TVN Webinar Series
Wednesday, February 24, 2016

Clinical tools for nutritional pathway involving hospitalized, older adults

Results of TVN-funded Catalyst Grant

Heather Keller, RD, PhD, FDC
University of Waterloo

TVN Improving care for the frail elderly™

NCE RCE

Welcome and our webinar format

Clinical tools for nutritional pathway involving hospitalized, older adults

Webinar & slides will be website

TVN transitioning to new name more reflective of our mission

Canadian Frailty Network

Carol Barrie
Executive
Director

Research update

- **2016 Summer Student Awards- Change from 10 to 20 awards**
  Intent to Apply due This Thursday February 25; Application due March 10, 2016
- **2015 Catalyst and Transformative Research Grants**
  - **In review process, results will be announced in early April 2016**
- **New, one-year Fellowships**
  - **Announcement later this month**
- **ACE Collaborative**
  - **Announcement of funded acute care teams in late March**

Future Webinars

Upcoming webinars – register on twitter @TVN_NCE

- **Wednesday, March 2, 2016 at 12 noon ET:**
  - **User studies with intel-assistive robots among elderly in long-term care homes – results of TVN-funded Catalyst Grant – Goldie Nejat, University of Toronto**
- **Wednesday, March 23, 2016 at 12 noon ET:**
  - **ASILA case-simulation prototype on cognitive, physical outcomes of frail seniors in nursing homes – results of TVN-funded Catalyst Grant – Veronique Boscart, Conestoga College**
- **Wednesday, April 6, 2016 at 12 noon ET:**
  - **Benchmarking end-of-life care practices for the elderly in primary care – results of TVN-funded CORE Grant – Francis Lau, University of Victoria**
- **Webinar slides available at: tvn-nce.ca/news-and-events/webinars**

Q-&-A

Please submit your questions online during the webinar.

We'll answer as many questions as possible immediately following the presentation.

Note: This webinar is being recorded and will be posted on the TVN site for downloading within the next couple of days.

Presenter: Clinical tools for nutritional pathway involving hospitalized older adults – Results of TVN-funded Catalyst Grant

Heather Keller, RD, PhD, FCD

- PhD in Epidemiology from University of Western Ontario, and MSc in Nutrition from McGill University
- Professor in Department of Kinesiology at University of Waterloo and Schlegel Research Chair in Nutrition and Aging
- Chair of Canadian Malnutrition Task Force, leading interprofessional team focused on improving identification and treatment of malnutrition in acute care settings
- Research interests span community and institutional sectors, and include nutrition risk screening, assessment and nutrition intervention for seniors in general and seniors with dementia

Clinical tools for nutritional pathway involving hospitalized, older adults

TVN Webinar Feb 24, 2016

Heather Keller RD PhD FDC

Schlegel Research Nutrition Chair
Schlegel-University of Waterloo Research Institute for Aging
Chair, Canadian Malnutrition Task Force

Learning Objectives

1) understand how evidence and consensus based methods can be used in tandem to create a best practice

2) appreciate the iterative process required for clinical tool development

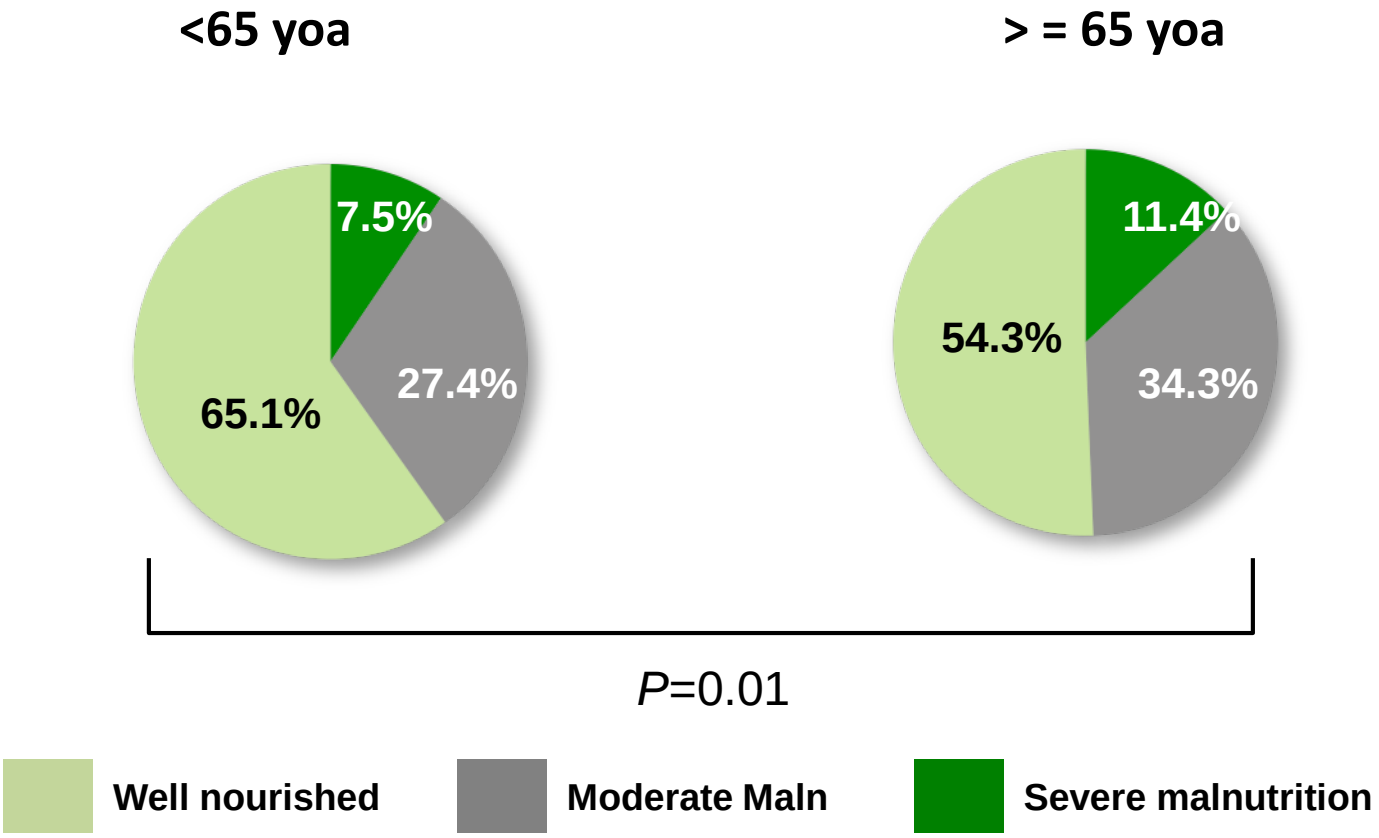
3) be informed on the content of these clinical tools and how they may be used in practice and research

