. *Implementation Science*, *6*(42). doi.org/10.1186/1748-5908-6-42
- Miles, M., Huberman, A., & Saldana, J. (2014). *Qualitative data analysis: a methods sourcebook* (3rd ed.). Thousand Oaks, CA: Sage Publishing.
- Ministry of Health and Long-Term Care. (2018). Family Health Teams - Ministry Programs - Health Care Professionals - Government of Ontario - Ministry of Health and Long-Term Care. Retrieved from <http://www.health.gov.on.ca/en/pro/programs/fht/>
- Moore, J. E., Mascarenhas, A., Bain, J., & Straus, S. E. (2017). Developing a comprehensive definition of sustainability. *Implementation Science*, *12*(110). doi.org/doi.org/10.1186/s13012-017-0637-1
- Morley, J., Vellas, B., Abellan van Kan, G., Anker, S., Bauer, J., Bernabei, R., & Walston, J. (2013). Frailty consensus: A call to action. *Journal of the American Medical Directors Association*, *14*(6), 392–397. doi.org/10.1016/j.jamda.2013.03.022
- Mowe, M., Bosaeus, I., Rasmussen, H., Kondrup, J., Unosson, M., & Irtun, Ø. (2006). Nutritional routines and attitudes among doctors and nurses in Scandinavia: A questionnaire based survey. *Clinical Nutrition*, *25*(3), 524–532. doi.org/10.1016/j.clnu.2005.11.011

- Mueller, C., Compher, C., Ellen, D., & American Society for Parenteral and Enteral Nutrition Directors, (A.S.P.E.N.) Board. (2011). A.S.P.E.N. clinical guidelines: Nutrition screening, assessment, and intervention in adults. *Journal of Parenteral and Enteral Nutrition*, 35(1), 16–24.
doi.org/10.1177/01486071110389335.
- Murray, E., Treweek, S., Pope, C., MacFarlane, A., Ballini, L., Dowrick, C., ... May, C. (2010). Normalisation process theory: a framework for developing, evaluating and implementing complex interventions. *BMC Medicine*, 8(63).
doi.org/10.1186/1741-7015-8-63
- Naithani, S., Thomas, J., Whelan, K., Morgan, M., & Gulliford, M. (2009). Experiences of food access in hospital. A new questionnaire measure. *Clinical Nutrition*, 28(6), 625–630. doi.org/10.1016/j.clnu.2009.04.020
- National Institute for Health and Care Excellence. (2018). Nutrition support in adults overview - NICE Pathways. Retrieved September 26, 2018, from <https://pathways.nice.org.uk/pathways/nutrition-support-in-adults>
- Ng, T. P., Feng, L., Nyunt, M. S. Z., Feng, L., Niti, M., Tan, B. Y., ... Yap, K. B. (2015). Nutritional, physical, cognitive, and combination interventions and frailty reversal among older adults: a randomized controlled trial. *The American Journal of Medicine*, 128(11), 1225–1236.e1.
doi.org/10.1016/j.amjmed.2015.06.017
- Niven, D. J., Mrklas, K. J., Holodinsky, J. K., Straus, S. E., Hemmelgarn, B. R., Jeffs, L. P., & Stelfox, H. T. (2015). Towards understanding the de-adoption of low-value clinical practices: a scoping review. *BMC Medicine*, 13, 255.
doi.org/10.1186/s12916-015-0488-z
- North East LHIN. (2018). North East Local Health Integration Network (LHIN). Retrieved July 2, 2018, from <http://www.nelhin.on.ca/primarycare.aspx>
- North East Local Health Integration Network. (2018). Stay on Your Feet. Retrieved July 13, 2018, from <http://www.nelhin.on.ca/stayonyourfeet.aspx>
- Oandasan, I. F., Gotlib Conn, L., Lingard, L., Karim, A., Jakubovicz, D., Whitehead,

- C., ... Reeves, S. (2009). The impact of space and time on interprofessional teamwork in Canadian primary health care settings: implications for health care reform. *Primary Health Care Research & Development*, 10(02), 151.
doi.org/10.1017/S1463423609001091
- Palmer, M., & Huxtable, S. (2015). Aspects of protected mealtimes are associated with improved mealtime energy and protein intakes in hospitalized adult patients on medical and surgical wards over 2 years. *European Journal of Clinical Nutrition*, 69(8), 961–965. doi.org/10.1038/ejcn.2015.87
- Parmelli, E., Flodgren, G., Schaafsma, M. E., Baillie, N., Beyer, F. R., & Eccles, M. P. (2011). The effectiveness of strategies to change organisational culture to improve healthcare performance. *Cochrane Database of Systematic Reviews*, (1), CD008315. doi.org/10.1002/14651858.CD008315.pub2
- Patton, M. Q. (2002). *Qualitative research and evaluation methods* (3rd ed.). Thousand Oaks, CA: Sage Publication.
- Payette, H., & Shatenstein, B. (2005). Determinants of healthy eating in community-dwelling elderly people. *Canadian Journal of Public Health*, 96(3), 27–31.
doi.org/10.17269/CJPH.96.1502
- Pearson, C., St-Arnaud, J., & Geran, L. (2014). *Understanding seniors' risk of falling and their perception of risk*. *Statistics Canada*.
- Pennington, J., & McWhirter, C. (1994). Incidence and recognition of malnutrition in hospital. *British Medical Journal*, 308(6934), 945–948.
- Plonien, C., & Williams, M. (2015). Stepping Up Teamwork via TeamSTEPPS. *Association of PeriOperative Registered Nurses (AORN) Journal*, 101(4), 465–470. doi.org/10.1016/j.aorn.2015.01.006
- Power, L., Mullally, D., Gibney, E. R., Clarke, M., Visser, M., Volkert, D., ... Corish, C. A. (2018). A review of the validity of malnutrition screening tools used in older adults in community and healthcare settings – A MaNuEL study. *Clinical Nutrition ESPEN*, 24, 1–13. doi.org/10.1016/j.clnesp.2018.02.005
- Prasad, V., & Ioannidis, J. P. (2014). Evidence-based de-implementation for

contradicted, unproven, and aspiring healthcare practices. *Implementation Science*, 9(1). doi.org/10.1186/1748-5908-9-1

- Proctor, E., Luke, D., Calhoun, A., McMillen, C., Brownson, R., McCrary, S., & Padek, M. (2015). Sustainability of evidence-based healthcare: research agenda, methodological advances, and infrastructure support. *Implementation Science*, 10(88). doi.org/10.1186/s13012-015-0274-5
- Ramage-Morin, P., & Garriguet, D. (2013). Nutritional risk among older Canadians. *Health Reports*, 24(3), 3–13.
- Ramage-Morin, P., Gilmour, H., & Rotermann, M. (2017). Nutritional risk, hospitalization and mortality among community-dwelling Canadians aged 65 or older. *Health Reports*, 28(9), 17–27.
- Ramprasad, C., Tamariz, L., Garcia-Barcena, J., Nemeth, Z., & Palacio, A. (2017). The use of tablet technology by older adults in health care settings—is it effective and satisfying? a systematic review and meta analysis. *Clinical Gerontologist*, 1–10. doi.org/10.1080/07317115.2017.1322162
- Rasmussen, H., Holst, M., & Kondrup, J. (2010). Measuring nutritional risk in hospitals. *Clinical Epidemiology*, 2, 209–216. doi.org/10.2147/CLEP.S11265
- Rasmussen, H., Kondrup, J., Ladefoged, K., & Staun, M. (1999). Clinical nutrition in danish hospitals: a questionnaire-based investigation among doctors and nurses. *Clinical Nutrition*, 18(3), 153–158. doi.org/10.1054/clnu.1999.0003
- Reimer, H., Keller, H., & Tindale, J. (2012). Learning you are “at risk”: seniors’ experiences of nutrition risk screening. *European Journal of Ageing*, 9(1), 81–89. doi.org/10.1007/s10433-011-0208-2
- Ross, L. J., Mudge, A. M., Young, A. M., & Banks, M. (2011). Everyone’s problem but nobody’s job: Staff perceptions and explanations for poor nutritional intake in older medical patients. *Nutrition & Dietetics*, 68, 41–46. doi.org/10.1111/j.1747-0080.2010.01495.x
- Rosser, W., Colwill, J., Kasperski, J., & Wilson, L. (2011). Progress of Ontario’s Family Health Team model: a patient-centered medical home. *Annals of Family*

