More-2-Eat Phase 2: Spread/Scaling Up
Improved Nutrition Care

CFN
Sept 21, 2018

Heather Keller RD PhD FDC
Schlegel Research Chair Nutrition & Aging, University of Waterloo
The Problem...

**Where it all starts:**
45% of people are admitted to hospitals malnourished and 75% of the time this goes unnoticed.

**Malnutrition =**
Extended Hospital Stays = $2 Billion a Year

**Not eating your medicine is costly:**
Malnutrition is a leading sign of a lengthy and costly hospital stay.
Treatment works

- Mealtime management
- Eating assistance
- Nutrient dense food
- Oral nutritional supplements
- Dietitian counseling

(Baldwin & Weekes, 2011; Cheung et al., 2013; Kimber et al., 2015; Stratton & Elia, 2007)
The Solution: The Integrated Nutrition Pathway for Acute Care (INPAC)

Keller et al, 2015; CFN Catalyst 2014-2015
The ‘More-2-Eat’ Project Phase 1

Objectives:

1) Test and evaluate implementation process in 5 diverse hospitals in 4 provinces

2) To develop a virtual toolkit to support implementation of INPAC

Funding: Canadian Frailty Network (2015-17)

Keller et al. 2017
Table 3: Estimates of screening, nutrition assessment, nutrition diagnoses, food intake & body weight monitoring by site (n = 700)

<table>
<thead>
<tr>
<th>Screening &amp; risk identification:</th>
<th>Overall (N = 700)</th>
<th>Site A (N = 152)</th>
<th>Site B (N = 119)</th>
<th>Site C (N = 159)</th>
<th>Site D (N = 131)</th>
<th>Site E (N = 139)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Screened for malnutrition</td>
<td>35.5% ** (n = 249/700)</td>
<td>76.3% (n = 116/152)</td>
<td>0% (n = 0/119)</td>
<td>25.8% (n = 41/159)</td>
<td>0% (n = 0/131)</td>
<td>66.1% (n = 92/139)</td>
</tr>
<tr>
<td>Of those screened, AT RISK</td>
<td>36.1% (n = 89/249)</td>
<td>31% (n = 35/119)</td>
<td>N/A</td>
<td>56.1% (n = 23/41)</td>
<td>N/A</td>
<td>33.7% (n = 31/92)</td>
</tr>
<tr>
<td>Comprehensive dietitian nutrition assessment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% receiving comprehensive dietitian assessments</td>
<td>27.9% ** (n = 195/700)</td>
<td>25% (n = 38/152)</td>
<td>16.8% (n = 20/119)</td>
<td>23.9% (n = 38/159)</td>
<td>38.9% (n = 51/131)</td>
<td>34.5% (n = 48/139)</td>
</tr>
<tr>
<td>Nutrition diagnoses</td>
<td>26.1% ** (n = 183/700)</td>
<td>24.3% (n = 37/152)</td>
<td>13.4% (n = 16/119)</td>
<td>22.0% (n = 35/159)</td>
<td>37.4% (n = 49/131)</td>
<td>33.1% (n = 46/139)</td>
</tr>
<tr>
<td>Food intake monitoring</td>
<td>6.2% (n = 43/699)</td>
<td>0% (n = 5/152)</td>
<td>4.2% (n = 1/119)</td>
<td>0.6% (n = 1/158)</td>
<td>8.4% (n = 11/131)</td>
<td>8.4% (n = 26/139)</td>
</tr>
<tr>
<td>Body weight recorded at admission</td>
<td>47.9% (n = 335/700)</td>
<td>14.5% (n = 22/152)</td>
<td>16.8% (n = 20/119)</td>
<td>78% (n = 124/159)</td>
<td>93.1% (n = 122/131)</td>
<td>33.8% (n = 47/139)</td>
</tr>
<tr>
<td>Body weight monitoring</td>
<td>17.5% (n = 122/699)</td>
<td>17.8% (n = 22/152)</td>
<td>10.9% (n = 13/119)</td>
<td>1.9% (n = 3/158)</td>
<td>16% (n = 21/131)</td>
<td>41.7% (n = 58/139)</td>
</tr>
</tbody>
</table>

** Indicates statistically significant difference across sites (p < 0.0001)
^ Indicates missing data
^ Indicates use of Fisher's exact test rather than chi-square
Original article

Multi-site implementation of nutrition screening and diagnosis in medical care units: Success of the More-2-Eat project

Heather H. Keller a, b, *, Renata Valaitis a, Celia V. Laur a, d, Tara McNicholl a, Yingying Xu a, Joel A. Dubin a, Lori Curtis a, Suzanne Obiorah c, Sumantra Ray d, Paule Bernier e, Leah Gramlich f, Marilee Stickles-White g, Manon Laporte h, Jack Bell i
Co-investigators/Collaborators for Implementation Study

Co-investigators
- Barbara Liu
- Jack Bell
- Paule Bernier
- Carlota Basualdo-Hammond
- Leah Gramlich
- Manon Laporte
- Donald Duerksen
- Sumantra Ray
- Pauline Douglas
- Lori Curtis