Outline

- Why do we need to advance nutrition care in Canadian hospitals?
  - Key results of the Nutrition Care in Canadian Hospitals study
- Development and testing
  - Integrated Nutrition Pathway for Acute Care (INPAC)
  - M-MIT/ MAT as monitoring tools
- Next steps post TVN Catalyst
- Discussion

Prevalence of Malnutrition at Admission to Hospital

Nutrition Care in Canadian Hospitals, CMTF 2010-2013



Food Intake and Malnutrition (unpublished)

Nutritional Status	< 50% of food intake in week 1	>= 50% of food intake in week 1
Well nourished	25%	75%
Diet-related Malnutrition (SGA B or C and normal CRP)	22%	78%
Malnutrition + Inflammation (SGA B or C and elevated CRP)	43%	57%

31.4% of patients ate <50% in their first week of admission
10.5% kept NPO> 3 days (Allard et al., JPEN 2015)

Patient Reported Eating Difficulties

(Keller et al., JHND 2015)

What Predicts Length of Stay

(Allard et al., JPEN 2015)

Characteristics	Hazard Ratio	95% CI
Malnutrition (SGA B/C)	0.73	0.62, 0.86
Hand grip strength	1.12	1.01, 1.23
Nutrition support	0.61	0.42, 0.88
Food intake < 50%	0.73	0.62, 0.87
Male	0.77	0.63, 0.93
Lives in 'other' setting	0.72	0.53, 0.96
Number of diagnoses		
2	0.70	0.59, 0.84
3	0.58	0.44, 076
Number of meds	0.96	0.95, 0.98

HR > 1.0 characteristic predicted shorter length of stay HR < 1.0 predicted a longer length of stay

Adjusted for: cancer, type of unit, CCI, education, age, RD visit, NPO for 3+ d, preadmission wt loss, BMI at admission

CMTF: Which Patients Receive a Dietitian Consult?

(excluding TPN/EN; Keller et al., Clin Nutr 2014)

- Type of hospital, Diet technician, surgery do not influence if a dietitian visit occurs
- Only 1 of 18 hospitals had standardized screening program, not fully linked to RD involvement
- RD sees **only 23%** of patients
    - 45% of these patients are well nourished
    - 36% moderate (SGA B) and 19% were severe malnutrition (SGA C)

  – 75% of SGA B and 60% of SGA C were **missed** using a referral process

What predicts a dietitian seeing a patient?

(Keller et al., 2014, Clin Nutr)

Characteristic	Within first 3 days n=96		4+ days n=116	
	OR	95% CI	OR	95% CI
Age	0.98	0.97, 0.996		
Metabolic dx	3.91	1.7, 8.95		
Severe mal'n (SGA C)	1.88	0.98, 3.6	2.2	1.1, 4.2
ONS pre adm	2.33	1.4, 3.9		
Mod tex diet	5.4	2.2, 13.2		
Renal diet	5.8	2.2, 14.7		
Male			1.6	1.0, 2.4
> 1 diagnosis			1.8	1.2, 2.9
New diagnosis			2.3	1.5, 3.6
Dysphagia			11.4	3.3, 39.3
Constipation			2.2	1.2, 3.9
Antibiotic use			1.6	1.0, 2.6