Medicine, 9(2), 165–171. doi.org/10.1370/afm.1228

- Rubenstein, L. (2006). Falls in older people: epidemiology, risk factors and strategies for prevention. *Age and Ageing*, 35(suppl_2), ii37-ii41. doi.org/10.1093/ageing/afl084
- Rubenstein, L., & Josephson, K. (2002). The epidemiology of falls and syncope. *Clinics in Geriatric Medicine*, 18(2), 141–158.
- Rubenstein, L., Vivrette, R., Harker, J., Stevens, J., & Kramer, B. (2011). Validating an evidence-based, self-rated fall risk questionnaire (FRQ) for older adults. *Journal of Safety Research*, 42(6), 493–499. doi.org/10.1016/j.jsr.2011.08.006
- Russell, C. A., & Elia, M. (2014). *Nutrition screening surveys in hospitals in the UK, 2007- 2011*. Retrieved from www.bapen.org.uk
- Sahyoun, N., Zhang, X., & Serdula, M. (2006). Barriers to the consumption of fruits and vegetables among older adults. *Journal of Nutrition for the Elderly*, 24(4), 5–21. doi.org/10.1300/J052v24n04_03
- Salas, E., Diaz Granados, D., Klein, C., Burke, C., Stagl, K., Goodwin, G., & Halpin, S. (2008). Does team training improve team performance? a meta-analysis. *Human Factors: The Journal of the Human Factors and Ergonomics Society*, 50(6), 903–933. doi.org/10.1518/001872008X375009
- Salas, E., Shuffler, M., Thayer, A., Bedwell, W., & Lazzara, E. (2015). Understanding and improving teamwork in organizations: a scientifically based practical guide. *Human Resource Management*, 54(4), 599–622. doi.org/10.1002/hrm.21628
- Salas, E., Sims, D., & Burke, C. (2005). Is there a “Big Five” in Teamwork? *Small Group Research*, 36(5), 555–599. doi.org/10.1177/1046496405277134
- San Martín-Rodríguez, L., Beaulieu, M.-D., D’Amour, D., & Ferrada-Videla, M. (2005). The determinants of successful collaboration: A review of theoretical and empirical studies. *Journal of Interprofessional Care*, 19(sup1), 132–147. doi.org/10.1080/13561820500082677
- Scheirer, M. A. (2005). Is sustainability possible? A review and commentary on

- empirical studies of program sustainability. *American Journal of Evaluation*, (3), 320. doi.org/10.1177/1098214005278752
- Schell, S., Luke, D., Schooley, M., Elliott, M., Herbers, S., Mueller, N., & Bungler, A. (2013). Public health program capacity for sustainability: a new framework. *Implementation Science*, 8(1), 15. doi.org/10.1186/1748-5908-8-15
- Scott, T., Mannion, R., Davies, H., & Marshall, M. (2003). Implementing culture change in health care: theory and practice. *International Journal for Quality in Health Care*, 15(2), 111–118. doi.org/10.1093/intqhc/mzg021
- Shaw, J., Tepper, J., & Martin, D. (2018). From pilot project to system solution: innovation, spread and scale for health system leaders. *BMJ Leader*, 2(3), 87–90. doi.org/10.1136/leader-2017-000055
- Shelton, R. C., Cooper, B. R., & Stirman, S. W. (2018). The sustainability of evidence-based interventions and practices in public health and health care. *Annual Review of Public Health*, 39, 55–76. doi.org/10.1146/annurev-publhealth
- Sheppard, F., Williams, M., & Klein, V. R. (2013). TeamSTEPPS and patient safety in healthcare. *Journal of Healthcare Risk Management*, 32(3), 5–10. doi.org/10.1002/jhrm.21099
- Silver, H. J., Pratt, K. J., Bruno, M., Lynch, J., Mitchell, K., & McCauley, S. M. (2018). Effectiveness of the Malnutrition Quality Improvement Initiative on practitioner malnutrition knowledge and screening, diagnosis, and timeliness of malnutrition-related care provided to older adults admitted to a tertiary care facility: a pilot study. *Journal of the Academy of Nutrition and Dietetics*, 118(1), 101–109. doi.org/10.1016/j.jand.2017.08.111
- Soo, S., Berta, W., & Baker, G. R. (2009). Role of champions in the implementation of patient safety practice change. *Healthcare Quarterly*, 12, 123–128.
- Southgate, K. M., Keller, H. H., & Reimer, H. D. (2010). Determining knowledge and behaviour change: after nutrition screening among older adults. *Canadian Journal of Dietetic Practice and Research*, 71(3), 128–133. doi.org/10.3148/71.3.2010.128

- Stevenson Rowan, M., Hogg, W., & Huston, P. (2007). Integrating public health and primary care. *Healthcare Policy; Politiques de Sante*, 3(1), e160-81.
- Stirman, S. W., Kimberly, J., Cook, N., Calloway, A., Castro, F., & Charns, M. (2012). The sustainability of new programs and innovations: a review of the empirical literature and recommendations for future research. *Implementation Science*, 7(1), 17. doi.org/10.1186/1748-5908-7-17
- Straus, S., Tetroe, J., & Graham, I. D. (2013). *Knowledge translation in health care. Moving from evidence to practice. Selecting, tailoring, and implementing knowledge translation interventions*. (2nd ed.). Oxford: Wiley-Blackwell BMJ Books.
- Tappenden, K., Quatrara, B., Parkhurst, M., Malone, A., Fanjiang, G., & Ziegler, T. (2013). Critical role of nutrition in improving quality of care: an interdisciplinary call to action to address adult hospital malnutrition. *Journal of Parenteral and Enteral Nutrition*, 37(4), 482–497. doi.org/10.1177/0148607113484066.
- Taylor, M. J., McNicholas, C., Nicolay, C., Darzi, A., Bell, D., & Reed, J. E. (2014). Systematic review of the application of the plan-do-study-act method to improve quality in healthcare. *BMJ Quality & Safety*, 23(4), 290–298. doi.org/10.1136/bmjqs-2013-001862.
- Tricco, A. C., Ashoor, H. M., Cardoso, R., MacDonald, H., Cogo, E., Kastner, M., ... Straus, S. E. (2016). Sustainability of knowledge translation interventions in healthcare decision-making: a scoping review. *Implementation Science*, 11(1), 55. doi.org/10.1186/s13012-016-0421-7
- Valaitis, R., Laur, C., Keller, H., Butterworth, D., & Hotson, B. (2017). Need for the Integrated Nutrition Pathway for Acute Care (INPAC): gaps in current nutrition care in five Canadian hospitals. *BMC Nutrition*, 3(60). doi.org/10.1186/s40795-017-0177-8
- Valaitis, R., Meagher-Stewart, D., Martin-Misener, R., Wong, S., MacDonald, M., & O'Mara, L. (2018). Organizational factors influencing successful primary care and public health collaboration. *BMC Health Services Research*, 18(1), 420.

doi.org/10.1186/s12913-018-3194-7

Van Asselt, D. Z. B., van Bokhorst-de van der Schüren, M. A., van der Cammen, T. J. M., Disselhorst, L. G. M., Janse, A., Lonterman-Monasch, S., ... Van Asselt DZB van Bokhorst-de van der Schueren MAE. (2012). Assessment and treatment of malnutrition in Dutch geriatric practice: consensus through a modified Delphi study. *Age and Ageing*, 41(3), 399–404.

doi.org/10.1093/ageing/afs005

van Beurden, E., Kempton, A., Sladden, T., & Garner, E. (1998). Designing an evaluation for a multiple-strategy community intervention: the North Coast Stay on Your Feet program. *Australian and New Zealand Journal of Public Health*, 22(1), 115–119.

