Improving documentation and coding of malnutrition – a five year journey

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Malnutrition is common and is associated with higher healthcare costs and length of stay, increased morbidity and mortality.

**Strong association with:**
- Impaired muscle and respiratory function
- Impaired immune response
- Delayed wound healing
- More complications
- Longer rehabilitation
- Longer hospital stay
- More falls

* Cost of Malnutrition > Cost of Obesity in healthcare
Patient Malnutrition – common and costly

- 1993, US - estimated an annual cost of US $18 billion due to the increased length of stay associated with the care of malnourished patients in hospitals in the US.

- 2003, UK - cost of disease-related malnutrition more than € 10.8 billion per year (7.3 billion British pounds) - more than double the bill for obesity.

- 2012, Spain - cross sectional study found an increase in LOS, especially in patients who had developed malnutrition during admission (15.2 vs. 8.0 days, p < 0.001), with an associated additional cost of € 5,829 per patient.
Causes of malnutrition are multifactorial

- Depression
- Inflammation
- Malignancy
- Dysphagia
- Acute trauma, injury or illness
- Polypharmacy

Food not appetising/unfamiliar

PROLONGED FASTING/STARVATION

Physical Barriers
- poor dentition
- unable to feed self
- food or drinks out of reach
- meal time interruptions

Poor Appetite
Nausea and Vomiting

↓Food Intake + weight loss +/- Disease/Surgery = Malnutrition
Increasing prevalence of obesity in developed countries contributes to lack of recognition

Nutrition Care Day; Australia – NZ benchmarking in 2010.
- Across all 24 sites malnutrition prevalence was 30% (n = 2976)
- 34% at St Vincent’s Hospital Melbourne (n = 81)

Other published literature for malnutrition prevalence at St Vincent’s:
- 30% of elderly general medical patients (Adams et al, 2008)
- 48% of gastrointestinal cancer surgical patients (Garth et al, 2010)

Cost effective interventions are available but identification, documentation and referral by medical and nursing staff is not routine.
Diagnosing Malnutrition - not always obvious

- Definition: controversial
- BMI <18.5 (WHO)
- Functional decline
- Recent unintentional loss of weight >5%
- Reduced intake / appetite
- Loss of fat and muscle stores
- Gold standard – subjective global assessment (SGA) tool
Subjective Global Assessment (SGA)

- Weight loss and weight history
- Changes in eating behaviour
- GI symptoms (anorexia, nausea, vomiting, diarrhoea)
- Functional status
- Oedema, ascites
- Subcutaneous muscle/tissue loss/wasting
- 3 level classification:
  - A – Well nourished
  - B – Mildly/moderately malnourished
  - C – Severely malnourished
Malnutrition in International settings

German study of 1886 consecutively admitted patients across 13 hospitals

Measured nutritional status (SGA), risk factors, length of stay

MVA revealed three independent risk factors

- Age (43% malnourished >70 years compared with 8% <30 years)
- Polypharmacy
- Malignancy

Highest prevalence was seen in

- Geriatrics (52%),
- Oncology (37.6%)
- Gastroenterology (32.6%)

Malnutrition associated with 43% increase in length of stay

Pirlich et al, Clin Nutr 2006
Malnutrition in Australian hospitals

St George Hospital, Sydney

Prospective study of 819 inpatients, excluding ICU, dementia, paediatrics or obstetrics

Measured
- Prevalence of malnutrition with Subjective Global Assessment
- Effect on 12 month mortality
- Proportion identified as at nutritional risk

Results
- Malnutrition 36%
- Mortality at 12 months: 29.7% malnourished vs 10.1%
- Longer LOS (17 days vs 11 days, p<0.0005)
- Only 1/3 with malnutrition were identified as at risk

Pilot Study – malnutrition documentation, missed coding and reimbursement

* Setting:
  * Adult tertiary hospital, metro area, acute admitted care

* Hypotheses:
  * Identification, documentation and referral for malnutrition risk by medical and nursing staff is not routine
  * Hospital reimbursements missed

* Pilot study - Gastroenterology Unit
* Completed August – September 2011 (5 weeks)
* Prospective / Cross Sectional Design

  * Consecutive gastroenterology inpatients were assessed for malnutrition using SGA over 5 weeks period
  * Medical history documentation audit
  * Coding of malnutrition and potential gaps in funding for the hospital
Malnutrition must meet the criteria in **ACS 0001 Principal diagnosis** or **ACS 0002 Additional diagnoses** to be coded.