Finding a solution…

Malnutrition…

- occurs in the community
- is perpetuated by hospital admission, iatrogenic
- Stay 2+ days longer= $2000+ per patient stay; ~$2B /year
- Is present in 1 of every 2 medical admissions → current resources need to be used differently
- Requires a change in culture of how nutrition care is provided

We need to work differently

- The entire team has a role to play
- Become food aware and treat food as medicine
- Dietitian as specialist resource; positioned to triage patients
- Connect patients better to community services
- Involve the patient and family in the monitoring and care process

Prior guidelines focused on screening, assessment and treatment

No guidelines address barriers to food intake, monitoring

No guidelines considered the prevalence of positive screening

Lack of ‘evidence’ on commonsense practices

NEW BEST PRACTICE NEEDED

The Integrated Nutrition Pathway for Acute Care (INPAC)

TVN Improving care for the frail elderly™

An evidence-based algorithm for the detection, treatment and monitoring of malnutrition amongst acute care medical and surgical patients.

- Developed through consensus from leading Canadian experts, clinicians and other stakeholders.
- This algorithm is a **minimum standard** and if a hospital or unit provides care above this minimum, they are encouraged to continue their high quality practice.

INPAC: Development

April 2014- October 2014

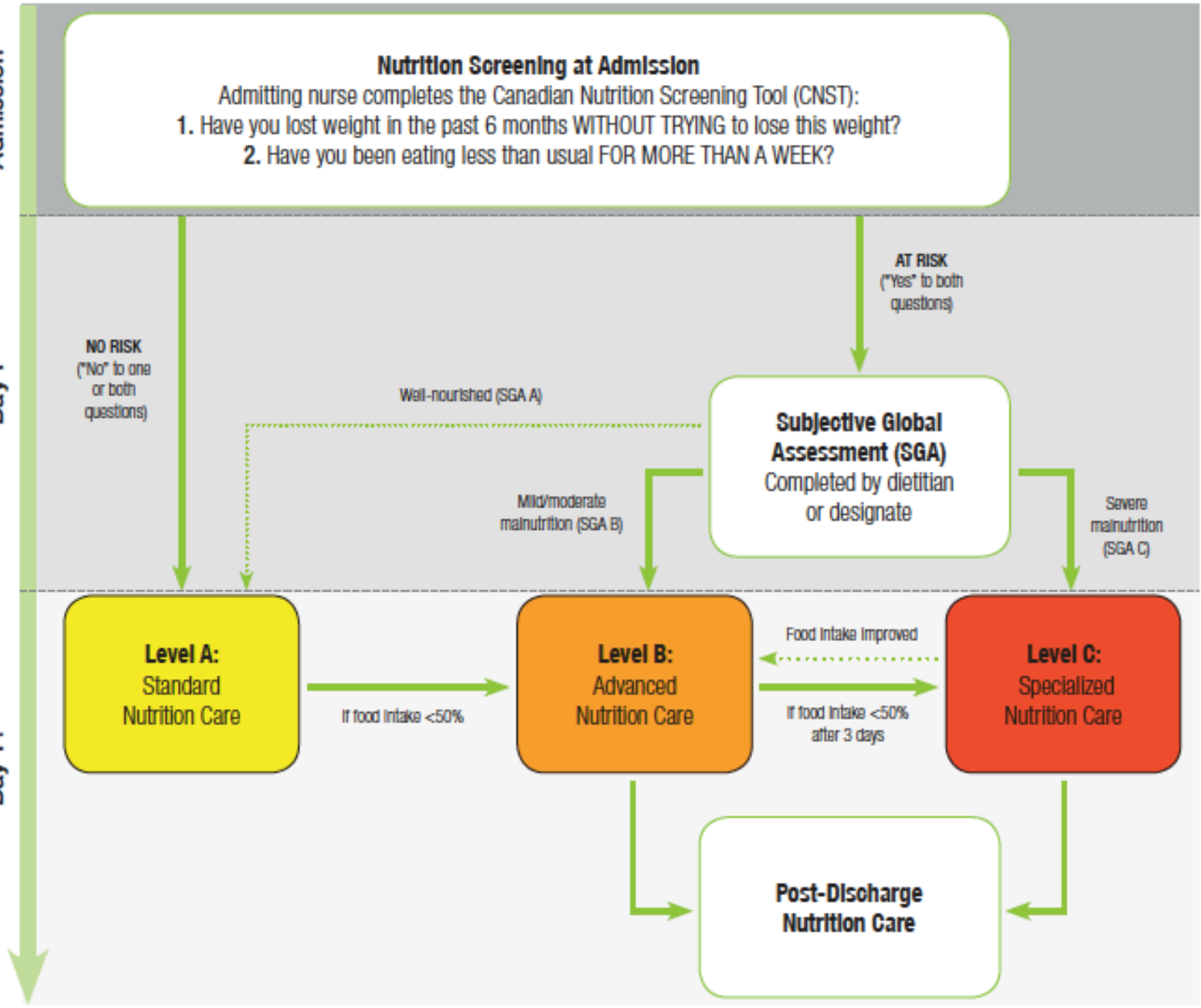
- Environmental scan
  - Post 2011 narrative lit review, key journals, organization websites, policy documents
  - Other evidence based pathways identified, common elements, gaps
  - Grey literature and expert opinion on better practices
  - Detailed background document on key practices e.g. screening
- Draft pathway of 'better practices'
- Modified Delphi
  - Stakeholder meeting: agree on initial content of pathway
    - 60% front-line
  - Two rounds questions on each component of draft pathway using an anonymous internet survey (n~30)
  - Items that achieved 80% consensus retained
    - 50% of items achieved consensus in first round
    - 2 items did not achieve consensus
  - Confirmation by co-investigators