Vanderwee, K., Clays, E., Bocquaert, I., Verhaeghe, S., Lardennois, M., Govert, M., & Defloor, T. (2010). Malnutrition and nutritional care practices in hospital wards for older people. *Journal of Advanced Nursing*, 67(4), 736–746.

doi.org/10.1111/j.1365-2648.2010.05531.x

Vellas, B., Cesari, M., & Li, J. (2016). *The White Book of Frailty*. (Retrieved). <http://www.garn-network.org/documents/whitebookonfrailty-USversion.pdf>.

Vivanti, A. P., McDonald, C. K., Palmer, M. A., & Sinnott, M. (2009). Malnutrition associated with increased risk of frail mechanical falls among older people presenting to an emergency department. *Emergency Medicine Australasia*, 21(5), 386–394. doi.org/10.1111/j.1742-6723.2009.01223.x

Weiner, B. J. (2009). A theory of organizational readiness for change. *Implementation Science*, 4(67). doi.org/10.1186/1748-5908-4-67

Weiner, B. J., Belden, C. M., Bergmire, D. W., & Johnston, M. (2011). The meaning and measurement of implementation climate. *Implementation Science*, 6(78). doi.org/10.1186/1748-5908-6-78

Westergren, A., Hagell, P., & Sjödaahl Hammarlund, C. (2014). Malnutrition and risk of falling among elderly without home-help service — A cross sectional study. *The Journal of Nutrition, Health & Aging*, 18(10), 905–911.

doi.org/10.1007/s12603-014-0469-5

Whitehead, J. (1986). *The design and analysis of clinical experiments* (1st ed.). New York: John Wiley Sons.

Wilson, J. M. G., & Junglier, G. (1968). *Principles and practice of screening for disease*. Accessed Nov 25, 2016. Retrieved from <http://apps.who.int/iris/handle/10665/37650>

World Health Organization. (2008). A guide to developing knowledge, attitude and practice surveys. Retrieved May 25, 2016, from http://apps.who.int/iris/bitstream/10665/43790/1/9789241596176_eng.pdf

Zisberg, A., Shadmi, E., Gur-Yaish, N., Tonkikh, O., & Sinoff, G. (2015). Hospital-associated functional decline: the role of hospitalization processes beyond individual risk factors. *Journal of the American Geriatrics Society*, 63(1), 55–62. doi.org/10.1111/jgs.13193

Appendix

Appendix A: Final Malnutrition KAP questionnaire

Malnutrition Knowledge, Attitudes and perceived Practices (M-KAP)

© C Laur, H Marcus, S Ray and HH Keller. 2017

This malnutrition knowledge, attitudes and practices (M-KAP) questionnaire is an important way to determine the knowledge and perceptions of hospital staff, and compare change over time with respect to patient malnutrition and nutrition care. These questions are based on the activities of the Integrated Nutrition Pathway for Acute Care (INPAC). This questionnaire can easily be placed on an online survey program or completed as a traditional 'paper and pencil' hardcopy questionnaire. Please acknowledge the original source and copyright in any publications/presentations.

This document includes 3 sections:

1. **Base M-KAP:** To be used to identify current knowledge, attitudes and practices of staff. Completion of M-KAP is useful before starting a quality improvement initiative targeted to nutrition care. Responses can be used to direct change management efforts and areas to focus on when training hospital staff.
2. **Additional questions after an improvement initiative:** If you have embarked on a change management or quality improvement initiative that has involved staff, the M-KAP can be used to identify changes in knowledge, attitudes and practices. In addition to M-KAP, some questions on change efforts may also be useful. These additional questions were used in the More-2-Eat study where INPAC was implemented and M-KAP was used.
3. **Scoring:** The scoring system for each question is provided. You will be able to use individual question scores and change between scores, as well as total knowledge/attitude (KA score), practice score, and total M-KAP score.

Detail about this questionnaire has been published. In these publications you can also compare your hospital score to the total for the 5 More-2-Eat hospitals.

Laur C, Marcus H, Ray S, Keller HH. Measuring hospital staff's knowledge, attitudes and practices with respect to quality nutrition care (2016). *Healthcare*, 4(4),79.

Laur C, Keller H, Curtis L, Douglas P, Murphy J, Ray S. Comparing hospital staff nutrition knowledge, attitudes, and practices before and 1 year after improving nutrition care: results from the More-2-Eat implementation project. *Journal of Parenteral and Enteral Nutrition*. 42(4):786-796

M-KAP

Malnutrition Knowledge, Attitude and Perceived Practices questionnaire.

Thank you for taking the time to complete this questionnaire. It should only take a few minutes of your time. Please complete the following questions to the best of your ability.

About You

1. Which type of hospital unit(s) do you primarily work in? *(Please check all that apply)*

- | | |
|-----------------------------------|---|
| <input type="checkbox"/> Medical | <input type="checkbox"/> Critical Care |
| <input type="checkbox"/> Surgical | <input type="checkbox"/> All other, please identify _____ |

2. You are a(n):

- | | |
|--|---|
| <input type="checkbox"/> Diet Tech | <input type="checkbox"/> Attending Physician |
| <input type="checkbox"/> Registered Nurse | <input type="checkbox"/> Resident |
| <input type="checkbox"/> Registered Practical Nurse/Licensed Practical Nurse | <input type="checkbox"/> Fellow |
| <input type="checkbox"/> Nurse Practitioner/Clinical Nurse Specialist | <input type="checkbox"/> Physiotherapist/Occupational Therapist |
| <input type="checkbox"/> Health Care Aide/Personal Support Worker | <input type="checkbox"/> Speech-Language Pathologist |
| | <input type="checkbox"/> Other, please identify_____ |

3. You are an employee of:

- The hospital
- A nursing agency
- Other, please identify_____

4. Are you?

- | | |
|------------------------------------|--|
| <input type="checkbox"/> Full time | <input type="checkbox"/> Casual |
| <input type="checkbox"/> Part time | <input type="checkbox"/> Other, please identify_____ |

5. How many years you have been practicing:

(TIP: This is overall, not just in your current hospital.)

- | | |
|-------------------------------------|--------------------------------------|
| <input type="checkbox"/> < 2 years | <input type="checkbox"/> 11-20 years |
| <input type="checkbox"/> 2-5 years | <input type="checkbox"/> 21-30 years |
| <input type="checkbox"/> 6-10 years | <input type="checkbox"/> 31+ years |

6. Which age group do you fall into?

- | | |
|--------------------------------------|--------------------------------------|
| <input type="checkbox"/> < 30 years | <input type="checkbox"/> 50-59 years |
| <input type="checkbox"/> 30-39 years | <input type="checkbox"/> 60+ years |
| <input type="checkbox"/> 40-49 years | |

7. What is your self-identified gender?

- Male Female Other

<i>Please rate your agreement with each of the following statements</i>	Strongly Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Strongly Agree
1. Nutrition is not important to a patient's recovery in hospital*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. All patients should be screened for malnutrition at admission to hospital	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. A patient's weight should be taken at admission	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. All staff involved in patient care can help set up the meal tray, open packages etc.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. All staff involved in patient care can provide hands-on assistance to eat when necessary	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Malnutrition is a high priority at this hospital	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Giving malnourished patients an adequate amount of food will enhance their recovery	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. All malnourished patients require individualized treatment by a dietitian *	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. I have an important role in promoting a patient's food intake	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Monitoring food intake is a good way to determine a patient's nutritional status	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

<i>Please rate your agreement with each of the following statements</i>	Strongly Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Strongly Agree
11. Interruptions during the meal can negatively affect patient food intake	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Promoting food intake to a patient is every staff member's job	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Nutritional care of a patient is only the role of the dietitian*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Malnourished patients who are discharged need follow up in the community	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. A patient's weight is not necessary at discharge*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

<i>Please rate your agreement with the following statements</i>	Strongly Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Strongly Agree
16. I always know <i>when</i> to refer to a dietitian	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17. I know <i>how</i> to refer to a dietitian	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18. I know when a patient is at risk of malnutrition or is malnourished	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19. I know some strategies to support food intake at meals	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20. I need more training to better support the nutrition needs of my patients	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

<i>Please rate how often you DO the following</i>	Never	Sometimes	Often	Always	N/A
1. Check the patient has all that they need to eat (e.g., dentures, glasses)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Help a patient with opening food packages	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Assist a patient to eat if they need help	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. If permitted, encourage a patient's family to bring food from home for the patient	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Visit and check a patient during their meal time to see how well they are eating	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Realign my tasks so I do not interrupt a patient during their meal time	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. At discharge of a malnourished patient, provide the patient or family with nutrition education material	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Thank you for taking the time to complete this questionnaire.