Collaborators
- Bridget Davidson
- Joel Dubin
- Marina Mourtzakis
- Richard Sawatzky
- Alies Maybee
- Khursheed Jeejeebhoy
- Sarah Robbins
- Linda Dietrich
- Heather Truber
<table>
<thead>
<tr>
<th>Activity</th>
<th>Implemented?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nutrition screening at admission (with CNST)</td>
<td>✓ (All sites)</td>
</tr>
<tr>
<td>Using SGA to triage patients</td>
<td>✓ (All sites)</td>
</tr>
<tr>
<td>MedPass used</td>
<td>✓ (All sites)</td>
</tr>
<tr>
<td>Food intake monitoring and following up low intake</td>
<td>✓ (Most sites)</td>
</tr>
<tr>
<td>Volunteers available during mealtimes</td>
<td>✓ (Most sites)</td>
</tr>
<tr>
<td>Weights taken on admission</td>
<td>✓ (Some sites)</td>
</tr>
<tr>
<td>Regular weights taken</td>
<td>✓ (Some sites)</td>
</tr>
<tr>
<td>More food available for patients on the unit</td>
<td>✓ (Some sites)</td>
</tr>
<tr>
<td>Discharge planning</td>
<td>✓ (Some sites)</td>
</tr>
</tbody>
</table>
Implementation of Screening at Admission
Implementation of Malnutrition Diagnosis with Subjective Global Assessment
Patient Care Processes and Treatment Improved

<table>
<thead>
<tr>
<th>Treatment/Care Process</th>
<th>Baseline</th>
<th>Follow-up</th>
</tr>
</thead>
<tbody>
<tr>
<td>Treatment (advanced care)</td>
<td>31</td>
<td>63</td>
</tr>
<tr>
<td>Medpass (oral nutrition supplement)</td>
<td>2</td>
<td>15</td>
</tr>
<tr>
<td>Weekly weight</td>
<td>3</td>
<td>21</td>
</tr>
<tr>
<td>Food intake monitoring</td>
<td>1</td>
<td>32</td>
</tr>
</tbody>
</table>

*Note:* This is across the 5 sites. Not all sites focused on weekly weights or food intake monitoring. 

(Keller et al., Clin Nutr 2018)
Patient outcomes?

<table>
<thead>
<tr>
<th>Site</th>
<th>Baseline</th>
<th>Follow-Up</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>9</td>
<td>6</td>
</tr>
<tr>
<td>B</td>
<td>12</td>
<td>8</td>
</tr>
<tr>
<td>C</td>
<td>7</td>
<td>5.5</td>
</tr>
<tr>
<td>D</td>
<td>8</td>
<td>9</td>
</tr>
<tr>
<td>E</td>
<td>11</td>
<td>9</td>
</tr>
</tbody>
</table>

Mealtime barriers to food intake

(Keller et al., submitted 2018)
## Spread Post M2E Phase 1

<table>
<thead>
<tr>
<th>Site</th>
<th>Screening</th>
<th>SGA</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>region</td>
<td>region</td>
</tr>
<tr>
<td>2</td>
<td>hospital</td>
<td>hospital</td>
</tr>
<tr>
<td>3</td>
<td>region</td>
<td>region</td>
</tr>
<tr>
<td>4</td>
<td>region</td>
<td>region</td>
</tr>
<tr>
<td>5</td>
<td>hospital</td>
<td>hospital</td>
</tr>
</tbody>
</table>
M2E Champions: Mei Tom, Marlis Atkins, Roseann Nasser, Donna Butterworth, Brenda Hotson, Marilee Stickles-White, Suzanne Obiorah

M2E Research Associates: Joseph Murphy, Andrea Digweed, Lina Vescio, Chelsa Marcell, Stephanie Barnes, Shannon Cowan, Sheila Doering, Michelle Booth

Trainees

- Celia Laur
- Renata Valaitis
- Tara McNicholl
- Sabrina Iuglio
The Knowledge To Action Cycle

![Diagram of the Knowledge To Action Cycle]

- Select, tailor, implement interventions
- Assess barriers to knowledge use
- Adapt knowledge to local context
- Monitor knowledge use
- Knowledge inquiry
- Synthesis
- Products/tools
- Tailoring knowledge
- Identify, review, select knowledge
- Identify problem
- Evaluate outcomes
- Sustain knowledge use

**Capability**
- Education: build skill
- Enablement: consider existing skills and opportunities

**Opportunity**
- Environmental restructuring: make it easy to do the right thing
- Modeling: create a cultural expectation for the behavior

**Motivation**
- Persuasion: make the behaviour a ‘good thing to do’
- Incentivisation: make it desirable to do the behavior

Michie et al, 2011
Hospital Staff/Management Opinions About Making Change

- Improving Nutrition Care for Patients
- Building Strong Relationships Within the Hospital Team
- Accounting for Climate
- Embedding Change into Current Practice
- Involving Relevant People in the Change Process
- Building a Reason to Change