INPAC: Validation

October 2014-March 2015

- Focus groups (n=45) with staff in 4 diverse hospitals- reviewed draft algorithm
  - Best practice
  - Feasibility
- Stakeholder re-engagement for final review of algorithm and validation
  - Greater diversity, new stakeholders
  - Review of feasibility, terminology

I N P A C


Admission
Day 1
Day 1+
Nutrition Screening at Admission
Admitting nurse completes the Canadian Nutrition Screening Tool (CNST):
1. Have you lost weight in the past 6 months WITHOUT TRYING to lose this weight?
2. Have you been eating less than usual FOR MORE THAN A WEEK?
NO RISK ("No" to one or both questions)
AT RISK ("Yes" to both questions)
Well-nourished (SGA A)
Subjective Global Assessment (SGA)
Completed by dietitian or designate
Mild/moderate malnutrition (SGA B)
Severe malnutrition (SGA C)
Level A: Standard Nutrition Care
If food intake <50%
Level B: Advanced Nutrition Care
Food intake improved
If food intake <50% after 3 days
Level C: Specialized Nutrition Care
Post-Discharge Nutrition Care

Canadian Nutrition Screening Tool

(Laporte et al., 2014)

Ask the patient the following questions	Yes	No
Have you lost weight in the past 6 months WITHOUT TRYING to lose this weight? * * If the patient reports a weight loss but gained it back, consider it as a NO weight loss. .		
Have you been eating less than usual FOR MORE THAN A WEEK?		
Two "YES" answers indicates nutrition risk		

If not at risk …

Level A: Standard Nutrition Care

Sit patient in chair or position upright in bed

Ensure vision and dentition needs addressed

Address nausea, pain, constipation, diarrhea

Confirm food available at all times

Monitor and report: food intake 2X/wk; duration of NPO/Clear fluid; hydration status; weekly weight

Ensure bedside table cleared for tray set-up, open packages, provide assistance to eat

Monitor for signs of dysphagia

Encourage family to bring in preferred foods from home

If at risk…

OR…

EN/PN

Unable to complete CNST

Transfer from CCU/ICU

Trauma, burns, pressure ulcers, SIRS etc.

Subjective Global Assessment Form

MEDICAL HISTORY

Patient name: _____ Date: _____/_____/_____

DIETARY INTAKE

1. ☐ No change; adequate
2. Inadequate; duration of inadequate intake _____
   ☐ Suboptimal solid diet ☐ Full fluids or only oral nutrition supplements ☐ Minimal intake, clear fluids or starvation
3. **Dietary intake in past 2 weeks***
   ☐ Adequate _____ ☐ Improved but not adequate _____ ☐ No improvement or inadequate _____

WEIGHT Usual weight: _____ Current weight: _____

1. **Non fluid weight change past 6 months:** Weight loss (kg) _____
   ☐ <5% loss or weight stability ☐ 5-10% loss without stabilization or increase ☐ >10% loss and ongoing
   If above not known, has there been a subjective loss of weight during the past six months?
   ☐ None or mild ☐ Moderate ☐ Severe
2. **Weight change past 2 weeks*** Amount (if known) _____
   ☐ Increased ☐ No change ☐ Decreased

SYMPTOMS (Experiencing symptoms affecting oral intake)

1. ☐ Pain on eating ☐ Anorexia ☐ Vomiting ☐ Nausea ☐ Dysphagia ☐ Diarrhea
   ☐ Dental problems ☐ Feels full quickly ☐ Constipation
2. ☐ None ☐ Intermittent/mild/few ☐ Constant/severe/multiple
3. **Symptoms in the past 2 weeks***
   ☐ Resolution of symptoms ☐ Improving ☐ No change or worsened

FUNCTIONAL CAPACITY (Fatigue and progressive loss of function)

1. No dysfunction
2. Reduced capacity; duration of change _____
   ☐ Difficulty with ambulation/normal activities ☐ Bed/chair ridden
3. **Functional Capacity in the past 2 weeks***
   ☐ Improved ☐ No change ☐ Decrease

METABOLIC REQUIREMENT

High metabolic requirement ☐ No ☐ Yes

PHYSICAL EXAMINATION

Loss of body fat	☐ No	☐ Mild/Moderate	☐ Severe
Loss of muscle mass	☐ No	☐ Mild/Moderate	☐ Severe
Presence of edema/ascites	☐ No	☐ Mild/Moderate	☐ Severe

CACHEXIA

☐ No ☐ Yes

SGA RATING

☐ A Well-nourished Normal ☐ B Mildly/moderately malnourished Some progressive nutritional loss ☐ C Severely malnourished Evidence of wasting and progressive symptoms

*See page 2 SGA Rating for more description.