In 2010, the NCCH and CSAC established protein-energy malnutrition (PEM) (codes E40 – E46) may be coded when it is documented by a dietitian in the clinical record.

<table>
<thead>
<tr>
<th><strong>E43 – unspecified severe PEM</strong></th>
<th>In adults, BMI &lt; 18.5 kg/m² or unintentional loss of weight (≥ 10 %), with evidence of suboptimal intake resulting in severe loss of subcutaneous fat and/or severe muscle wasting.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>E44.0 – PEM of moderate degree</strong></td>
<td>In adults, BMI &lt; 18.5 kg/m² or unintentional loss of weight (5 – 9 %), with evidence of suboptimal intake resulting in moderate loss of subcutaneous fat and/or moderate muscle wasting.</td>
</tr>
<tr>
<td><strong>E44.1 – PEM of mild degree</strong></td>
<td>In adults, BMI &lt; 18.5 kg/m² or unintentional loss of weight (5 – 9 %) with evidence of suboptimal intake resulting in mild loss of subcutaneous fat and/or mild muscle wasting.</td>
</tr>
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</table>
### Pilot study - patient demographics

<table>
<thead>
<tr>
<th></th>
<th>Total (n = 51)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>51.9 ± 18.3</td>
</tr>
<tr>
<td>Gender (%M / %F)</td>
<td>59/41</td>
</tr>
<tr>
<td>BMI (kg/m²)</td>
<td>24.0 (6.0)</td>
</tr>
<tr>
<td>LOS (days)</td>
<td>4.0 (4.0)</td>
</tr>
<tr>
<td>Most common admission disease types</td>
<td>Chronic Liver Disease (25%)</td>
</tr>
<tr>
<td></td>
<td>Inflammatory Bowel Disease (24%)</td>
</tr>
<tr>
<td>Malnourished (n (%))</td>
<td>18 (35%)</td>
</tr>
</tbody>
</table>
Documentation of Nutrition Risk Factors on admission by Doctors and Nurses

- Loss of Appetite
- Oral Intake
- Loss of Weight
- Nausea
- Vomiting
- Diarrhoea

% patients

- Doctor
- Nurse

St Vincent's Hospital Melbourne
No doctor documented the presence of malnutrition in the medical history on or during the patient’s admission.
Missed Hospital Reimbursements

Malnourished Patients  
\( n=18 \)

- Documented and Coded  
  8

- Not Coded  
  10

  - Missed Documentation and coding  
    4
  
  - Documented but coding missed  
    6

    - Higher WIES  
      2

Well Nourished Patients  
\( n=33 \)

Potential missed reimbursements AUD $21,500 (6% WIES)
Malnutrition Diagnosis – Difference in Dollars

<table>
<thead>
<tr>
<th></th>
<th>No Malnutrition Documentation</th>
<th>Malnutrition Documentation</th>
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</thead>
<tbody>
<tr>
<td>DRG</td>
<td>H60B Cirrhosis and Alcoholic Hepatitis with <strong>severe or moderate</strong> complications</td>
<td>H60A Cirrhosis and Alcoholic Hepatitis with <strong>catastrophic</strong> complications</td>
</tr>
<tr>
<td>WIES</td>
<td>0.5024</td>
<td>2.3454</td>
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<tr>
<td>$$$ (x $3867)</td>
<td>$1,947</td>
<td>$9,070</td>
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</table>

**Difference in funding:** $7,123
## Malnutrition Diagnosis – Difference in Dollars

<table>
<thead>
<tr>
<th>Unit</th>
<th>DRG</th>
<th>DRG Description</th>
<th>WIES</th>
<th>Cost ($)</th>
<th>DRG with Malnutrition</th>
<th>WIES</th>
<th>Cost ($)</th>
<th>Difference</th>
<th>LOS</th>
<th>DRG Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Stroke</strong></td>
<td></td>
<td>Stroke &amp; Other Cerebrovascular Disorders W Severe CC</td>
<td>2.0516</td>
<td>$8,996</td>
<td>B70A</td>
<td>2.675</td>
<td>$11,729</td>
<td>$2,733</td>
<td>18</td>
<td>Stroke &amp; other cerebrovascular Disorders W Catastrophic CC</td>
</tr>
<tr>
<td><strong>Oncology</strong></td>
<td></td>
<td>Digestive Malignancy W/O Catastrophic CC</td>
<td>0.5589</td>
<td>$2,450</td>
<td>G60A</td>
<td>1.7374</td>
<td>$7,618</td>
<td>$5,167</td>
<td>6</td>
<td>Digestive Malignancy W Catastrophic CC</td>
</tr>
<tr>
<td><strong>General Medicine</strong></td>
<td>K62B</td>
<td>Miscellaneous Metabolic Disorders W/O Catastrophic or Severe CC</td>
<td>0.6561</td>
<td>$2,787</td>
<td>K62A</td>
<td>1.3011</td>
<td>$5,527</td>
<td>$2,739</td>
<td>4</td>
<td>Miscellaneous Metabolic Disorders W Catastrophic or Severe CC</td>
</tr>
</tbody>
</table>
Identification of Malnutrition - Achievements