Laur et al, 2017
Key KT activities

• **Build** team engagement
  • Staff discussion groups
  • Survey to understand KAP, barriers
  • Lunch and learns

• **Tailor** INPAC to specific unit processes/context

• **Collect** data to evaluate and stimulate change

• **Learn about** change management
  • Use diverse behaviour change techniques
  • Ready-to-use resources

• **Build** on early success

---

Key Actors

Champion

Site Implementation Team

External coach

Co-champions
INPAC Audit

INPAC Audit

Auditor Initials: ____________
Unit/Hospital: _______________
Date: ____________ Audit #: __________

1. Patient Information

Patient Identifier Room/Bed: ____________ Year of Birth (YYYY): ________________
Sex: □ Male □ Female □ Other
Date admitted to unit (YYYY-MM-DD): ________________
Was the patient an ER/Unit transfer? □ Yes □ No
If yes, transferred from where? ________________

2. Specific diagnoses that are being addressed in this hospitalization


3. Nutrition Screening

□ Completed → At Risk: □ Yes □ No
□ Not completed: Reason not completed: ________________

4. Subjective Global Assessment

□ Completed: If completed:
□ A (well nourished)
□ B (mild/moderate malnutrition)
□ C (Severe malnutrition)
□ Referred, not yet completed
□ Not Completed: If not completed, why:
□ Not at risk
□ Other: Specify: ________________

5a. Comprehensive Dietitian Nutrition Assessment Completed

□ Not completed/No assessment required (not at risk; SGA A and/or B)
□ Yes, completed → Complete 5b
□ Referred, not yet completed
□ Not Completed AND at Risk/Malnourished: If not completed, why? ________________
e.g. palliative, SGA not yet completed etc.

5b. Nutrition Diagnosis (check all that apply):

□ No Nutrition Diagnosis at this time NO-1.1
□ Inadequate protein-energy intake NI-5.3
□ Inadequate energy intake NI-1.2
□ Inadequate oral intake NI-2.1
□ Predicted suboptimal energy intake NI-1.4
□ Underweight NC-3.1
□ Increased nutrient needs NI-5.1
□ Unintended weight loss NC-3.2
□ Malnutrition NI-5.2
□ Other Nutrition Diagnosis (specify)

6. Action taken to improve nutrition for patient (check all that apply)

□ No action
□ ONS as medpass (small amount of nutrient dense product)
□ Enteral nutrition
□ ONS at other times/with meals
□ Parenteral nutrition
□ Nutrient dense diet
□ Specify: ________________
□ Liberalized diet

7. a. Food intake monitoring has occurred

□ Yes □ No
□ No step to b

b. Food intake is ≤ 50%

□ Yes □ No
□ No step to b

c. Intake ≤ 50% triggered local action plan

□ Yes □ No
□ No step to b

d. Action taken to improve nutrition when food intake is ≤ 50% (check all that apply)

□ No new action
□ RD consult
□ ONS between meals/at medication times
□ Nutrient dense diet
□ Liberalized diet
□ Other: Specify: ________________

8. Body weight was measured at admission

□ Yes □ No

9. Body weight monitoring post admission has occurred

□ Yes □ No

10. Has a NUTRITION discharge plan/summary, education, and/or recommendation for follow up post discharge been initiated?

□ Yes □ No
□ If yes, please specify details: ________________

This resource is a result of the collaboration of the hospital sites, researchers and stakeholders participating in the INPAC study.'
Overview of the More-2-Eat Study Time Frames and INPAC Audit Data Collection (n=5036 patients).
"Food Is Medicine" is more than just a slogan.

It's a belief. It is an approach to care. It represents a tremendous amount of research that identifies the process changes we can make to improve nutrition within our healthcare institutions.

Speaking out about Change

m2e.nutritioncareincanada.ca
What we think helps sustain/spread (Laur et al, submitted)
Phase 2... (Keller, Laur, Valitis, Dublin, Chen, Curtis, Bell, Ray, Gramlich, Morrison)

- Can implementation be done within current resources?
  - 10 hospitals, 6 provinces
  - Phase 1 sites expand to 2+ further units
    - Sustain and replicate?
  - Phase 2 hospitals, 1 unit
  - RedCAP Registry for data entry and templates for reports
    - self managed
  - INPAC toolkit and resources
  - Training on behaviour change
  - Monthly telephone coaching
  - Community of Practice Listserv

Outcome data: LOS, readmission, in –hospital mortality
Publications from M2E to date

1. McNicholl T et al., Handgrip strength, but not 5m walk, is a useful functional measure to add to clinical nutrition Assessment. Nutr Clin Pratice (accepted Aug 2018).
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 Centres of Excellence (NCE) Program

In-kind Support:
Dietitians of Canada
Canadian Society of Nutrition Management
Canadian Nutrition Society
NNEdPro Global Centre for Nutrition and Health
Regional Geriatric Program of Toronto
WE CAN DO BETTER.

It is time to think of food as medicine and help people and our healthcare system get better. Learn more about our research at: http://nutritioncareincanada.ca

FOOD IS MEDICINE.

MEDICINE HEALS.
THANK YOU!

Questions?