Quality Outcomes and Financial Benefits of Nutrition Intervention

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September 8, 2015
SHIFTING MARKET DYNAMICS PROVIDE AN OPPORTUNITY TO ELEVATE THE ROLE OF NUTRITION

↑ Aging Population

↑ Life Expectancy

↑ Disease Incidence

↑ Healthcare Consumption

↑ Quality of Life

↑ Role of Nutrition in Improving Patient Outcomes

↓ CMS Payments

↓ Quality of Care

↓ Cost of Care

Evolving Demographics

Transitional Care

Evolving Health Policy

CMS Payments

Quality of Care

Cost of Care

Life Expectancy

Disease Incidence

Healthcare Consumption

Quality of Life

Role of Nutrition in Improving Patient Outcomes

September 8, 2015

Quality Outcomes and Financial Benefits of Nutrition Intervention
MALNUTRITION IS AN INDEPENDENT PREDICTOR OF POOR CLINICAL OUTCOMES
BED REST, AGE AND HOSPITALIZATION INCREASE LOSS OF MUSCLE

Healthy Young
28 Days Inactivity

Healthy Elders
10 Days Inactivity

Elderly Inpatients
3 Days Hospitalization

≈ 1 lb loss of muscle
≈ 2.2 lb loss of muscle
≈ 2.2 lb loss of muscle

MALNUTRITION: SCOPE OF THE PROBLEM

Prevalent across all healthcare settings

<table>
<thead>
<tr>
<th>Healthcare Setting</th>
<th>Prevalence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hospital</td>
<td>30-50%(^1-4)</td>
</tr>
<tr>
<td>Long-Term Care</td>
<td>21%-51%(^5)</td>
</tr>
<tr>
<td>Outpatient &amp; Homecare</td>
<td>13-30%(^5)</td>
</tr>
</tbody>
</table>

Risk is increased in:\(^6\)
- Older adults
- Critically ill patients
- Patients with comorbid chronic diseases, e.g., cancer, COPD, chronic kidney disease

RISK OF NEVER EVENTS WITH PRE-EXISTING MALNUTRITION/WEIGHT LOSS\textsuperscript{1}

\begin{itemize}
\item Surgical site infection: 2.5
\item Pressure Ulcer: 3.8
\item Catheter-associated UTI: 5.1
\item Mediastinitis after CABG: 5.3
\end{itemize}

POST-HOSPITAL SYNDROME

Associated Causes:

- Poor Nutrition
- Pain and Discomfort
- Decline in Mental Functioning
- Sleep Deprivation

Malnutrition during hospitalization may cause poor outcomes, yet often receives little attention.

In a recent study, patients “at risk” were more likely to experience emergent care visits and rehospitalizations.¹

Objective
To identify the association between baseline nutritional status and subsequent health service utilization and mortality.

Population
N = 198 older adults receiving Medicare home health services for 1 year.

Key Findings
12% were malnourished and 51% were at risk.
Those who were malnourished or at risk at initial assessment were more likely to experience:
- Subsequent Hospitalization (P=.040)
- Number of Hospital Admissions (P=.045)
- ER Visit (P=.047)
- Mortality (6 months, P=.001; 1 year, P=.031)

ORAL NUTRITION SUPPLEMENTATION (ONS) HAS SHOWN SIGNIFICANT CLINICAL BENEFITS

Reduction in Pressure Ulcer Incidence\(^1\)

\[25\% \quad 0.75 \text{ 95\% CI (0.62-0.89)}\]

Reduction in Serious Complications (e.g., infections)\(^2\)

\[19\% \quad \text{P}<0.001\]

Reduction in Hospital Readmission\(^2\)

\[30\% \quad \text{P}<0.004\]

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National Surgical Quality Improvement Project protocol to identify risk factors associated with 30-day readmission.

Preoperative, intraoperative, and postoperative outcomes were collected 1442 inpatient general surgery procedures at a single academic center between 2009 and 2011.