Canadian Malnutrition Task Force / Le Groupe de travail canadien sur la malnutrition

SGA B: mild/moderate malnutrition

Level B: Advanced Nutrition Care

Continue STANDARD NUTRITION CARE practices

AND

Assess and address other barriers to food intake

Monitor food intake at least 1 meal/day

Promote intake with 1 or more of:

- nutrient/energy dense diet
- liberalized diet
- preferred foods
- high energy/protein shakes/drinks
- snacks available between meals

SGA C: severe malnutrition

Level C: Specialized Nutrition Care

Continue STANDARD & ADVANCED NUTRITION Care

Patient undergoes a comprehensive nutrition assessment completed by RD: more detailed assessment of nutrition status using physical exam, anthropometry, dietary and clinical and biochemical markers

Further identification of barriers to food intake (e.g. swallowing ability, medication side effects, depression, etc.)

Identification of eating behaviours/strategies that will support food intake

Individualized diet/nutrition support prescription

IDENTIFYING BARRIERS & MONITORING FOOD INTAKE

Mealtime Audit Tool (MAT)

- A 2-page form
- Completed by hospital staff
- Documents **mealtime issues, challenges, and/or barriers** that patients might have
- Part 1 completed **before and during** a meal
  - General ward environment
  - Readiness for meal
  - Descriptive data (ward, meal, timing of delivery etc.)
- Part 2 completed with **selected patients** after the meal
  - Barriers each patient experienced
  - ‘No’ indicates barrier experienced
  - Summed for a total score

How was MAT Developed and Tested?

- Developed from the Nutrition Care in Canadian Hospitals (NCCH) study results, as well as other research on protected mealtimes.
  - Small working group including clinicians
- Testing:
  - Study 1: usability, ease of completion clarity of items (n=120, 65+ yoa patients/ 4 sites, 6 auditors)
  - Study 2: inter-rater reliability (n=90, 30 meals; 2 auditors)

Mealtime Audit Tool

Part 1: General observations of unit mealtime activity

Date of audit: _____ Name of auditor: _____

Which meal? ❑ Breakfast ❑ Lunch ❑ Supper

Time auditor arrived on unit (e.g., 12:00 p.m.): _____

Type/Unit (e.g., medical, surgical or name): _____

Number of beds filled: _____

Time meal truck arrived on floor: _____ Time tray distribution started: _____

Time tray distribution completed: _____ Time of truck removal: _____

Comment on the unit readiness for the meal and any delays/challenges that might influence the patients' perceptions of the meal.

_____

_____

_____

Part 2: Questions to ask patients...

	Patient:			
How was your meal? On a scale of 1 to 10 (1 is low and 10 is high), how important is your food and fluid intake (in hospital) to your recovery? On a scale of 1 to 10, how much importance did staff place on your food and fluid intake?	Comments Self-rating			Staff rating
	Yes	**No**	**N/A**	**Comments**
1. Did the meal come at an appropriate time for you?				
2. Did you get the food that you ordered (if applicable)?				
3. a) Did you have all of the food/drink items you wanted during this meal?				
b) If you requested other items, did you get them? *N/A if none requested*				
4. Was your meal appetizing (presentation and aroma)?				
5. Were hot foods served hot?				
6. Did you need help being positioned comfortably prior to eating, AND if so, was help provided? *N/A if no help needed*				
7. Did you have everything you needed in order to eat/drink comfortably (such as your glasses, dentures, etc.)?				
8. a) Were you able to reach your meal tray?				
b) Were you able to open your food packages, OR did you get help to open packages?				
9. a) Are you able to eat your meal without help (from staff or family)?				
b) If staff helped you, did you get help when you wanted it? *N/A if no help provided by staff*				
10. Did you have enough time to eat your meal?				
11. Were you visited by staff mid-meal to see if you needed anything?				
12. *If tray is untouched, ask:* did staff offer you any other food to eat? *N/A if some items eaten*				
13. Are you suffering from constipation, AND if so, have you been offered anything to manage it? *N/A if no constipation*				
14. Were you offered help to use the washroom before mealtime? *N/A if no help needed*				
15. Are you experiencing any symptoms like pain or nausea, AND if so, have you been offered anything to manage them? *N/A if no symptoms*				
16. Were you able to eat your meal without interruptions (e.g., doctor, nurse, physical therapist visiting)?				
17. Was your meal free from noise, cleaning or other disturbances?				
Total of NO responses – a higher score indicates more barriers to the meal				
Is there anything we could do to make your meals better?				

MAT: Reliability Testing Results

Study 1:

- On average 2.9 +/- 1.6 barriers
- Site differences in type
- Common (>10%):temperature, packages, not appetizing, disturbed, no mid-meal check, no alternatives suggested, no snacks offered

Study 2:

- Total score ICC 0.68 95% CI (0.52, 0.79)
- Only 4/18 items with <90% concordance

My Meal Intake Tool (M-MIT)

- One meal intake record
  - also captures some common food access issues
- Filled out by patient **after completion of a meal**
- Should be considered a **minimum** for monitoring of oral intake

How was M-MIT developed?