Additional M-KAP Questions

These questions are to include along with baseline questions, AFTER you have worked towards improving nutrition care activities.

1. Have you noticed any change in nutrition care practice (packages opened for patients, provision of eating assistance, fewer mealtime interruptions etc.) since [date]?

- Yes – positive changes noticed
- Yes – negative changes noticed
- Both positive and negative changes noticed
- No - no change noticed

If you noticed a change, what have you noticed: [text box]

2. On a scale of 1 (negative/decreased) to 10 (positive/increased), rank the impact of the changes you noticed on...

a) Patients' overall health and recovery

1 2 3 4 5 6 7 8 9 10 No change

1 = Negative effect

5 = Neutral/did not influence

10 = Positive effect

b) Your job satisfaction

1 2 3 4 5 6 7 8 9 10 No change

1 = Decreased satisfaction

5 = Neutral/did not influence

10 = Increased satisfaction

c) Overall value to the unit

1 2 3 4 5 6 7 8 9 10 No change

1 = Negative effect

5 = Neutral/did not influence

10 = Positive effect

3. On a scale of 1 (lower) to 10 (higher), rate the focus of this unit on nutrition care as compared to [date]?

1 2 3 4 5 6 7 8 9 10

1 = A lot less focused on nutrition care

5 = No change

10 = A lot more focused on nutrition care

4. On a scale of 1 (low/poor) to 10 (high), rate how supported you felt to make changes to nutrition care since [date]?

1 2 3 4 5 6 7 8 9 10

1 = Less supported

5 = No change in level of support

10 = More supported

5. What proportion of patients at your hospital are:	None	Less than 10% of patients	11-49% of patients	50-74% of patients	75-100% of patients	Don't Know
1. Screened for nutrition risk?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Referred to a dietitian if they are thought to be at nutrition risk	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Received appropriate nutrition care following identification of nutrition risk	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

6. Please rate your agreement with each of the following statements	Strongly Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Strongly Agree
1. I was aware that changes were occurring regarding nutrition care on the study unit	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. I was asked what changes to nutrition care I wanted to see on the unit	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. I was involved in planning and making changes to nutrition care on the unit	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

M-KAP Scoring

Knowledge/Attitude Score

For the questions: *Please rate your agreement with each of the following statements:*

Strongly Disagree = 1

Somewhat Disagree = 2

Neutral = 3

Somewhat Agree = 4

Strongly Agree = 5

NOTE: The * questions are to be reverse coded (Strongly Disagree = 5, Somewhat Disagree = 4, Neutral = 3, Somewhat Agree = 2, Strongly Agree = 1).

KA Total: Add the scores for questions 1-20 to get the total Knowledge/Attitude score.

Practice Scores

For the questions: *Please rate how often you DO the following:*

Never = 1

Sometimes = 2

Often = 3

Always = 4

N/A = 1

Blank = 1

P Total: Add the scores for questions 20-27 to get the total Practice score.

M-KAP Total: Add KA Total + P Total

Ranking Questions

Ranking impact of change: Select what you qualify as “high” and “low” scores. For More-2-Eat, a score of 7 or above was considered a high/positive.

Appendix B: Ethics approval for reliability testing of the knowledge, attitude, and practice questionnaire at Grand River Hospital (THREB# 2015-0571) and from the University of Waterloo (ORE #20730).



TRI-HOSPITAL RESEARCH ETHICS BOARD (THREB)

(A shared service for Cambridge Memorial Hospital, Grand River Hospital and St. Mary's General Hospital)
 Grand River Hospital, Rm. K503, Kaufman Building, 835 King Street West, Kitchener, Ontario, N2G 1G3
 Tel: (519) 749-4300 ext. 5367 Fax: (519) 749-4274

<p>Tri-Hospital Research Ethics Board Membership</p> <p>Michael Coughlin, PhD Chair, Tri-Hospital Research Ethics Board</p> <p>Edmond Chouinard, MD Oncologist</p> <p>Lydia Chudleigh, BAsc, MBA, VP Quality Performance Management</p> <p>Lynne Julius HBScN, MHS Executive Director Clinical Program Development</p> <p>Valerie Longo-Wild, RN-EC, MN</p> <p>Tina Mah, PhD, BS-OT, MBA, VP Planning & Performance Management</p> <p>Paul Motz, BSc Community Member</p> <p>Victoria Sills, BScPhm</p> <p>Amy Stahlke, BA, LLB, Community Member</p> <p>Noela Vorsteveid, BScPharm</p> <p>The Tri-Hospital Research Ethics Board operates in compliance with the Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans (2010), the ICH Good Clinical Practice Guidelines and Division 5 Health Canada Food and Drug Regulations.</p>	<p>June 10, 2015</p> <p style="text-align: right;">CERTIFICATE OF APPROVAL THREB #2015-0571</p> <p>Heather Keller PhD RD University of Waterloo Dept Kinesiology 200 University Ave West Waterloo, ON. N2L 3G1</p> <p>Dear Ms. Keller and Ms. Marcus, THREB# 2015-0571: Reliability testing of a survey of knowledge, attitudes and perceived practices of hospital staff for the detection, prevention and treatment of malnutrition. GRH</p> <hr/> <p>Study Identification Number: THREB #2015-0571</p> <ol style="list-style-type: none"> THREB Application for Review received May 11, 2015 Administrative approval received May 06, 2015 GRH Consent of Participant, Version 5.0 Dated: June 1, 2015 Survey of Knowledge, attitudes and perceived practices – Revised Protocol Version 3.0 Letter of Information, Revised Version 5.0 June 1, 2015 Protocol 3.0 Recruitment Poster Revised Version 1.2 Dated: June 10, 2015 Contact Information sheet for Survey, Version 1.0 Questionnaire: About You, Version 2.0 May 13, 2015 Your Second Questionnaire, Revised Version 2.0 Practice Survey for staff, Version 1.0 Thank you for participating letter, Revised Version 2.0 Budget Summary Version 1.0 <p>Initial Approval Date: June 10, 2015 Anniversary Date for Renewal: June 03, 2016</p> <hr/> <p>Thank you for your application requesting approval of the above research study. Members of the Tri-Hospital Research Ethics Board (THREB) reviewed your application at the June 03, 2015 meeting and approved the study with some conditions. Those conditions have now been met and you have final THREB approval for the study. The study is to be reviewed in one year, before the next "Anniversary Date."</p> <p>Approval is granted to conduct the research project in accordance with the above protocol.</p>
---	---

Requirements for ongoing approval include:

- Annual progress reports for review and continued approval of the study by THREB;
- Submission of any changes in the protocol, informed consent documents, information sheets, questionnaires, recruitment posters or other study materials;
- Timely reporting of all local serious adverse events;
- A final report, upon completion of the study, submitted within three months.

If there is a contract or data sharing agreement, the study may not commence until those documents have been finalized. The study is to be reviewed in one year, before the next "Anniversary Date."

NOTE: The above Study Identification Number THREB #2015-0571 has been assigned to your project. Please use this number on all future correspondence.

Please call me if you have any questions.

Sincerely,

Michael D. Coughlin, Ph.D.
 Chair, Tri-Hospital Research Ethics Board

Cc: Betty Devenny, Sarah Laferriere, Celia Laur

UNIVERSITY OF WATERLOO
OFFICE OF RESEARCH ETHICS

Notification of Ethics Clearance of Application to Conduct Research with Human Participants

Principal/Co-investigator: Heather Keller	Department: Kinesiology
Student Investigator: Celia Laur	Department: Health Studies & Gerontology
Student Investigator: Tiffany Got	Department:

ORE File #: 20730

Project Title: Reliability testing of a survey of knowledge, attitudes and perceived practices of hospital staff for the detection, prevention and treatment of malnutrition.