- Malnutrition Screening Tool incorporated into the Nursing Admission Risk Form
- Electronic method of recording weight and BMI on the PAS system established in 2014
- BMI Flag has been developed for inclusion on nursing, waitlist and operating theatre reports
BMI Flag – Ward and Theatre reports

Purple BMI = Underweight with BMI <18.5

Red BMI = Very Obese with BMI ≥35
Dietary: Patient has been fasting for 2 days. Recommended oral intake today = on full soft diet. Managed 1/8 breakfast. No nausea or vomiting. At home ever-past 6 months. Frequent nausea and occasional vomiting and poor appetite. Only been managing 1/2 usual meals.

Nutrition Diagnosis: Inadequate oral intake and malnutrition related to poor appetite, frequent nausea and occasional vomiting as evidenced by 20% loss of weight (12 kg) over 6 months, consuming < 1/2 meals and severe loss of fat and muscle stores.

Nutrition Summary: MALNUTRITION - Subjective Global Assessment (SGA)

- SGA B – Mildly/Moderately malnourished
- SGA C – Severely malnourished

Name: SMITH
Signature: /s
Dietitian Date: 1/1/13

Action:
1) Provide high energy, high protein diet
2) Commence oral nutrition supplements
   - 60 ml Two Cal. Q1D
3) Encourage small frequent meals
4) Regular: Maxalon as per unit.
Medical discharge summary - added malnutrition complication

- Highlights the nutrition care provided in hospital for ongoing care
## Malnutrition coding on head of unit information

### Head of Unit Information

#### Access

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<tbody>
<tr>
<td>Number of Procedures</td>
<td>202</td>
<td>272</td>
<td>246</td>
<td>252</td>
<td>273</td>
<td>268</td>
<td>272</td>
<td>245</td>
<td>201</td>
<td>203</td>
<td>203</td>
<td>316</td>
<td>237</td>
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<tr>
<td>Number of Admissions</td>
<td>273</td>
<td>319</td>
<td>344</td>
<td>349</td>
<td>345</td>
<td>351</td>
<td>356</td>
<td>341</td>
<td>359</td>
<td>273</td>
<td>374</td>
<td>407</td>
<td>315</td>
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<tr>
<td>Number of Separations</td>
<td>279</td>
<td>325</td>
<td>338</td>
<td>363</td>
<td>339</td>
<td>358</td>
<td>366</td>
<td>342</td>
<td>369</td>
<td>269</td>
<td>379</td>
<td>415</td>
<td>314</td>
</tr>
<tr>
<td>Percentage of Discharges Home before 10am</td>
<td>9.1 %</td>
<td>9.7 %</td>
<td>2.7 %</td>
<td>7.7 %</td>
<td>10.7 %</td>
<td>4.8 %</td>
<td>6.1 %</td>
<td>11.8 %</td>
<td>12.1 %</td>
<td>15.4 %</td>
<td>13.7 %</td>
<td>18.0 %</td>
<td>28.9 %</td>
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#### Effectiveness

