Malnutrition Is a Problem That Can Be Solved

THE PROBLEM

Worldwide 20 to 50% of hospitalized patients are malnourished—a situation with serious negative impact on patient outcomes and healthcare costs.

THE SOLUTION

Nutrition intervention, such as oral nutrition supplements (ONS) immediately upon admission, helps lessen adverse effects of malnutrition and enhance patient response to treatment and recovery.

The feedM.E. Nutrition Care Pathway helps make nutrition intervention stepwise and simple.
Nutrition Practices for Hospital Administrators

- Malnutrition takes high health and financial tolls.
- Nutrition interventions improve patient outcomes and cut hospital costs.
- Common barriers impede best-practice nutrition but can be overcome with guidelines, protocols, training and reinforcement.
- To identify risk of malnutrition and to guide nutrition care, follow our Nutrition Care Pathway.
Malnutrition Is Common and Costly

Malnutrition prevalence • Health tolls • Excess healthcare costs

Evidence shows that malnutrition worsens clinical outcomes and adds to the overall costs of care.
Malnutrition Is Common in Hospitals Worldwide

Prevalence of hospital malnutrition ranged between 20 and 50%¹

- 50% of European hospital patients > 80 years and nursing home patients were at risk of malnutrition³
- 19% of Dutch nursing home patients were malnourished⁴
- 43% in Cuban hospitals were moderately malnourished and 11% were severely malnourished⁶
- 48% in Brazilian hospitals were malnourished⁶
- 51% of older Australians in rehabilitation hospitals were at risk of malnutrition⁷
- 32% malnutrition prevalence in 56 hospitals in Australia and New Zealand⁸
- 42.5% in Jinling hospital were malnourished based on low body mass index or recent weight loss¹⁰
- 27% in Beijing hospitals at malnutrition risk³

Malnutrition Is Associated With Illness, Injury, and Hospitalization


Risk of dying increases when food intake is limited by illness or injury\(^4\)

Loss of lean body mass delays recovery and impedes rehabilitation\(^3\)

Hospitalization itself often worsens nutritional status\(^2\)

Anyone who is sick or injured is at risk of malnutrition, especially older people\(^1\)
More than 1 in 5 patients over age 65 was severely undernourished or at risk for under-nutrition upon hospital admission.

Malnutrition Has Adverse Impacts on Outcomes

DECREASES\(^1,2\)

- GI, pulmonary, and renal function
- Recovery from illness
- Mental state
- Immunocompetence
- Recovery from injury
- Quality of life

INCREASES\(^1,2\)

- Overall complication rate
- Rate, duration, severity of infections
- Hard-to-heal wounds, pressure ulcers
- Immobility, risk of falling
- Need of help and care
- Mortality risk

Malnutrition Increases Risk of Post-surgical Complications

Pre-existing malnutrition increases risk for post-surgical complications by 2- to 5-times.

Malnutrition Increases Risk of Hospital-acquired Infections

**France**
Malnutrition increases risk of hospital-acquired infection nearly 5-fold (OR, 4.98).

**Korea**
Severely malnourished ICU patients were 2.1 times more likely to get an infection.

Malnutrition Is Associated With Falling in Hospitals

Australia: patients who fell during hospitalization

<table>
<thead>
<tr>
<th></th>
<th>Well-nourished by SGA*</th>
<th>Malnourished by SGA*</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n=27; mean ± S.D.</td>
<td>n=22; mean ± S.D.</td>
<td></td>
</tr>
<tr>
<td>Age (years)</td>
<td>69.8 ± 14.1</td>
<td>72.8 ± 14.1</td>
<td>0.453</td>
</tr>
<tr>
<td>MST,* admission</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No risk (0,1)</td>
<td>21</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Risk (≥ 2)</td>
<td>6</td>
<td>16</td>
<td>&lt; 0.001*</td>
</tr>
<tr>
<td>Weight (kg)</td>
<td>75.4 ± 13.9</td>
<td>63.0 ± 12.8</td>
<td>0.002*</td>
</tr>
<tr>
<td>Body mass index</td>
<td>25.9 ± 3.9</td>
<td>22.1 ± 3.4</td>
<td>0.003*</td>
</tr>
<tr>
<td>Energy intake (Kj)</td>
<td><strong>6671 ± 2351</strong></td>
<td><strong>4949 ± 2466</strong></td>
<td>0.018*</td>
</tr>
<tr>
<td>Protein intake (g)</td>
<td><strong>77.2 ± 29.5</strong></td>
<td><strong>56.4 ± 30.4</strong></td>
<td>0.022*</td>
</tr>
</tbody>
</table>

*Malnutrition screening Tool, MST. Subjective Global Assessment, SGA. Nutritional status was determined as well-nourished (SGA A) or Malnourished (SGA B + C); statistical significance is reported at P < 0.05.