This certificate provides confirmation the above project has been reviewed in accordance with the University of Waterloo's Guidelines for Research with Human Participants and the Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans. This project has received ethics clearance through a University of Waterloo Research Ethics Committee.

Note 1: *This ethics clearance is valid for one year from the date shown on the certificate and is renewable annually. Renewal is through completion and ethics clearance of the Annual Progress Report for Continuing Research (ORE Form 105).*

Note 2: *This project must be conducted according to the application description and revised materials for which ethics clearance has been granted. All subsequent modifications to the project also must receive prior ethics clearance (i.e., Request for Ethics Clearance of a Modification, ORE Form 104) through a University of Waterloo Research Ethics Committee and must not begin until notification has been received by the investigators.*

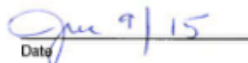
Note 3: *Researchers must submit a Progress Report on Continuing Human Research Projects (ORE Form 105) annually for all ongoing research projects or on the completion of the project. The Office of Research Ethics sends the ORE Form 105 for a project to the Principal Investigator or Faculty Supervisor for completion. If ethics clearance of an ongoing project is not renewed and consequently expires, the Office of Research Ethics may be obliged to notify Research Finance for their action in accordance with university and funding agency regulations.*

Note 4: *Any unanticipated event involving a participant that adversely affected the participant(s) must be reported immediately (i.e., within 1 business day of becoming aware of the event) to the ORE using ORE Form 106. Any unanticipated or unintentional changes which may impact the research protocol must be reported within seven days of the deviation to the ORE using ORE form 107.*


Maureen Nummelin, PhD
Chief Ethics Officer

OR
Julie Joza, MPH
Senior Manager, Research Ethics

OR
Sacha Geer, PhD
Manager, Research Ethics


Date

Copyright © 2000-02 University of Waterloo

Appendix C: Ethics approval for administration of the KAP questionnaire and the focus groups and interviews at the 5 More-2-Eat hospitals the University of Waterloo (ORE#: 20590)

UNIVERSITY OF WATERLOO

<https://oreprod.private.uwaterloo.ca/ethics/form101/ad/reports/certific...>

**UNIVERSITY OF WATERLOO
OFFICE OF RESEARCH ETHICS**

Notification of Ethics Clearance of Application to Conduct Research with Human Participants

Principal/Co-Investigator: Heather Keller	Department: Kinesiology
Principal/Co-Investigator: Lori Curtis	Department: Economics
Student Investigator: Celia Laur	Department: Health Studies & Gerontology
Collaborator: Joel Dubin	Department: Health Studies & Gerontology
Collaborator: Marina Mourtzakis	Department: Kinesiology

ORE File #: 20590

Project Title: More-2-Eat


This certificate provides confirmation the above project has been reviewed in accordance with the University of Waterloo's Guidelines for Research with Human Participants and the Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans. This project has received ethics clearance through a University of Waterloo Research Ethics Committee.

Note 1: *This ethics clearance is valid for one year from the date shown on the certificate and is renewable annually. Renewal is through completion and ethics clearance of the Annual Progress Report for Continuing Research (ORE Form 105).*

Note 2: *This project must be conducted according to the application description and revised materials for which ethics clearance has been granted. All subsequent modifications to the project also must receive prior ethics clearance (i.e., Request for Ethics Clearance of a Modification, ORE Form 104) through a University of Waterloo Research Ethics Committee and must not begin until notification has been received by the investigators.*

Note 3: *Researchers must submit a Progress Report on Continuing Human Research Projects (ORE Form 105) annually for all ongoing research projects or on the completion of the project. The Office of Research Ethics sends the ORE Form 105 for a project to the Principal Investigator or Faculty Supervisor for completion. If ethics clearance of an ongoing project is not renewed and consequently expires, the Office of Research Ethics may be obliged to notify Research Finance for their action in accordance with university and funding agency regulations.*

Note 4: *Any unanticipated event involving a participant that adversely affected the participant(s) must be reported immediately (i.e., within 1 business day of becoming aware of the event) to the ORE using ORE Form 106. Any unanticipated or unintentional changes which may impact the research protocol must be reported within seven days of the deviation to the ORE using ORE form 107.*



Maureen Nummelin, PhD
Chief Ethics Officer

5/25/2015

Date

OR
Julie Joza, MPH
Senior Manager, Research Ethics

Appendix D: Protocol for reliability testing of a survey of knowledge, attitudes and perceived practices of hospital staff for the detection, prevention and treatment of malnutrition.



Reliability testing of a survey of knowledge, attitudes and perceived practices of hospital staff for the detection, prevention and treatment of malnutrition.

Protocol

Local Investigator: Hannah Marcus, Grand River Hospital

Primary Investigator: Heather Keller, University of Waterloo

Doctoral Student: Celia Laur

Undergraduate Student: Tiffany Got

Recruitment

(June/July 2015)

- a) Potential participants will be recruited at a table display in the foyer or cafeteria of GRH during June and July of 2015.
- b) Individuals who approach the table will be asked if they are staff at the hospital and provide direct care to patients.
- c) Potential participants (see inclusion criteria) will be provided verbal and written information about the study procedures. Signed consent will be taken to confirm agreement to both administrations of the questionnaire (at the display table and after 2-weeks).
- d) Inclusion criteria: Diet Tech, Registered Nurse, RPN/LPN, Health Care Aide/Personal support worker, Attending Physician, Resident, and Fellows
- e) Exclusion criteria: visitors, patients or others who show interest in the study but are not clinical staff or those staff who do not have direct contact with patients around their nutrition.
- f) 60 participants are required.

Completion of First Administration of Questionnaire

(June/July 2015)

- a) If the member of hospital staff is interested in participating, and has consented to complete both surveys, they will be provided a hard copy questionnaire to complete and return immediately.
- b) This questionnaire will also collect basic demographic information to understand the sample.
- c) It is estimated that the questionnaire will take less than 10 minutes to complete.
- d) The participants will return the questionnaire and will provide their email address (or mailing address if preferred) for repeat administration of this questionnaire (excluding demographics) approximately two weeks later.

Completion of Second Administration of Questionnaire

(2 weeks after completion of initial questionnaire)

- a) Participants will be sent the second questionnaire via email (or regular mail) for completion. For those sent via regular mail, a postage paid addressed envelope will be enclosed so participants will not incur any personal expenses.
- b) A reminder email (or letter) will be sent twice to encourage complete administration.
- c) In the email return of the questionnaire, participants will be reminded to provide their mailing information to receive their thank you gift certificate.

Compensation

(Sent after completion of second survey)

- a) Upon return of the second questionnaire, participants who completed both administrations of the questionnaire will be sent a thank you letter and a gift certificate valued at \$5 via regular post
- b) Participants who do not submit a second questionnaire, will receive a thank you via email or regular mail.

Analysis

(August 2015)

- a) Data will be analyzed for reliability following collection of all questionnaires. Intra class correlation will be the primary form of analysis, as well as descriptive statistics.