- Developed from other simple one-meal tools
- Testing:
  - The **validity** and **ease of completion** of M-MIT
  - 120 patients > 65 yrs in four hospitals
  - **accuracy** of patient estimation compared to an auditor's recording of food and fluid intake

MY MEAL INTAKE

Patient Name: _____

Room #: _____ Date: _____

This form helps us understand how you are eating. Please complete this form after you have finished **this meal**. If you need help, let us know.

1. List all drinks on your tray; this includes juice, tea/coffee, milk, drink supplements, etc.
2. Place an 'X' in the circle to indicate how much you consumed of each beverage
3. For the food on your tray, place an 'X' in the circle to indicate how much you ate overall; this includes the main dish, side dishes, soup, bread, dessert
4. List any food or beverages you are saving to eat at a later time
5. **Turn the page over** and answer the remaining questions

What meal is this? ❑ Breakfast ❑ Lunch ❑ Supper

What and how much did you drink?	0% I drank none	25%	50%	75%	100% I drank all
Example: Milk	○	○	X	○	○
	○	○	○	○	○
	○	○	○	○	○
	○	○	○	○	○
	○	○	○	○	○

How much of all the food on your tray did you eat?	0% I ate none	25%	50%	75%	100% I ate all
	○	○	○	○	○

Please list any items (food or beverages) being saved for later: _____

Please turn over ⟶

How was your appetite at this meal?

- ❑ Very good/Good
- ❑ Less than usual

Why was your appetite less than usual?

- ❑ I was not interested in eating
- ❑ I had nausea/vomiting
- ❑ I was tired
- ❑ I had pain
- ❑ I ate other foods and was not hungry
- ❑ No specific reason
- ❑ Other: _____

_____

_____

Did you have any challenges at this meal?

- ❑ I needed help to sit up to eat
- ❑ I needed help opening food packages
- ❑ I needed help to eat and/or drink
- ❑ I did not like the food
- ❑ I had problems chewing/swallowing
- ❑ I was not allowed to eat because I am having a test today
- ❑ I did not get what I had ordered (if selective menu)
- ❑ The environment was not appetizing
- ❑ Other: _____

_____

- ❑ I had no challenges

Other comments to share with us about your food intake: _____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

Who completed this form? ❑ Patient ❑ Family/Friend/Volunteer ❑ Staff

M-MIT: Validation Results

- 57% female, 47.5% > 80 yoa; 63% at least high school
- 78% completed form without error (e.g. no blanks)

- Solid food: Se 76% Sp 74%
- Fluids: overall Se 62% Sp 81%; individual items better
- Males, < 80 yoa, < High school, better appetite: better accuracy, but statistical tests not possible
- 45% with low appetite had low intake vs. 6% good appetite and low intake

Is INPAC feasible?

What resources are required?

Will it improve care processes?

Will it improve patient reported outcomes?

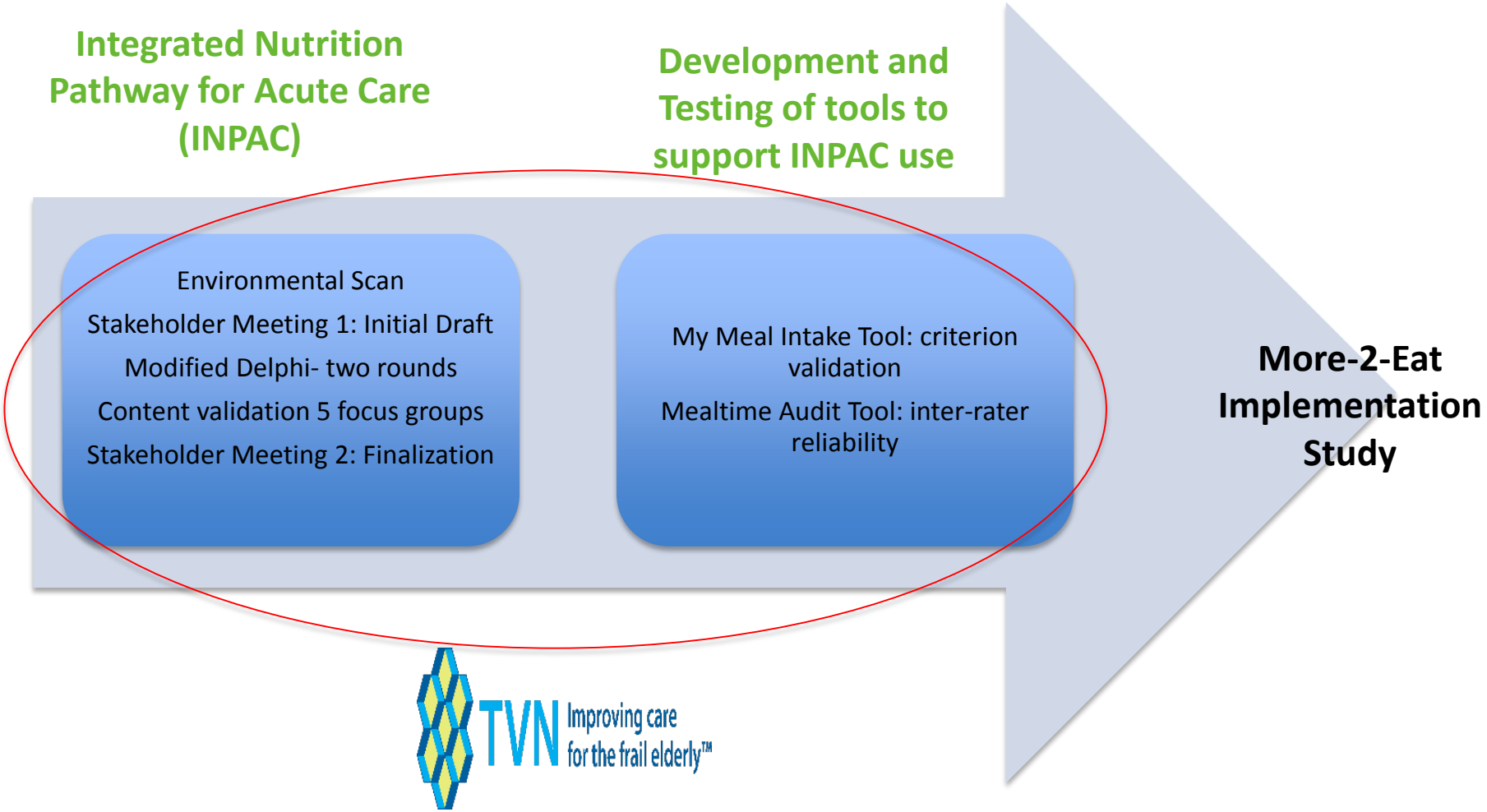
How is it implemented, better practices to support implementation