‘Fallers’ had a high prevalence of malnutrition; nutrition intervention is recommended for people who fall during hospitalization.

Malnutrition Negatively Impacts Health-related QOL

EuroQol-5D QOL Dimensions

Quality of Life

- Pain/discomfort
- Anxiety/depression
- Usual activities
- Mobility
- Self-care

Norway
n= 3286 people aged 65-87 yrs
Health-related Quality of Life (HRQoL) was significantly reduced in older people with increased risk of malnutrition.

Malnutrition Is Associated With Serious Morbidity and Mortality

**UK**\(^2\): Hospital patients at high risk for malnutrition had greater post-release mortality compared to low-risk patients (24% vs. 5% at 3 months).

**India**\(^4\): Malnourished dialysis patients were at 3-fold higher risk of mortality compared to nourished peers.

**USA**\(^1\): Older hospital patients with low BMI (< 22 kg/m\(^2\)) were more likely to experience life-threatening complications than were those with higher BMI (15.4% vs. 4%).

**Brazil**\(^3\): In-hospital mortality was higher in malnourished than in nourished patients (12.4% vs 4.7%).

Financial Costs Associated With Malnutrition Are High

Netherlands\(^1\)

**Added costs of care** for managing disease-related malnutrition was estimated as 2.1% of the country’s total national health expenditures. Across Europe, such costs would total €120 billion annually.

Singapore\(^2\)

Malnourished patients had **longer stays in hospital** (6.9 days vs 4.6 days, \(P < 0.001\)) and **2-fold higher rates of readmission** within 15 days compared to adequately-nourished peers—both with expensive consequences.

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Malnutrition and Increased Daily Hospital Costs

Malnourished patients had higher daily costs of care, and they stayed longer in the hospital (16.7 days vs 10.1 days for nourished patients) causing still greater costs.

Malnutrition and Increased Total Hospitalization Costs

The hospitalization cost for a malnourished patient was more than double that of a patient who was not classified as nutritionally-at-risk.

Feeding Hospitalized Patients: the Impact

Oral nutrition supplements • Outcome benefits • Cost savings

Clinical evidence underscores advantages of nutrition intervention.
## Outcome Benefits With ONS

<table>
<thead>
<tr>
<th>Outcome benefit</th>
<th>Study design and findings</th>
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</thead>
<tbody>
<tr>
<td>Lower incidence of pressure ulcers</td>
<td>Meta-analysis of results from 4 RCTs showed significantly lowered incidence among elderly hospitalized patients (OR 0.75) who used ONS (2-26 weeks) compared to non-users. Studies were done in Switzerland, Sweden, France, and the Netherlands.</td>
</tr>
<tr>
<td>Greater handgrip strength</td>
<td>Meta-analysis of results from 4 RCTs showed that ONS users (mean age &gt; 65 years) had significantly improved handgrip strength compared to controls. Studies were done in the UK, Sweden, and Germany.</td>
</tr>
<tr>
<td>Improved QOL</td>
<td>During a 3-month post-hospitalization interval, malnourished patients who received individualized nutrition care with ONS and dietary counseling scored higher on all 8 QOL scales, compared to only 3 scales with dietary counseling. This study was conducted in Germany.</td>
</tr>
<tr>
<td>Reduced mortality risk</td>
<td>Meta-analysis of nutrition trials in older people. In subgroup analysis of those who were undernourished, ONS use significantly reduced risk of mortality by more than 20%. Studies were done at sites around the world.</td>
</tr>
</tbody>
</table>

Oral Nutrition Supplement Use Lowers Costs of Hospital Care

USA
Database of 44 million inpatient episodes, with >700,000 episodes that included the use of ONS; each ONS-user was paired with a non-user who had a similar health condition (propensity matching)

EPISODE COST
ONS use was associated with 21.6% reduction in hospitalization cost
Each dollar spent on ONS generated $52.63 in savings from reduced episode cost

LENGTH OF STAY
ONS use was associated with 21.0% reduction in LOS

30-DAY READMISSION
ONS was associated with a 6.7% reduction in probability of 30-day readmission
Each dollar spent on ONS generated at least $2.56 from avoided 30-day readmissions

Health Benefit: Fewer Complications in Hospitals

Baltimore and Beijing
n=1831

No-support group

PN group

EN group

Patients with complications, %

Overall complication
Infectious complication
Non-infectious complication

Health Tolls and Financial Costs: Summary

MALNUTRITION

MORBIDITY

MORTALITY

TREATMENT

LENGTH OF STAY

READMISSIONS

INCREASED COST

Common Barriers and Strategies to Achieve Best-practice Nutrition

Barriers • Nutrition culture • Nutrition guidelines • Training and education

Achieving optimal nutrition starts at the top.
Too Often Patients’ Nutritional Needs Are Overlooked and Under-treated