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</thead>
<tbody>
<tr>
<td>Percentage of Unplanned Return to Theatre</td>
<td>0.0 %</td>
<td>0.0 %</td>
<td>0.0 %</td>
<td>0.0 %</td>
<td>0.0 %</td>
<td>0.0 %</td>
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<td>0.0 %</td>
<td>0.0 %</td>
<td>0.0 %</td>
<td>0.3 %</td>
</tr>
<tr>
<td>Percentage of Discharge Summaries Dispatched</td>
<td>98.6 %</td>
<td>98.7 %</td>
<td>100 %</td>
<td>97.5 %</td>
<td>95.7 %</td>
<td>100 %</td>
<td>97.5 %</td>
<td>98.5 %</td>
<td>100 %</td>
<td>98.3 %</td>
<td>100 %</td>
<td>96.8 %</td>
<td>100 %</td>
</tr>
<tr>
<td>Percentage of Discharge Summaries Dispatched Within 48hrs</td>
<td>63.2 %</td>
<td>30.7 %</td>
<td>30.7 %</td>
<td>69.2 %</td>
<td>62.1 %</td>
<td>68.0 %</td>
<td>84.4 %</td>
<td>49.4 %</td>
<td>48.8 %</td>
<td>28.8 %</td>
<td>80.6 %</td>
<td>88.5 %</td>
<td>60.8 %</td>
</tr>
<tr>
<td>Percentage of Discharge Summaries Dispatched Within 48hrs</td>
<td>52.3 %</td>
<td>38.2 %</td>
<td>30.7 %</td>
<td>67.5 %</td>
<td>56.4 %</td>
<td>68.0 %</td>
<td>82.3 %</td>
<td>52.0 %</td>
<td>46.6 %</td>
<td>29.0 %</td>
<td>80.6 %</td>
<td>86.7 %</td>
<td>60.8 %</td>
</tr>
<tr>
<td>Percentage of Malnutrition Coded Episodes with a LOS &gt; 3 days</td>
<td>26.9 %</td>
<td>28.1 %</td>
<td>23.3 %</td>
<td>35.5 %</td>
<td>23.1 %</td>
<td>40.5 %</td>
<td>11.8 %</td>
<td>20.7 %</td>
<td>31.4 %</td>
<td>41.7 %</td>
<td>14.8 %</td>
<td>28.1 %</td>
<td>29.2 %</td>
</tr>
<tr>
<td>WIES vs Target</td>
<td>63.4 %</td>
<td>69.0 %</td>
<td>55.7 %</td>
<td>67.4 %</td>
<td>86.8 %</td>
<td>100 %</td>
<td>90.6 %</td>
<td>100 %</td>
<td>100 %</td>
<td>100 %</td>
<td>100 %</td>
<td>100 %</td>
<td>88.2 %</td>
</tr>
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</table>
Multidisciplinary education and collaboration

* Engaged medical staff to document malnutrition diagnosis in addition to the dietitian
* Collaboration with clinical coding staff to discuss how clinicians can meet coding criteria
  * Guidelines for malnutrition documentation
  * Organised regular meetings between dietetics and clinical coding departments to maintain working relationships.
* Seek input from clinical coding staff in the development and/or review of nutrition assessment forms.
* Audited the effectiveness of interventions to improve malnutrition coding rates
Diagnostic coding for malnutrition 2010 - 2014
Two Australian studies have reported estimates of unclaimed reimbursements from patient admissions where malnutrition was not recorded as a co-morbidity as part of the DRG.

- AUD $1,850,540 for undiagnosed or undocumented cases of malnutrition (Gout et al, 2009)
- AUD $1,677,235 due to undiagnosed and documented malnutrition (Ferguson et al, 1997)

Australian Commission on Safety and Quality in Health Care (ACSQHC) has recently recognised hospital acquired malnutrition as part of a national set of high-priority complications – similar cost and length of stay impacts to pressure ulcers / falls and amenable to reduction in rate of onset.
Nutrition is an integral component of patient treatment and recovery and the patient experience. Hospitalised patients represent a diverse group with special needs and we have a duty of care to ensure provision of food and fluids is appropriate for all. Patient safety - Food and Nutrition related incidents can result in serious complications e.g. increased infection and LOS.

- Iatrogenic starvation: Prolonged fasting and missed meals
- Practical starvation: Lack of feeding assistance
- Incorrect food: Allergies, Aspiration in swallowing impaired
Introduction of a similar multidisciplinary nutrition strategy in the UK resulted in reduction for malnourished patients in:

- LOS (11 day to 8.1 days)
- Major complications (75% to 17%)
- 30 day readmission rate (16.5% to 7.1%)

(Brugler et al J Qual Improv 1999)
Malnutrition common in hospital patients

Potential loss of WIES funding from inadequate diagnosis and coding of malnutrition has driven a number of improvements

- Improved screening and identification
- Improved documentation
- Improved coding

Ongoing work to see how improvements translate into improved nutrition care and clinical outcomes
Acknowledgements

* St Vincent’s Nutrition Project Working Group
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