<table>
<thead>
<tr>
<th>Four Most Common Readmission Reasons</th>
<th>Operations With Highest Readmission Rates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gastrointestinal complications (28%)</td>
<td>Pancreatectomy (18%)</td>
</tr>
<tr>
<td>Surgical infection (22%)</td>
<td>Colectomy/colostomy (13%)</td>
</tr>
<tr>
<td><strong>Malnutrition (10%)</strong></td>
<td>Small bowel resection (12%)</td>
</tr>
<tr>
<td>Wound complications (8%)</td>
<td>Gastrectomy (11%)</td>
</tr>
</tbody>
</table>

ORAL NUTRITION SUPPLEMENTS REDUCE HOSPITAL ADMISSIONS\textsuperscript{1}

<table>
<thead>
<tr>
<th>Patient Group</th>
<th>Routine Care</th>
<th>ONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elderly community\textsuperscript{2}</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Benign GI disease\textsuperscript{3}</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Elderly hospital discharges\textsuperscript{4}</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Elderly hospital discharges\textsuperscript{5}</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hip fracture hospital discharges\textsuperscript{6}</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Elderly hospital discharges\textsuperscript{7}</td>
<td></td>
<td></td>
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</tbody>
</table>

ORAL NUTRITION SUPPLEMENTATION PROVIDED DURING HOSPITALIZATION WAS ASSOCIATED WITH:¹

- **21% decrease** in length of stay (2.2 days)
- **21.6% decrease†** in episode costs ($4734)
- **6.7% decrease*** in probability of 30-day readmissions

¹ Monetary figures are based on 2010 US dollars and inflation adjusted.

*Readmission defined as return to study hospital for any diagnosis. Data measured delayed readmission and does not include patients not readmitted due to recovery or death.

AN INVESTMENT IN ORAL NUTRITIONAL SUPPLEMENTATION THERAPY CAN HELP GENERATE POSITIVE RETURN

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>Annual Admissions</td>
<td>20,000</td>
</tr>
<tr>
<td>Additional Annual Patients Fed</td>
<td>1%</td>
</tr>
<tr>
<td>Total Additional Annual Patients Fed</td>
<td>200</td>
</tr>
</tbody>
</table>

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<table>
<thead>
<tr>
<th></th>
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<tbody>
<tr>
<td>Cost Reduction/Episode</td>
<td>$ 4,734</td>
</tr>
<tr>
<td>Cost of ONS</td>
<td>$ 88.26</td>
</tr>
<tr>
<td>Net Cost Reduction/Episode</td>
<td>$ 4,646</td>
</tr>
</tbody>
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<tr>
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<tbody>
<tr>
<td>Total Net Savings</td>
<td>$ 929,148</td>
</tr>
</tbody>
</table>

ONS IMPROVED THE FOLLOWING OUTCOMES IN MEDICARE PATIENTS AGES 65 AND OLDER:¹

- **8.4%** decrease in probability of 30-day readmission¹
- **1.7 day** (16%) decrease in hospital length of stay¹
- **$3079** (15.8%) decrease in episode cost¹

ONS IMPROVED OUTCOMES AND REDUCED HOSPITAL COSTS IN THREE TARGETED MEDICARE POPULATIONS

<table>
<thead>
<tr>
<th></th>
<th>Acute Myocardial Infarction (AMI)</th>
<th>Congestive Heart Failure (CHF)</th>
<th>Pneumonia (PNA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>30-day Readmission Probability</td>
<td>$-12%^*$ ($-10.9%$)</td>
<td>$-10.1%^*$</td>
<td>$-5.2%$</td>
</tr>
<tr>
<td>Length of Stay</td>
<td>$-5.1%^*$ ($1.2$ days)</td>
<td>$-14.2%$ (1.3 days)</td>
<td>$-8.5%^*$ (0.8 days)</td>
</tr>
<tr>
<td>Episode Cost</td>
<td>$-10.9%$ ($1,538)</td>
<td>$-7.8%^*$ ($1,266)</td>
<td>$-10.6%^*$ ($1,516)</td>
</tr>
</tbody>
</table>

* indicates significance at the 1% level   †indicates significance at the 5% level

THE IMPACT OF ORAL NUTRITION SUPPLEMENTATION AMONG HOSPITALIZED PATIENTS WITH COPD WAS STUDIED IN A LARGE SAMPLE

*Out of 10,322 ONS episodes and 368,097 non-ONS episodes, a one-to-one match sample was created (N=14,326).

Chronic Obstructive Pulmonary Disease (COPD)

- 30-day Readmission
- Probability Length of Stay
- Episode Cost

-13.10%*

-12.50% ($1,570)

-21.50% (1.88 days)

* A one to one matched sample was created from a 10,322 ONS episodes and 368,097 non-ONS episodes data population.

