The Prevalence and Impact of Malnutrition in Canadian Hospitals

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Provincial Medical Medical Advisor Nutrition Services, AHS
Conflict of Interest

- Speakers Bureau – Abbott Canada
- Speakers Bureau, Advisory Board – Baxter Canada, Global
Learning Objectives

- To provide an overview of malnutrition, contributing factors, and impact on outcome
- Describe CMTF and the Nutrition Care in Canadian Hospitals Study
- Describe the scope of data collection
- Summarize patient-level results (n=1022)
- To discuss results and relevance to nutrition care in Canadian Hospitals including health professional perspectives
- To discuss best practice methods for achieving nutrition care goals in the hospital environment
Malnutrition: What It Is

- Malnutrition:

  A state of nutrition in which deficiency or excess (or imbalance) of energy, protein, and other nutrients causes measurable adverse effects on tissue, body form and function, and clinical outcome.\(^1\)

- Under-nutrition:

  A state of deficient energy or protein intake or absorption; often described as protein-energy malnutrition (PEM)

  Characterized by:
  – Weight loss
  – Body composition changes

- In this presentation, malnutrition means under-nutrition

Adult Starvation and Disease-Related Malnutrition (Jensen et al., 2010)

- Inadequate nutrients and/or energy
  - No inflammation
    - Undernutrition e.g. prolonged poor intake
    - Chronic e.g. sarcopenia, COPD, Hemodialysis
    - Acute e.g. critical illness trauma
  - Inflammation
Increased Awareness of Malnutrition: BAPEN National Nutrition Screening Week 2007

1 in 4 adults across all age groups admitted to hospital and care homes in the UK at risk of malnutrition

BAPEN NSW 2007.
Prevalence of Malnutrition in Elderly

- In 10,000 elderly persons, mean prevalence of malnutrition:\(^1\)
  - 1% in community healthy elderly
  - 4% in outpatients receiving home care
  - 5% in patients with Alzheimer’s Disease living at home
  - 20% in hospital patients
  - 37% in institutionalized patients

Malnutrition

Morbidity $\uparrow$
Wound healing $\downarrow$
Infections $\uparrow$
Complications $\uparrow$
Convalescence $\downarrow$

Mortality $\uparrow$
Treatment $\uparrow$
LOS $\uparrow$
QOL $\downarrow$
COSTS $\uparrow$
Increased Morbidity

- ↑ Infections:
  - UK study – increased infections (0.4 vs 0.2 new infections) in malnourished patients
  - Malnutrition shown to be an independent risk factor for nosocomial infections
  - 14.6% in severely malnourished patients vs. 4.4% in well-nourished patients

- ↑ Complications:
  - Malnourished patients had an increased risk of complications during hospital stay vs. well-nourished patients (OR: 3.3 [unadjusted]; 1.7 [adjusted])
  - Malnourished patients had 3 to 7 times the risk of life-threatening complications while in the hospital
  - Complications are significantly higher in malnourished patients (27.0% vs 16.8%)

Increased Mortality

- 44% in malnourished patients vs 18% in well-nourished patients

Malnutrition is Associated with Increased LOS

<table>
<thead>
<tr>
<th>Studies</th>
<th>n</th>
<th>Discipline</th>
<th>Length of Stay (day)</th>
<th>p&lt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>No- Malnutrition</td>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weinsier 1979</td>
<td>134</td>
<td>GIM</td>
<td>12</td>
<td>20</td>
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<tr>
<td>Robinson 1987</td>
<td>100</td>
<td>GIM</td>
<td>9.2</td>
<td>15.6</td>
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<td>Cederholm 1995</td>
<td>205</td>
<td>Geriatrics</td>
<td>18</td>
<td>43</td>
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<tr>
<td>Naber 1997</td>
<td>155</td>
<td>GIM</td>
<td>12.6</td>
<td>20</td>
</tr>
<tr>
<td>Edington 2000</td>
<td>850</td>
<td>Multi</td>
<td>5.7</td>
<td>8.9</td>
</tr>
<tr>
<td>Correira 2003</td>
<td>9348</td>
<td>Multi</td>
<td>10.1</td>
<td>16.7</td>
</tr>
<tr>
<td>Kyle 2004</td>
<td>652</td>
<td>Multi</td>
<td>5.1</td>
<td>10.2*</td>
</tr>
<tr>
<td>Pirlich 2006</td>
<td>1886</td>
<td>Multi</td>
<td>11</td>
<td>15*</td>
</tr>
<tr>
<td>Weighted mean</td>
<td></td>
<td></td>
<td>9.7</td>
<td>17.2</td>
</tr>
</tbody>
</table>