Appendix E: Demographic form for interview and focus group participants (same form for baseline and after a year of INPAC implementation)

More-2-Eat

Demographic Form

1. You are a(n):

- | | |
|--|---|
| <input type="checkbox"/> Dietitian | <input type="checkbox"/> Health Care Aide/Personal Support Worker |
| <input type="checkbox"/> Diet Technician/Diet Assistant | <input type="checkbox"/> Attending Physician |
| <input type="checkbox"/> Food Service | <input type="checkbox"/> Resident |
| <input type="checkbox"/> Food Service Supervisor | <input type="checkbox"/> Fellow |
| <input type="checkbox"/> Registered Nurse | <input type="checkbox"/> Physiotherapist/Occupational Therapist |
| <input type="checkbox"/> Registered Practical Nurse/Licensed Practical Nurse | <input type="checkbox"/> Speech-Language Pathologist |
| <input type="checkbox"/> Nurse Practitioner/Clinical Nurse Specialist | <input type="checkbox"/> Discharge Planner |
| | <input type="checkbox"/> Other, please identify_____ |

2. Which age group do you fall into?

- | | |
|--------------------------------------|--------------------------------------|
| <input type="checkbox"/> < 30 years | <input type="checkbox"/> 50-59 years |
| <input type="checkbox"/> 30-39 years | <input type="checkbox"/> 60+ years |
| <input type="checkbox"/> 40-49 years | |

3. What is your self-identified gender?

- Male
 Female

Appendix F: Interview and focus group script and questions for baseline, after a year of INPAC implementation, and a year after project completion

More-2-Eat

Staff/Management Focus Group/Interview questions

Pre-implementation focus group/interview

Verbal Script: As you are aware, we will be implementing the Integrated Nutrition Pathway for Acute Care (INPAC) on {Name of Unit} over the next year or so. We would like to get your perspective on how to implement this care pathway and any challenges or facilitators that you are aware of. You have received an information letter about the purpose of this focus group/interview. Do you have any questions for me? Your information will be kept confidential. Whatever we discuss in this room needs to be kept in confidence among those participating. Please do not discuss what is said or by whom comments were made after the focus group is done.

We will be providing a summary report to the site implementation team and management to help them with improving nutrition care. This will be a general summary from focus groups and interviews that we are conducting in this hospital. You will in no way be identified to management for participating in this focus group. Do you have any questions? Shall we begin? I will be audio recording this session, so please speak up. We will not transcribe your name or any other identifying information that you provide.

Date: _____ Site Code: _____ FG/I#: _____ of _____ (# people in FG: _____)

More-2-Eat

Baseline Questions

1. What do you think this unit does well in terms of nutritional care?
2. What are the major challenges to providing nutrition care in this hospital?

	Screening	Standard Care	Monitoring Food Intake	Discharge Planning	RD questions re SGA triaging
Facilitators					
Barriers					

Questions

1. In INPAC, we have suggested screening patients at admission by asking them 2 questions about weight change and food intake. What would help to make this change? What might prevent this change?
2. We want all patients to receive standard care, such as having packages opened and being set up to eat. What would help to make this change? What might prevent this change?
3. How can food intake of a patient be monitored? What would help to make this change? What might prevent this change?
4. For RDs – Are you familiar with SGA? Have you been trained? If SGA were to be done for all patients who are screened as at risk, what would help make this change? What might prevent this change?
5. If there was one thing you could change about the way food and nutrition care is provided on this unit, what would it be?
6. When you have made changes to improve care practices in the past, what worked well? What didn't? Why?

Focus Group/Interview Questions

(Post-implementation)

1. Have you noticed any changes in nutrition care practices on this unit/hospital over the past year? (Prompt: packages opened for patients, eating assistance provided more regularly, fewer mealtime interruptions, identification of patients needing nutrition care etc.)

If yes, changes observed

- a) How have these changes impacted what you do **day-to-day**? (benefit or detriment)
- b) How can these changes become '**routine**' and the norm for care?
- c) Which changes had the biggest impact (benefit or detriment) **to patients** and why?
- d) What/who supported these changes? How did they support these changes?
- e) What else would you like to change?
- f) What do you think would be most important for **another unit** to do/change if they wanted to improve their nutrition care?

If no changes observed, explain the M2E project and objectives (if this triggers memory revert to questions above).

- a) What do you think should be done to better identify malnourished patients and improve food intake?
 - b) Why do you think M2E changes at [unit/hospital name] were not observable to you?
2. FOR GENERAL STAFF/ FOCUS GROUP ONLY: Have you received any nutrition **education**, in-services etc. in the past year?
 - a) If so, who provided the education?
 - b) What was the purpose of the training?
 - c) How did you change your practice after the training?
 - d) Are you still doing those practices?

(Prompt: how to screen, how to monitor food intake, increased awareness of problem of malnutrition)

3. FOR ALL

- a) What should be included in a **toolkit** that will help others to improve their nutrition care? What resources or tools would help hospitals to integrate INPAC into their routine of care?
- b) After M2E, how can the unit/hospital keep the momentum going? How will you make sure the changes are **sustained**?

4. *Specific interview questions for RAs, champions, Site Implementation Team members or others intimately involved in the M2E project:*

- a) INTERVIEW ONLY: What worked especially well to improve nutrition care on the unit? What would you do **differently next time**? (Prompts: advice, tools, resources [including key personnel] etc.)
- b) INTERVIEW ONLY: What were the big factors that influenced implementation of improved nutrition care practices in this unit/hospital? (Prompt: policies, accreditation results etc.)

Prompts

- Use hypotheticals (policy; no RAs etc.)
- What if there was a policy? Would the same processes occur?
- What if nutrition care/screening was considered as part of performance reviews?

Sustainability Interview Questions

(A year after project completion)

Role:

Age: (< 30 years; 30-39 years; 40-49 years; 50-59 years; 60+ years)

1. It has been a year since we last did interviews with More-2-Eat sites. Do you think nutrition care, particularly malnutrition, is still an important part of patient care on the unit? In the hospital? The region?
 - a. How do you know?
 - b. Why?

2. Do you think the changes that were made to improve nutrition care (i.e., nutrition screening, SGA) in your unit are a part of the routine? How do you know?
 - a. How did you encourage these activities to become part of the routine?
 - b. How did what you implemented initially evolve or change in the past year? (i.e., was not working so needed to change or be removed; changes requested through staff feedback)
 - c. If not, why do you think they are no longer part of the routine?

3. How did any of your early success (i.e., nutrition screening) affect your ability to sustain the changes or spread throughout the hospital? How did this early success effect the implementation team? The unit staff?

4. What happened to the implementation team after M2E ended? (Evolve? Disband?)
 - a. If it is still together, how did it evolve over the past year?
 - b. What impact did this (staying as a team or disbanding) have on the unit staff? (Encouraged the unit to take ownership of nutrition care? Nutrition was forgotten?)

5. What strategies did you use to try to maintain focus on nutrition after the year of improvements? (i.e. keep up the momentum and motivation of the implementation team and the unit staff)
 - a. Which strategies were effective? Why?

- b. Which strategies were NOT effective? Why?
 - c. Were the strategies different whether you were encouraging the implementation team, vs encouraging the staff? How so?
 - d. Are there any strategies you wish you did differently? Why?
 - e. Are there any more strategies you are planning on implementing? If so, which ones?
6. Did anyone continue to collect data to monitor progress after the end of official data collection? (i.e., do you still use the INPAC audit? Your own audit tools?)
 - a. If so, what do you collect?
 - b. How do you use these results?
 - c. Does anyone else see the results (staff, management etc.)? How?
 7. Did you take advantage of any new or existing opportunities in order to spread nutrition care throughout your unit or hospital? (i.e., adding a nutrition component to a new initiative)
 - a. If so, how did you use these opportunities?
 8. Do you think the “champion” role has been sustained? Why or why not?
 - a. How has this [your] role evolved since you started?
 - b. What is the impact of this champion (or lack of a champion)?
 9. In the past year, how have you engaged with stakeholders (i.e. staff, management, patients, families) to understand their views, expertise, and ideas for improvement for nutrition care?
 - a. Have unit staff been involved in driving, implementing, or maintaining the changes to nutrition care? How?
 - b. Do you think people feel they are part of the change and have an important role to play? If so, how? If not, why not?
 10. Do you have support from [other] leadership or stakeholders at the hospital or regional level to continue with improvements to nutrition care activities?
 - a. If so, how do they provide this support?
 - b. If not, what were the barriers to the support?
 - i. How do you think these barriers affected the nutrition care on the unit?
 11. Have there been any changes in nutrition policy, performance measures, regulations, or guidelines, in your unit/hospital/region?

- a. If so, what were the changes?
 - b. How did these affect the care provided?
 - i. Do you think your unit's focus on nutrition has influenced these policy changes?
 - c. If not, why not?
12. Is there anything you would have done differently to maintain momentum, sustain the changes, or influence policy? If so, what?
13. What are your goals or next steps regarding nutrition care in the hospital?
14. Do you have any advice for other hospitals looking to improve nutrition care?
15. Is there anything else you think we should know about your hospital or unit?