Europe-wide survey of nutrition practices in hospitals

- Only 50% of units conducted routine nutrition screening on admission
- Even when energy goal was specified, 43% of patients did not meet goal

Too Often Patients’ Nutritional Needs Are Overlooked and Under-treated

24h audit of nutrition care in Australian hospitals

- 55% of malnourished patients ate less than half of the food offered

Too Often Patients’ Nutritional Needs Are Overlooked and Under-treated

Nutritional status worsens during hospital stay

- In Chinese teaching hospitals, the proportion of malnourished patients went from 8.2% on admission to 11.5% at discharge.¹
- Stroke patients hospitalized in South Korea deteriorated from 12.2% undernourished at baseline to 19.8% one week later.²

## Barriers to Best-practice: Time, Training, Money

<table>
<thead>
<tr>
<th>Perceived barriers to updating nutrition practice&lt;sup&gt;1,2&lt;/sup&gt;</th>
<th>Why overcome this barrier?</th>
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<tbody>
<tr>
<td>Practice change takes time</td>
<td>Adoption of standardized, practical protocols makes feeding decisions stepwise and logical, which saves time.</td>
</tr>
<tr>
<td>Practice change requires staff education and training</td>
<td>Achieving better nutritional status for patients improves clinical outcomes and lowers costs of care.</td>
</tr>
<tr>
<td>Practice change will cost a lot</td>
<td>Due to the high costs of care for malnourished patients, hospitals can’t afford not to improve nutrition care.</td>
</tr>
</tbody>
</table>

5 Steps to Overcome Barriers and Achieve Best-practice Nutrition

- Create a nutrition culture
- Overcome barriers
- Monitor progress
- Know nutrition guidelines
- Empower champions
- Educate and train staff

Feed Patients Right. Feed Patients Now.
Create a Culture That Values Nutrition

Mission and goals: NUTRITION

Policies & Protocols

Guidelines

Training

Education

Reinforce messages, refresh training

Education and Training

- Grand rounds presentations
- In-service training sessions
- Workshops
Education and Training

- Computer-based learning modules
- Bedside instruction for small groups or one-on-one training
Education and Training

- Visual reminders such as posters and checklists
- feedM.E. and other Abbott Nutrition training materials as resources
Evidence that healthcare professionals need and want nutrition education and training

**USA:** Attending physicians, fellows, and residents waited an average of 2.4, 1.8, and 2.6 days before addressing nutritional status in critically ill patients.

Nutrition Support Teams and “Champions” Help Overcome Barriers

Take Action: Follow the Nutrition Care Pathway

Screen • Intervene • Supervene

Basic nutrition care is logical and stepwise.
Make Nutrition Screening a Routine Part of Care

Screen and intervene on admission

Screen for malnutrition risk on admission
- Does the patient have illness/injury that has malnutrition risk?
- Appetite loss?
- Weight loss?

Consider immediate dietary fortification or oral nutrition supplement for all at-risk patients

Use alternate protocol for end-of-life patients
Intervene and Supervene

Assess needs and intervene with nutrition during hospitalization.¹

Use Subjective Global Assessment (SGA)² and other tools for malnutrition diagnosis

Plan for hospital nutrition
How and when? What? How much?
Route, access, and timing Select a formula Set energy and protein goals

Track and modify nutrition in hospital

Plan for post-discharge nutrition

Choose Nutrition Intervention

Modify oral diet and/or use oral nutrition supplements

Use tube-fed enteral nutrition therapy

Use parenteral nutrition therapy

Routine rescreening and reassessment

Intervene With Nutrition in Hospital; Supervene With Post-discharge Nutrition Care

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Routine rescreening and reassessment
Call to Action

NUTRITION CARE AT YOUR HOSPITAL

Know what to do, and train staff to do it

- Know evidence-based nutrition guidelines.
- Use nutrition protocols.
- Train staff on best-nutrition practices.
- Use teams/champions to sustain quality care.
- Update practices and training regularly.
NUTRITION CARE AT YOUR HOSPITAL

Call to Action

Evaluate practice; adjust and reassess care processes.

- Benchmark practices and outcomes.
- Discuss findings with colleagues.
- Set change goals, e.g., reduce practice variation, contain costs, increase compliance.
- Implement changes, as needed, with refreshed policies and training.
- Monitor compliance and outcomes; share results with colleagues.
Malnutrition has negative effects on outcomes and cost of care.

Nutrition interventions decrease morbidity, shorten LOS, lower mortality, reduce readmissions, and lower overall costs of care.

Time, money, and training are common barriers to adoption of best-practice nutrition—but such barriers can be overcome.

A Nutrition Care Pathway guides nutrition care for hospitalized patients who are malnourished or at risk.