Norman et al. Prognostic Impact of Disease related Malnutrition
Clinical Nutrition 2008;27:5-15
Higher Healthcare Costs: BAPEN 2005

- Malnutrition in UK costs: excess of £7.3 billion per year\(^1\)
  - Hospital = £3.8 billion
  - LTC patients = £2.6 billion
  - GP visits = £0.49 billion
  - Outpatients = £0.36 billion
  - PE, EN and ONS = £0.15 billion
- Higher proportion of costs on older adults\(^1\)
  - £5 billion for persons > 65 years
- UK costs for obesity = £3.5 billion per year\(^1\)

Decreased Quality of Life and Functioning

- Malnutrition has been associated with decreased quality of life and functional impairment
  - Malnourished patients have poorer function (ADLs) on admission and at 90 days
    • QoL was significantly poorer for those with a total MNA score <24
  - Malnourished patients have lower QoL scores (SF-36) and 7 out of 8 QoL scores were significantly reduced

THEREFORE: HIGH PREVALENCE OF MALNUTRITION IN HOSPITALS AND LTCFS

MALNUTRITION HAS A NEGATIVE IMPACT ON OUTCOME

THIS IS NOT NEW

ACTION: HOSPITAL PROCESS FOR NUTRITION CARE

THE IDEAL WORLD
The Ideal Hospital Care Process: Nutrition Care Pathway

Step 1: Nutrition Screening
All patients screened

Well Nourished  Malnourished  At Nutritional Risk

Step 2: Nutrition Assessment
Detailed examination of metabolic, nutrition, or functional variables by an expert clinician, dietician, or nutrition nurse.¹

Step 3: Nutrition Intervention

MONITORING
Malnutrition Screening: W5

- **Why**: What is the rationale for screening?
- **What**: Which tools?
- **Where**: Which locations/patient populations?
- **When**: Nutrition intervention based on defined risk?
- **Who**: Roles and responsibilities of the individuals, the healthcare team and the system?
Step 1. Nutrition Screening Tools

- Nutrition screening tools quickly evaluate a patient’s nutritional status to identify malnourished or at-risk patients
  
  - Malnutrition Screening Tool\(^1\)
  - Malnutrition Universal Screening Tool\(^2\)
  - DETERMINE checklist for screening and assessment\(^3\)
  - Nutritional Risk Index\(^4\)
  - Nutritional Risk Screening-2002
  - Mini Nutritional Assessment\(^5\)
  - Canadian Nutrition Screening tool (CNST)

3. www.aafp.org/Pre-Built/NSI_DETERMINE.pdf.
Fig. 1. A framework for screening tool selection based on the matrix of needs and quality of the tool. The screening program includes the screening test (screening tool), management, and follow-up. It is based on a modification of a previous framework by Elia and Stratton [1]. The screening test refers to the result of nutrition screening, and the screening program refers to the broader activity that includes nutrition screening, management, and follow-up.
Subjective Global Assessment

History:
- Changes in weight over past 6 months
- Changes in dietary intake
- Gastrointestinal symptoms
- Functional capacity
- Stress of disease

Physical:
- Loss of subcutaneous fat: triceps, chest
- Muscle wasting: deltoids, quadriceps, biceps, ...
- Edema: ankle, sacral, ascites

Classification:
A: Well nourished: no history or physical findings of malnutrition
B: Moderately malnourished: Weight loss 5-10% of UBW
   Unintentional weight loss (6 mo), Mild signs of malnutrition
C: Severely Malnourished: Weight loss > 10% UBW (6 mo)
   Unintentional weight loss, severe signs of malnutrition

Detsky et al. JPEN 11:8, 1987
Loss of subcutaneous fat
Muscle Wasting
Step 3: Nutrition Intervention

Potential nutrition intervention strategies:

– Alter diet prescription/diet order
– Liberalize diet
– Food fortification
– Provide food/meal preferences
– Recommend vitamin/mineral supplement
– Oral Nutritional Supplements
– Enteral Nutrition
– Parenteral Nutrition
THE REALITY: THE PERFECT STORM
From pre-hospital to hospital care process
Factors contributing to Malnutrition

- **Before admission:**
  - Weight loss often present
  - Many factors involved
  - Large proportion of Elderly
  - Aging process