If the interviewee has not already discussed the current status of each activity, ask specifically about:

- Nutrition Screening with the Canadian Nutrition Screening Tool
 - Is CNST still being used on this unit?
 - Is CNST being used anywhere else in the hospital? If so, when did this start? If not, are there plans to expand?
 - Are the screening questions still being asked?
 - How do you know if the questions are being asked (audits etc.)?
- Nutrition Assessment with the subjective global assessment
 - Is SGA still being used?
 - Are dietitians across the hospital using SGA?
- Is the unit monitoring food intake?
 - If so, how?
 - How is low intake flagged for appropriate care?
- Are regular weights taken?
 - If so, how/when?
 - How did you get this into the routine?
- Is the "Medpass" program still being used?
 - What have you done to try to sustain it?
- What is being done to include nutrition in the discharge plans?
 - How have these plans evolved over the past year

Appendix G: Ethics approval from the University of Waterloo for the Family Health Team study

5/4/2018

UNIVERSITY OF WATERLOO

UNIVERSITY OF WATERLOO OFFICE OF RESEARCH ETHICS

Notification of Ethics Clearance of Application to Conduct Research with Human Participants

Faculty Supervisor: Heather Keller **Department:** Kinesiology
Student Investigator: Celia Laur **Department:** School of Public Health and Health Systems

ORE File #: 22965

Project Title: Understanding falls and nutrition risk screening in Family Health Teams.

Human Research Ethics Committee (HREC) Clinical Research Ethics Committee (CREC) is pleased to inform you the above named study has been reviewed and given ethics clearance.

Approval to start this research is effective on the ethics clearance date which is: 5/4/2018 (m/d/y)

University of Waterloo Research Ethics Committees are composed in accordance with, and carry out their functions and operate in a manner consistent with, the institution's guidelines for research with human participants, the Tri-Council Policy Statement for the Ethical Conduct for Research Involving Humans (TCPS, 2nd edition), International Conference on Harmonization: Good Clinical Practice (ICH-GCP), the Ontario Personal Health Information Protection Act (PHIPA), the applicable laws and regulations of the province of Ontario. Both Committees are registered with the U.S. Department of Health and Human Services under the Federal Wide Assurance, FWA00021410, and IRB registration number IRB00002419 (HREC) and IRB00007409 (CREC).

The above named study is to be conducted in accordance with the submitted application (Form 101/101A) and the most recent approved versions of all supporting materials.

Ethics clearance for this study is valid until: 5/4/2019 (m/d/y). Multi-year research must be renewed at least once every 12 months unless a more frequent review has otherwise been specified by the Research Ethics Committee (Form 105). Studies will only be renewed if the renewal report is received and approved before the expiry date. Failure to submit renewal reports by the expiry date will result in the investigators being notified ethics clearance has been suspended and Research Finance being notified the ethics clearance is no longer valid.

Level of review:

Delegated review
 Full committee review meeting date: _____ (m/d/y)

Signed on behalf of: HREC Chair HREC Vice-Chair CREC Chair CREC Vice-Chair


 Julie Joza, Acting Chief Ethics Officer, jjoza@uwaterloo.ca, ext. 38535
 Heather Root, Senior Manager, heather.root@uwaterloo.ca, ext. 30469
 Karen Pieters, Manager, kpieters@uwaterloo.ca, ext. 30495
 Joanna Eidse, Research Ethics Advisor, jeidse@uwaterloo.ca, ext. 37163
 Erin Van Der Meulen, Research Ethics Advisor, ervandermeulen@uwaterloo.ca, ext. 37046

This is an official document. Retain for your files.
You are responsible for obtaining any additional institutional approvals that might be required to complete this study.

Appendix H: Demographic forms to be completed by Family Health Team staff/management; LHIN Management/Screening Champions; and Family Health Team Senior Clients

Demographic form to be completed by Family Health Team Staff and Management

Interview Number: _____ (completed by CL)

Family Health Team name: _____ Date: _____

1. You are a(n):

- | | |
|---|--|
| <input type="checkbox"/> Dietitian | <input type="checkbox"/> Care Coordinator |
| <input type="checkbox"/> Physician | <input type="checkbox"/> Management |
| <input type="checkbox"/> Registered Nurse | <input type="checkbox"/> Health Promoter |
| <input type="checkbox"/> Nurse Practitioner | <input type="checkbox"/> Quality Improvement |
| <input type="checkbox"/> Registered Practical Nurse | <input type="checkbox"/> Other; please specify:
_____ |
| <input type="checkbox"/> Pharmacist | |
| <input type="checkbox"/> Social Worker | |

2. What is your self-identified gender: Male Female Prefer not to say

3. Age:

- | | |
|---------------------------------------|--|
| <input type="checkbox"/> Less than 30 | <input type="checkbox"/> 50-59 |
| <input type="checkbox"/> 30-39 | <input type="checkbox"/> Over 60 |
| <input type="checkbox"/> 40-49 | <input type="checkbox"/> Prefer not to say |

4. How long have you been working at this Family Health Team:

- | | |
|--|--|
| <input type="checkbox"/> Less than 6 month | <input type="checkbox"/> Approximately 3 years |
| <input type="checkbox"/> Approximately 1 year | <input type="checkbox"/> More than 3 years |
| <input type="checkbox"/> Approximately 2 years | <input type="checkbox"/> Prefer not to say |

**Demographic form to be completed by LHIN Management/Screening
Champions**

Date: _____

1. You are a(n):

- | | |
|--|---|
| <input type="checkbox"/> Public Health Officer | <input type="checkbox"/> Registered Practical Nurse |
| <input type="checkbox"/> Health Promoter | <input type="checkbox"/> Pharmacist |
| <input type="checkbox"/> Quality Improvement | <input type="checkbox"/> Social Worker |
| <input type="checkbox"/> Dietitian | <input type="checkbox"/> Care Coordinator |
| <input type="checkbox"/> Physician | <input type="checkbox"/> Management |
| <input type="checkbox"/> Registered Nurse | <input type="checkbox"/> Other; please specify: |
| <input type="checkbox"/> Nurse Practitioner | _____ |

2. What is your self-identified gender: Male Female Prefer not to say

3. Age

- | | |
|---------------------------------------|--|
| <input type="checkbox"/> Less than 30 | <input type="checkbox"/> 50-59 |
| <input type="checkbox"/> 30-39 | <input type="checkbox"/> Over 60 |
| <input type="checkbox"/> 40-49 | <input type="checkbox"/> Prefer not to say |

4. How long have you been working in your current role:

- Less than 6 month
- Approximately 1 year
- Approximately 2 years
- Approximately 3 years
- More than 3 years

Demographic form to be completed by Family Health Team Senior Clients

Family Health Team Name: _____ Date: _____

1. What is your self-identified gender: Male Female Prefer not to say

2. Age

Less than 65

65-70

71-75

76-80

81-85

Over 85

Prefer not to say

3. How long have you been going to this Family Health Team:

Less than 6 month

Approximately 1 year

Approximately 2 years

Longer than 2 years

Prefer not to say

4. At your last visit to your Family Health Team, who did you speak with? (Check all that apply)

Dietitian

Physician

Registered Nurse

Nurse Practitioner

Registered Practical Nurse

Pharmacist

- Social Worker
 - Care Coordinator
 - Not sure
 - Other; please specify: -
-

5. Highest level of education?

- Some primary school
 - Graduated primary school (e.g., grade 8)
 - Some high school (e.g., 9 through 12)
 - Graduated high school
 - Some post secondary education (e.g., college, university)
 - Graduated post secondary
 - Post graduate (MSc, PhD) study or degree
 - Other (e.g., trade training with no post-secondary component): specify
-

- Prefers not to say

6. Your living situation in the community?

- live alone
- live with spouse
- live with spouse & other family
- live with other family/friends
- other, Specify: _____

Appendix I: Script and interview questions for Family Health Team staff/management, LHIN management/ screening champions, and Family Health Team clients

Verbal Script before In Person Interviews with FHT staff + LHIN Management /Screening Champions and those who have already signed the consent form

Hello, I am Celia Laur, a graduate student at the University of Waterloo.