NEXT STEPS…

INPAC Development & Testing

TVN Catalyst Grant 2013/SIG 2015-2017

(Keller et al., 2015)



Taking Action: The 'More-2-Eat' Project

Objectives:

1) To develop an implementation program for the INPAC

1) Test and evaluate implementation in 5 diverse hospitals in four provinces
2) Sub study: To test the feasibility of high protein (+500 kcal, 25g pro) supplementation for 90 days in frail malnourished; measurement of functional outcomes, body composition

Funding: Technology Evaluation in the Elderly Network (2015-17)

K-2-A Process

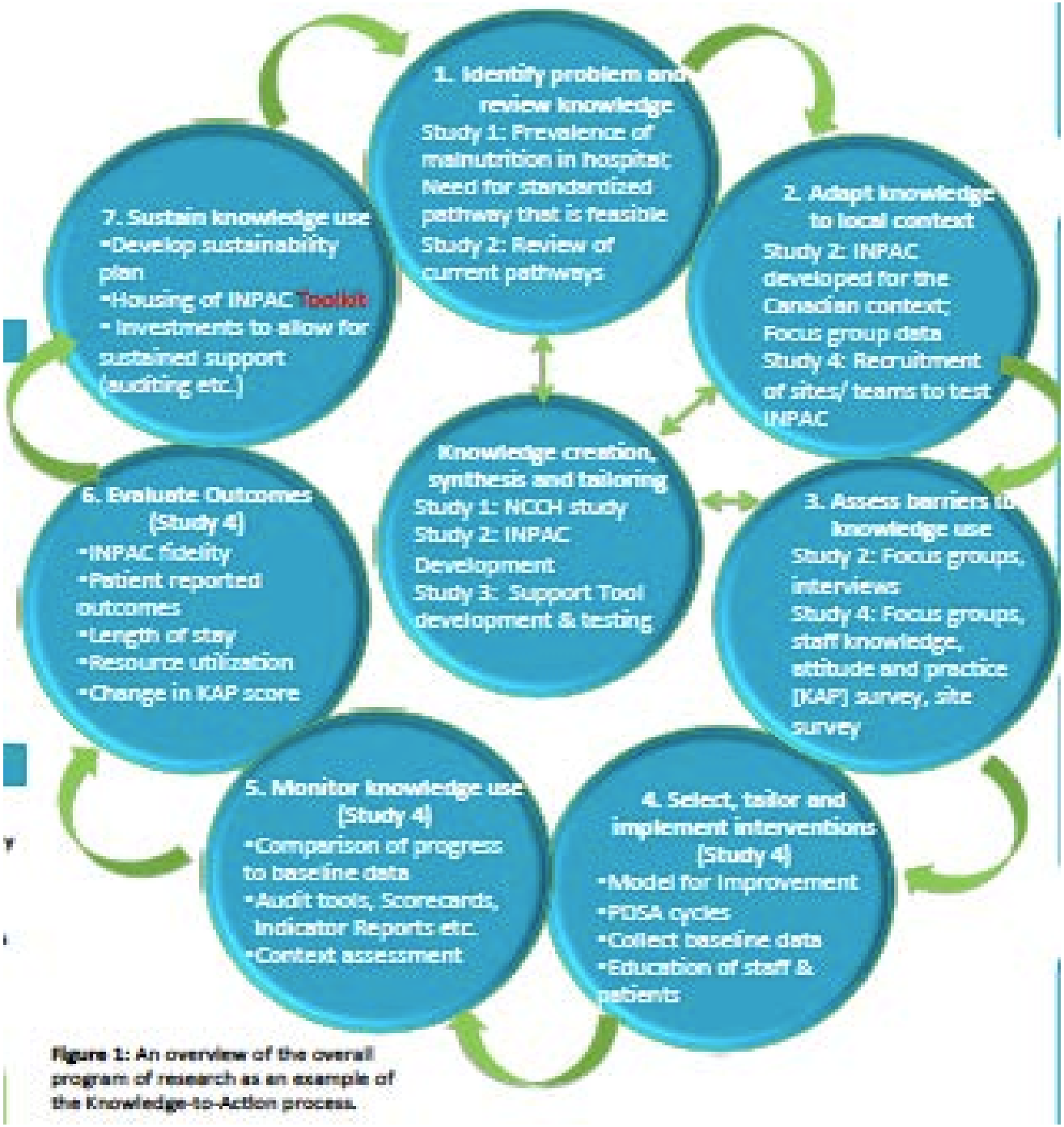


Figure 1: An overview of the overall program of research as an example of the Knowledge-to-Action process.

More-2-Eat Project Overview

Before-after time series design

Planning

Team Pre-Work

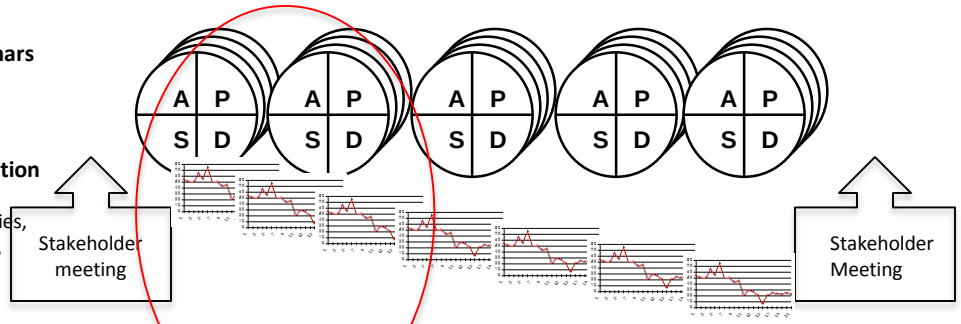
M2E Champion, M2E RA, Site Implementation Teams, management sponsorship

Collate Materials
Create Package, Measures and Educational Material

Introductory Webinars Among Sites

Baseline data collection
Patient risk, reported outcomes, INPAC activities, staff survey . Interviews, focus groups

Expert Panel etc.



Sustained Change
Monitoring of Changes + Focus Groups

Distribute Findings
Program prepared to be rolled out in other hospitals
Publications

Communication/Support
Site Implementation Team Meetings; Teleconference among Site Teams and Core Research Group (monthly); Coaching (as required); Training for Staff

***Research Requirements**:*
Ethics Approvals; Baseline Data Collection; Context data collection

Site Data Collection and Analysis
Audit Reports (weekly; individual level); Score Cards (key actions/targets; facilitators, challenges); Indicator Reports (monthly; summary of audit reports);

Primary Analysis:
1. Comparison of baseline data to implmentation phase patient reported outcomes
2. INPAC Fidelity over time