- **At admission:**
  - Patients often not properly screened
  - Health care professionals: shortage, perception
  - Nutritional Care Plan not systematic
  - Underlying disease

- **During hospitalization/institutionalization:**
  - Food issues
  - Tests issues
  - Monitoring issues
  - Recognition issues
  - Lack of nutritional interventions
At Admission: Poor Nutrition Screening and Lack of a Care Plan

- Absence of formal screening
  - > 50% of patients at risk in various healthcare settings are not recognized and/or referred for treatment\(^1\)

- In UK: Failure to recognize 60%-85% of hospital patients with malnutrition and refer them for assessment and treatment\(^1\)-\(^3\)
  - UK study of 4 hospitals: only 41 of 168 malnourished patients were referred to a dietitian\(^3\)

Pan-Canadian prevalence of hospital malnutrition? How is the nutrition care? How does it affect our patient outcomes?
The Canadian Malnutrition Taskforce (CMTF)

A taskforce, made up of researchers, dietitians and clinicians from hospitals and universities across Canada

**Mission**
To create awareness about the gaps in preventing, detecting and treating malnutrition in hospitals, LTC, and in older adults in the community.

**Vision**
To create knowledge and close the gaps between research and practice in the prevention, detection, and treatment of malnutrition in Canadians through the continuum of care.
# Who Is the CMTF?

<table>
<thead>
<tr>
<th>Name</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Johane Allard, MD, FRCPC</td>
<td>Ontario</td>
</tr>
<tr>
<td>Paule Bernier, PDt, MSc</td>
<td>Quebec</td>
</tr>
<tr>
<td>Donald R. Duerksen, MD, FRCPC</td>
<td>Manitoba</td>
</tr>
<tr>
<td>Leah Gramlich, MD, FRCPC</td>
<td>Alberta</td>
</tr>
<tr>
<td>Khursheed Jeejeebhoy, MBBS, PhD, MRCP, FRCP</td>
<td>Ontario</td>
</tr>
<tr>
<td>Heather Keller, RD, PhD, FDC</td>
<td>Ontario</td>
</tr>
<tr>
<td>Manon Laporte, RD, MSc, CNSC</td>
<td>New-Brunswick</td>
</tr>
<tr>
<td>Hélène Payette, PhD</td>
<td>Quebec</td>
</tr>
</tbody>
</table>

## Support

<table>
<thead>
<tr>
<th>Name</th>
<th>Role</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bridget Davidson, RD, MSc</td>
<td>National Study Coordinator</td>
</tr>
<tr>
<td>Elisabeth Vesnaver, PhDc</td>
<td>Statistics</td>
</tr>
<tr>
<td>Bianca Arendt, PhD</td>
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</tr>
</tbody>
</table>
Study Objectives

1. To assess nutrition status and prevalence of malnutrition, including obesity, in hospital patients

2. To determine whether malnourished and obese patients have extended length of stay or increased 30-day re-admission and mortality

3. To demonstrate the change in nutritional status that occurs during hospitalization

4. To describe the practice of nutritional care

5. To determine if patients are satisfied with their nutrition care, including meals

6. To validate a feasible nutrition risk tool

7. To determine the cost of malnutrition
Clinical Outcomes

Main
• Length of stay

Secondary
• Discharge home vs nursing home, rehabilitation center, or other facility transfer
• 30-day readmission
• Hospital mortality
• 30-day mortality
• Change in nutritional status from baseline
• Antibiotic use, surgery frequency
Charlson Co-Morbidity Index

- Charlson comorbidity index: to classify the prognostic comorbidity
  1: CVD disorders, dementia, cerebrovascular, COPD, conjunctive tissue disorders, diabetes without complications, chronic liver disease
  2: Hemiplegia, moderate/severe kidney disease, diabetes with complications, tumours, leukemia, lymphoma
  3: moderate to severe liver disease
  6: malignant tumour, metastasis, AIDS
## Patients’ Demography

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Median (range) or % of Patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>1022</td>
</tr>
<tr>
<td>Age (years)</td>
<td>66 (18-98)</td>
</tr>
<tr>
<td>Gender %</td>
<td>Male 51.91</td>
</tr>
<tr>
<td>Ethnicity%</td>
<td>Canadian 81.78, European 11.46, Asian(^a) 2.36, Aboriginal/Natives 1.96</td>
</tr>
<tr>
<td>Education</td>
<td>High school 38.28, Post Secondary 40.45</td>
</tr>
</tbody>
</table>

\(^a\)South Asian, West Asian, East/South East Asian.
Primary Admitting Diagnosis