ONS DECREASED THE PROBABILITY OF 30-DAY READMISSIONS IN SPECIFIC 65+ MEDICARE POPULATIONS¹,²

<table>
<thead>
<tr>
<th>Condition</th>
<th>Change in 30-Day Readmission Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>COPD¹</td>
<td>-13.1%*</td>
</tr>
<tr>
<td>Acute Myocardial Infarction (AMI)²</td>
<td>-12.0%*</td>
</tr>
<tr>
<td>Congestive Heart Failure (CHF)²</td>
<td>-10.1%*</td>
</tr>
<tr>
<td>Pneumonia (PNA)²</td>
<td>-5.2%</td>
</tr>
<tr>
<td>All Diagnoses (Ages 65+)²</td>
<td>-8.4%*</td>
</tr>
</tbody>
</table>

* Indicates significance at the 1% level

IMPACT OF A MULTIDISCIPLINARY NUTRITION PROGRAM ON LENGTH OF STAY, HOSPITAL COSTS, AND READMISSION

Akron General Medical Center

- Level 1 Trauma Center
- Teaching Hospital
- Over 100 years of service
- Magnet designation
- NICHE designation

AKRON GENERAL’S QUALITY IMPROVEMENT PROJECT

Oral Nutritional Supplement (ONS) With Med Pass

• Nurse performs nutrition screening upon admission

• ONS administered with med pass for those with positive screen with a nursing order

• ONS dispensed with each of 3 med passes
  – stocked on nursing unit
  – Shake-like, variety of flavors, screw top

• Provided with meds to emphasize importance

AKRON GENERAL’S STUDY DESCRIPTION

• IRRB approved Study
  – Retrospective Cohort Study
• Compared pre/post intervention groups
  – 1st 6 months of 2011 and 2013
• Comparison based on diagnoses commonly associated with ONS compared to those not commonly associated with ONS*

*The following diagnoses were most associated with ONS: Septicemia NOS, Urinary Tract Infection, Pneumonia (organism), Acute Kidney Failure, Acute & Chronic Respiratory Failure, Dehydration, Food/Vomit Pneumonitis, Acute Onset Chronic Diastolic Heart Failure, Subendocardial Infarction, Clostridium Difficile Infection

57% REDUCTION IN TIME TO INTERVENTION

2011

Day 1
Nursing admission screen, referral to RD

Day 1-2
RD sees patient, writes order or verbal order

Day 2-3
Patient receives supplement (2.3 days)

2013

Day 1
Nursing admission screen, referral to RD

Day 1
Patient receives supplement (<24 hrs)

Day 1-2
RD sees patient, validates order

PATIENTS RECEIVING ONS INCREASED BY 34%¹

Increased Percentage of Patients Receiving ONS

<table>
<thead>
<tr>
<th>Year</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>6.1%</td>
</tr>
<tr>
<td>2013</td>
<td>8.1%</td>
</tr>
</tbody>
</table>

P=<0.01

LENGTH OF STAY REDUCED BY 0.77 DAYS\textsuperscript{1}

Reduction in LOS for Diagnoses Commonly Treated with ONS and other Diagnoses

<table>
<thead>
<tr>
<th>Dx Commonly Treated with ONS</th>
<th>Other Dx</th>
</tr>
</thead>
<tbody>
<tr>
<td>-0.77</td>
<td>-0.39</td>
</tr>
</tbody>
</table>

\textsuperscript{1} Goates S, et al., \textit{JPEN}, February 2015; vol. 39: online supplement S-74, 79. URL: http://pen.sagepub.com/content/39/2/231/suppl/DC2
18% REDUCTION IN THE PROBABILITY OF 30-DAY READMISSION

Change in Probability of 30-Day Readmission

-18.1%  -3.8%

Dx Commonly Treated with ONS  Other Dx

P=<0.059

Proportion of patients receiving ONS rose from 6.1% in 2011 to 8.1% in 2013, a 34% increase (p=<0.01).

ADVOCATE HEALTH CARE & ABBOTT COLLABORATION

With These Goals:

1. Rapidly identify patients at risk for malnutrition
2. Emphasize the importance of protein-rich food and oral nutritional supplements
3. Help reduce 30-day readmissions
4. Help decrease hospital costs
3 STEPS FOR ADDRESSING MALNUTRITION

1. Screen and recognize all patients at risk of malnutrition.

2. Rapidly implement nutrition interventions and continue monitoring your patients.

3. Include nutrition in every discharge plan with education on why nutrition is important to recovery.
GUIDE PATIENTS THROUGH A RECOVERY PLAN WITH NUTRITION EDUCATION

**Education**

Provide instructions and education to patients upon discharge.

**Food Security**

Inquire about living conditions to ensure food is available and accessible.

**Compliance**

Encourage patient compliance for continuous nutritional improvement.