As you are aware, this project, funded by a doctoral fellowship with the Canadian Institutes for Health Research, is focused on understanding falls and nutrition risk screening in Family Health Teams (FHT). I am interested in the perspectives of FHT staff and management, LHIN Management/Screening Champions, and senior clients from the FHT who have been screened. Today, I am interested in your perspective, and will be asking questions about falls and nutrition screening, including: about the screening processes and how at risk clients are supported; how these screening processes became (or are becoming) part of your routine; and how your organisation, clients, location, and teamwork affect these processes. You have received an information letter about the purpose of this interview and a consent form. Do you have any questions for me before you sign the consent form and we begin this interview?

Before we begin, I will highlight a few key points from the information letter. We will be audio recording the interview. Any names and the FHT name will be removed from the transcript created from this interview and the audio will be destroyed after it is transcribed. When permission is provided, un-identified quotes may be used in a report, research summary or presentation or in a published paper, but the FHT and person who provided statements will not be known. You do not have to answer any questions you do not wish to. Your participation is totally voluntary. Participation in this study will in no way affect your employment, services, contracts or other opportunities within this FHT.

We will be providing a summary report to the FHT to help with improving falls prevention and nutrition risk screening and services. This will be a general summary from all interviews that we are conducting. You will in no way be identified to management for participating in this interview.

Do you have any questions before we begin?

Shall we begin? I will be audio recording this session, so please speak up. We will not transcribe your name or any other identifying information that you provide.

Interview Questions for Family Health Team Staff and Management

1. What do you think this FHT does well in terms of providing support for older adults at risk of falling? Those with nutrition problems or at nutrition risk?
2. What are some of the challenges with providing this care to prevent falls? To address nutrition risk?
3. Falls risk screening was put in place some time ago. How do you think the falls screening process is going now? Can you tell me what the process is? What is working well? What are the challenges?
4. After falls screening started, was anything done to keep this screening going? (Probe: audits and feedback; reminders; quick questions about how it's going etc.) If so, what was used? If not, why not?
5. What was your reaction when you heard that nutrition risk screening was also going to be added in your FHT for falls prevention? Why?
6. Who is involved in the discussions about how to implement nutrition screening? (Probe: only management; those who would be conducting the screening; those who would be coordinating the support for those at risk)?
7. How does the nutrition screening happen? What is the process here? Who is screened and when?
8. How is the team working to get nutrition screening to be routine? (Probe: team is working together; staff just followed directions from management)
9. How do you think the way things work around here (i.e. how the FHT function; leadership style or involvement; teamwork; general mentality) is influencing your ability to implement nutrition screening? (Probe: staff opinions are heard/disregarded by leadership; change is continuous so you're used to it; there are too many changes and it just felt like another task)
10. What were the similarities between implementing falls screening and nutrition screening? What are the differences?
11. What were some of the challenges in setting up nutrition screening that did not arise in falls screening implementation?
12. Is there anything else you think I should know about your organisation, clients, location, that may be impacting how you implemented screening? (Small teams? Remote location?)
13. What would your advice be to other FHTs across Ontario who are interested in implementing falls or nutrition screening?

Interview Questions with LHIN Management/Screening Champions

1. How do you think this LHIN and the FHT are doing in terms of providing support for older adults at risk of falling? Those with nutrition problems or at nutrition risk?
2. What are some of the challenges with providing support to prevent falls in your region? To improving nutrition among older adults?
3. Falls risk screening was put in place some time ago. How do you think this falls screening process is going now? What is working well? What are the challenges?
4. How did you work towards sustaining the falls screening in the FHT?
5. How did it go spreading falls screening to other FHT?
6. Why did you think it was time to add nutrition risk screening in addition to falls screening? (i.e. falls screening was embedded so time to move to the next step?)
7. What were the similarities between implementing nutrition screening compared to falls screening? The differences? (Probe: involve different people? System already in place?)
8. Who is involved in the wider discussions about how to implement and spread nutrition screening? (Probe: Public Health; other LHINs)?
9. How is the regional team supporting FHT to integrate nutrition screening into the routine? (Probe: both teams are working together; staff just followed directions from management)
10. How do you balance meeting the regional level requirements with the local FHT requirements when each site is unique? (Probe: providing some flexibility within the teams to meet their population needs)
11. How do you think the wider regional and local organizational culture (i.e. leadership involvement; teamwork; general mentality) is influencing the ability of FHT to implement nutrition screening? (Probe: staff opinions are heard/disregarded by leadership; change is continuous so you're used to it; there are too many changes and it just felt like another task)
12. Is there anything else you think I should know about your region, organisation, clients, location, that may be impacting how you implemented screening? (Small teams? Remote location?)
13. What would your advice be to other FHT across Ontario who are interested in implementing falls or nutrition screening?

Verbal Script before Client Interview for those who have signed the consent form/will sign the form in person

Hello, I am Celia Laur, a graduate student at the University of Waterloo.

As you are aware, this project, funded by a doctoral fellowship with the Canadian Institutes for Health Research, is focused on understanding falls prevention strategies in your Family Health Teams. I am interested in your perspective, and will be asking questions how the Family Health Team did the falls and nutrition screening with you, as well as what you do to prevent a fall or to eat well, and how the Family Health Team and other services have provided you with support. You will not be asked specific questions about your health conditions, and no individual advice will be provided. You have received an information letter about the purpose of this interview and a consent form. Do you have any questions for me before you sign the consent form and we begin this interview?

Before we begin, I will highlight a few key points from the information letter. We will be audio recording the interview. Any names and the FHT name will be removed from the transcript created from this interview and the audio will be destroyed after it is transcribed. When permission is provided, un-identified quotes may be used in a report, research summary or presentation or in a published paper, but the FHT and person who provided statements will not be known. You do not have to answer any questions you do not wish to. Your participation is totally voluntary. Participation in this study will in no way affect your services, or other opportunities within this FHT.

We will be providing a summary report to the FHT to help with improving falls prevention and nutrition risk screening and services. This will be a general summary from all interviews that we are conducting. You will in no way be identified for participating in this interview.

Do you have any questions before we begin?

Shall we begin? I will be audio recording this session, so please speak up. We will not transcribe your name or any other identifying information that you provide.

Interview Questions with Family Health Team Clients

1. What sort of things do you do to stay healthy?
2. Recently, when you visited your family health team you were asked to answer several questions about whether or not you have fallen recently. (Reminder: questions about if you have fallen recently; if you have been advised to use a cane; if you are worried about falling etc.) How did you feel about answering those questions? (Probe – appreciated being asked; did not like having to fill in a questionnaire; didn't understand why they were asking)
3. Were you also asked any questions about food and nutrition? (Reminder: questions about if you have lost or gained weight; if you skip meals; about your appetite; how frequently you eat fruits and vegetables etc.) What did you think of those questions?
4. Did someone ask you those questions or did you fill them out yourself? How easy was it to answer those questions? (Questions easy to understanding; easy to read the questions? Ability to pick the box you wanted)
5. After you answered the questions, did anyone talk to you about your answers? If yes, who did you speak with?
6. Were you provided any information about falls or nutrition during your visit to the family health team?
 - a. If so, what information was provided?
 - i. Did you follow that information?
 - ii. Did you read the educational material (pamphlet) provided? What did you think? If you didn't read it, why not?
 - iii. Have you made any changes to your lifestyle since receiving this information? If so, what did you change? If not, why not?
 - iv. Did you go to any of the community run events (exercise classes etc.?). If not, why not? What are some of the challenges to attend these events (transportation etc.)
 - v. Did you speak with an expert about nutrition at the family health team?
 - b. If you did not receive any information, would you have liked to receive information about how to prevent a fall? About food and nutrition? What kind of information would you like to receive?
7. Are there any other programs or services that you think you would like to attend to prevent falls or promote good nutrition?

Thank you for your time. As a token of our appreciation, we are providing each client with a \$15 gift certificate. (*In person interviews: give money and thank you letter and have individual sign to confirm the money was provided.*) Are you interested in receiving a summary of the results from this study? If so, where would you like them to be sent?