Presence of Cancer on Admission 17.26%
## Admission Parameters

<table>
<thead>
<tr>
<th>Admission Parameter</th>
<th>N</th>
<th>Median (Range) / %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Charlson Co-Morbidity Index</td>
<td>1005</td>
<td>2 (0; 17)</td>
</tr>
<tr>
<td>Number of Medication</td>
<td>1016</td>
<td>10.0 (0; 37)</td>
</tr>
<tr>
<td>Number of Supplements (Multivitamins, Minerals)</td>
<td>1015</td>
<td>0 (0; 10)</td>
</tr>
<tr>
<td>Oral meal replacement/supplement</td>
<td>1015</td>
<td>21.2%</td>
</tr>
<tr>
<td>Antibiotic on admission</td>
<td>1012</td>
<td>42.1%</td>
</tr>
</tbody>
</table>
Prevalence of Malnutrition at Admission Based on SGA

- Well Nourished (n=558)
- Moderate Malnutrition (n=341)
- Severe Malnutrition (n=116)
## Types of malnutrition at admission
*(n=369 SGA B/C with CRP)*

<table>
<thead>
<tr>
<th>Type of Malnutrition</th>
<th>% (n) of patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Starvation-related malnutrition (SGA B or C, CRP &lt; 10mg/L)</td>
<td>23.58 (87/369)</td>
</tr>
<tr>
<td>Chronic disease-related malnutrition (SGA B or C, CRP ≥10mg/L)</td>
<td>76.42 (282/369)</td>
</tr>
</tbody>
</table>
## Food Intake and Malnutrition

<table>
<thead>
<tr>
<th>Nutritional Status</th>
<th>&lt; 50% of food intake in week 1</th>
<th>&gt;= 50% of food intake in week 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Well nourished</td>
<td>25.35%</td>
<td>74.65%</td>
</tr>
<tr>
<td>Starvation Malnutrition (SGA B or C and normal CRP)</td>
<td>22.08%</td>
<td>77.92%</td>
</tr>
<tr>
<td>Chronic Disease Malnutrition (SGA B or C and elevated CRP)</td>
<td>43.28%</td>
<td>56.72%</td>
</tr>
</tbody>
</table>

31.36% of patients have a low intake in their first week of admission
Change in SGA
Admission vs. Discharge n=720

<table>
<thead>
<tr>
<th>frequency (row %)</th>
<th>Discharge</th>
<th>Total Admission</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Well nourished</td>
<td>Moderate Mal’n</td>
</tr>
<tr>
<td>Admission</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Well nourished</td>
<td>315</td>
<td>68</td>
</tr>
<tr>
<td></td>
<td>81.2 %</td>
<td>17.5 %</td>
</tr>
<tr>
<td>Moderate Mal’n</td>
<td>72</td>
<td>145</td>
</tr>
<tr>
<td></td>
<td>29.3 %</td>
<td>58.9 %</td>
</tr>
<tr>
<td>Severe Mal’n</td>
<td>9</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td>10.5 %</td>
<td>29.1 %</td>
</tr>
<tr>
<td>Total Discharge</td>
<td>396</td>
<td>238</td>
</tr>
</tbody>
</table>

71% no change; 14.7% Improve; 14.3% worsen

n.s. difference Qb= 1.55 p=0.67, McNemar-Bowkar Test
<table>
<thead>
<tr>
<th>Parameters</th>
<th>Admission</th>
<th>Discharge</th>
<th>Sign Test</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>Range</td>
<td>Median</td>
</tr>
<tr>
<td>Handgrip Strength (kg)</td>
<td>995</td>
<td>0.0-70.0</td>
<td>20.5</td>
</tr>
<tr>
<td>C-Reactive Protein (mg/L)</td>
<td>799</td>
<td>0.16-352.9</td>
<td>29.8</td>
</tr>
<tr>
<td>Plasma Albumin (g/L)</td>
<td>904</td>
<td>12.0-78.4</td>
<td>33.0</td>
</tr>
<tr>
<td>Weight (kg)</td>
<td>987</td>
<td>31.4-254.7</td>
<td>74.6</td>
</tr>
<tr>
<td>Mid arm Circumference (cm)</td>
<td>999</td>
<td>14.2-57.4</td>
<td>30.3</td>
</tr>
<tr>
<td>Calf Circumference (cm)</td>
<td>991</td>
<td>18.5-72.2</td>
<td>36.0</td>
</tr>
<tr>
<td>BMI (kg/m²)</td>
<td>873</td>
<td>10.8-93.5</td>
<td>26.4</td>
</tr>
</tbody>
</table>
Other Outcomes