3. Context assessment and impact on implementation
4. Resources required to implement INPAC
5. Feasibility of pilot intervention and measures

Enhanced Protein Supplement Pilot RCT (2 sites)
Patient recruitment; randomization, measures; follow up post discharge

Core Research Team Evaluation
Baseline, 4/5, 11/12 month selected follow-up post discharge for patient reported outcomes; context evaluation

Resource Utilization
Length of stay 12 mo prior and during implementation; selected patients receipt of mealtime care; monthly workload measures for selected staff

Developmental Phase: May to Dec 2015	Testing & Implementation Phase Dec 2015 to Dec 2016	Sustainability Phase Jan to Mar 2017

Knowledge Translation

- Dissemination – open access and clinical practice journals
- Presentations at national and international conferences
- International expert discussions on implementation of screening and other best practices
- Tools available on CMTF website www.nutritioncareincanada.ca
- CMTF/ CNS newsletters
- Advocacy with regional, provincial, national decision makers

Take home messages

- Improvements in hospital nutrition care are needed
- INPAC designed to be feasible and practicable
- Staff, hospital management, professional associations, government all have a role to play in improving nutrition care
- M-MIT and MAT and other quality tools are available to audit practice and make change
- More-2-Eat will test feasibility of INPAC and implmentation

Acknowledgements

Research Team

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Funding

TVN Improving care for the frail elderly

Collaborators

CMTF Advisory Board

Canadian Nutrition Society

Stakeholders/experts

Hospital test sites; site coordinators

Abbott Laboratories

Partners Against Malnutrition

QUESTIONS

Key References

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