- **Length of stay**
  - < 7 days = 54.42%
  - >= 7 days = 45.58%

- **Hospital mortality** 2.73% (n=27)

- **30- Day mortality** 2.15% (n=20)

- **30 day readmission** 19.76% (n=184)
# Protective Factors Associated with Earlier Discharge

**Cox Regression**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Parameter Estimate</th>
<th>p-value</th>
<th>Hazard Ratio (Relative Risk)</th>
<th>95% Hazard Ratio (Relative Risk) Confidence Limits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender (female)</td>
<td>0.105</td>
<td>0.1298</td>
<td>1.11</td>
<td>0.97, 1.27</td>
</tr>
<tr>
<td>Cancer (not present)</td>
<td>-0.117</td>
<td>0.2512</td>
<td>0.89</td>
<td>0.73, 1.09</td>
</tr>
<tr>
<td>Age (&lt; 60 y)</td>
<td>0.228</td>
<td>0.0019</td>
<td>1.26</td>
<td>1.09, 1.45</td>
</tr>
<tr>
<td>CCI (&lt; 3)</td>
<td>0.214</td>
<td>0.0062</td>
<td>1.24</td>
<td>1.06, 1.44</td>
</tr>
<tr>
<td>Food intake (&gt;50%)</td>
<td>0.162</td>
<td>0.0226</td>
<td>1.18</td>
<td>1.02, 1.35</td>
</tr>
<tr>
<td>Well nourished</td>
<td>0.225</td>
<td>0.0012</td>
<td>1.25</td>
<td>1.09, 1.44</td>
</tr>
</tbody>
</table>

-2 log likelihood = 10175.416

Likelihood Ration Test Chi-Square = 39.62, p-value < 0.0001

Overall Wald test of Global Null Hypothesis all Beta=0: Wald statistic = 39.2214, p-value < 0.0001

(Omnibus test of Model Coefficients)
Any Mortality & Nutritional Status

Malnourished patients are 6.4 times more likely to die than well-nourished patients.

Fisher’s Exact test p-value <0.0001

\(X^2=28.57, \text{ p-value}<0.0001\)
Predictors of Mortality  
(n=47 deaths)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Wald Statistic</th>
<th>Odd’s Ratio [Exp (B)]</th>
<th>95% CI</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age &lt; 60 vs &gt;=60</td>
<td>7.99</td>
<td>4.57</td>
<td>1.59, 13.1</td>
<td>0.005</td>
</tr>
<tr>
<td>CCI &lt;3 vs &gt;=3</td>
<td>5.7</td>
<td>2.2</td>
<td>1.15, 4.35</td>
<td>0.02</td>
</tr>
<tr>
<td>SGA A vs B/C</td>
<td>17.6</td>
<td>5.3</td>
<td>2.45, 11.7</td>
<td>&lt;0.0001</td>
</tr>
</tbody>
</table>

All covariates significant predictors in bivariate analysis
Omnibus Tests of Model Coefficients chi-square= 36.7, df=3, p<0.0001;
Hosmer & Lemeshow Chi-square= 1.37 p=0.97
Readmission & Nutritional Status

Malnourished patients are 1.61 times more likely to be re-admitted than well-nourished patients.

N = 928

$X^2=8.43$, $p$-value=0.004
Patient Food Access

- Adapted from Naithani et al., 2009
- Sensory satisfaction, portion size, timing of meals
- Challenges with eating
- Pencil/paper form, majority self-complete

- N=887 at discharge
- 89% response rate
Patient Satisfaction

Percentage of respondents satisfied with:

- Appearance: 83.05%
- Temperature: 78.28%
- Taste: 70.99%
- Smell: 81.37%

- 13.1% rated portion size too small
- 14.1% rated portion size too large
- 19.6% rated the temperature of the food as too cold

81% satisfied with portion size
Barriers to Eating

Percentage of respondents who were affected by:

- Missed meal due to medical procedure: 34.73%
- Interrupted during meal: 41.83%
- Disturbed by noise, smell, or activity: 38.94%
Patient Difficulties with Eating

**Issues**
- Cutting food: 16.3%
- Opening packages/unwrapping food: 30.2%
- Reaching meals: 19.8%
- Did not get food ordered: 3.1% (every meal)
- Self-feeding: 8.8%
- Poor position for eating: 27.6%
- Did not get help to eat meals: 7.8%
- Not enough time to eat meals: 7.4%
Common reasons for not eating as reported by respondents:

- Poor appetite (64.5%)
- Sickness (43.1%)
- Tiredness (41.5%)
- Pain (37.7%)
- Being worried (25.4%)
- Depressed (20.0%)
- Breathing difficulties (17.2%)
- Chewing/swallowing problem (15.6%)
Hunger

30.2% had food brought in by visitors
12.3% felt hungry but no food was available
24.8% got hungry because time between meal was too long
18.2% when missed meals, was never given food by staff
11.6% felt hungry but could not ask staff for food
Physician Surveys

- N = 428; 35.1% response; 61% male, 75% academic centre
- Adapted Mowe et al., Clin Nutr 2006;25:524-32

- Although 33.1% report >50% of patients receive nutritional assessment on admission; 86.8% believe this should occur
- Protocols for identification of malnutrition reported by 32.1%
- Nutrition knowledge lags behind interest and perceived importance of nutrition
Nurse Surveys

• N=346, 48% response rate (11 hospitals)
• 90% female, 80% ward nurses, 56% academic hospital

• 55% felt that malnutrition was not a problem on their ward (<25% malnourished)
• 93.5% believed nutrition assessment should occur on admission; 91% felt that 3 nutrition questions could be part of their assessment
• 56% felt dietitian should do screening; 23% nurse
Focus Groups: Nutrition Personnel, n=8 FG, 91 participants

- Need to develop a “nutrition culture”; priority, team work
- Need effective tools e.g. screening, evidence based protocols, appropriate and quality food, timely and accurate patient information
- Effective systems, e.g. food production & delivery, communication
- Care responsive to patient needs e.g. flexible food systems, appropriate menus and meal supplements, up to date care and inclusion of patient of family in care process
- Right person doing the right task / staff training
Summary of Other Data

• Food intake in hospital is an important marker of risk and recovery; many factors influence.
• There is an interest among physicians and nurses to address the nutritional problems of patients.
• Nutrition screening and assessment should be done upon admission but education is required on what to do and how to do it.
• Changing the nutrition culture involves a multi-level approach.
Figure 1. Nutrition care algorithm (adapted from Standards for Specialized Nutrition Support: Adult Hospitalized Patients60).
Summary of Results

• Prevalence of malnutrition ~ 45%
• Disease-related malnutrition more prevalent
• Nutritional status deteriorates in hospital for some
• Food intake < 50% and malnutrition are independent predictors of malnutrition
• Food intake in hospital an important marker of risk and recovery; many factors influence
• Malnutrition results in inefficiency, as 1/5 return to hospital
Long-term Goals of Study

The study will tell us …

• National-level data on malnutrition prevalence and predictors of in-hospital malnutrition;
• How readily we respond to malnutrition and improve;
• Patient satisfaction/perceptions;
• Identify processes that are barriers and those that promote best nutrition practice;
• A better understanding of how to achieve nutritional care goals.
CMTF KT Priorities

- Standardized screening is mandatory in acute care hospitals
- Administrators and health teams are educated on the need to integrate nutrition care into medical practice
- Mealtimes are patient focused; protected, care consistent with nutrition care plan
- Food and nutrition services are optimized to provide quality, appropriate (e.g. culturally, texture) food with adequate nutrients for recovery
- Multidisciplinary team is involved in nutrition care and roles are delineated; RD determines nutrition care plan, including route;
- Nutrition therapies, including oral nutrition supplementation, enteral and parenteral nutrition are used effectively
Knowledge Translation Plan

• Publish results
• Media campaign
• Conference presentations
• Briefing documents available on web site
• Patient pamphlets
• Work with Accreditation Canada to establish quality nutrition care in hospitals
• Training on detection: screening, SGA
• Resource toolkit
• Facilitated culture change
Facilitated Culture Change

• Working with Senior Management, Physicians, Nurses and Clinical Nutrition to change nutrition practice

• If your hospital has the interest and wants to learn more about this opportunity please contact Bridget Davidson, Executive Director, at bdavidson@golden.net or (519) 741-0828.
Conclusions

- Malnutrition is common in hospitalized patients and contributes to mortality and morbidity
- Factors before admission, at admission and during hospitalization contribute to Malnutrition
- Solutions need to be sought at the system, provider and patient levels to effect change in outcome
Through unrestricted educational grants, our sponsors help in the fight against malnutrition.