Improving Patient Outcomes with Comprehensive Nutrition Intervention Principles

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Disclosures

• Support for this program is provided by Abbott Nutrition

• This program is not intended for continuing education credits for any healthcare professional

• Drs Sulo and Kerr are employed by Abbott Nutrition
Learning Objectives

• Provide overview of literature on impact of nutrition care across the continuum of care

• Review real-world experience with nutrition-focused Quality Improvement Programs (QIPs) at Advocate Aurora Health and the University of Southern California – Primary Care Clinics

• Demonstrate how improved nutrition care processes, including use of supplemental nutrition, can reduce healthcare utilization and costs of care
MALNUTRITION BURDEN
Nutritional Status is Progressively Compromised Across the Continuum of Care

Upon Admission to the Hospital

30% to 50% of patients are malnourished upon admission¹

During Hospital Stay

Many patients with normal nutrition status experience a decline during hospitalization²

Post-discharge

Weight loss and loss of muscle increase risk of readmissions²,³

Unrecognized Poor Nutrition is Associated with Costly Consequences

Increased LOS¹
Increased readmission rates¹
Increased cost of care¹

Higher complication rates³
Increased risk of pressure ulcers²
Increased morbidity/mortality⁴

Malnutrition Remains a Common and Costly Healthcare Problem

$157\text{ Billion}$

Disease-associated malnutrition (DAM) annually imposes a significant economic burden on our society and our healthcare systems.

$51.3\text{ Billion}$

The total annual burden from DAM borne by the elderly population.

Nutrition Intervention is an Important but Often Overlooked Step in the Care Process
BENEFITS OF NUTRITION CARE IN HOSPITAL AND HOME HEALTH PATIENTS
Impact of Oral Nutritional Supplementation Provided During Hospitalization was Studied in a Retrospective Health Economic Analysis¹

Sample

11-year database from 2000-2010

44 million adults ages 18+ after inpatient episodes

ONS Use Within Sample

Within the 11-year database, ONS use was reported in 724,027 of 43,968,567 adult inpatient episodes

Rate of ONS use: 1.6%

Health Economic Study Shows the Impact of Oral Nutrition Supplements on Probability of Hospital Readmissions, LOS, and Episode Costs

21% decrease* in length of stay (2.3 days)
21.6% decrease† in episode costs ($4734)
6.7% decrease* in probability of 30-day readmissions

$1 spent on ONS = $52.63 savings in net episode cost

† Monetary figures are based on 2010 US dollars and inflation adjusted.
*Relative risk reduction to all statistics. 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.
Six Principles of Nutrition Care to Design the Process Change

1. Create Institutional Culture
2. Redefine Clinicians’ Roles to Include Nutrition
3. Communicate Nutrition Care Plans
4. Recognize and Diagnose ALL Patients at Risk
5. Rapidly Implement Interventions and Continue Monitoring
6. Develop Discharge Nutrition Care and Education Plan

## Advocate Health Care Quality Improvement Study Overview

### Study Design

Multi-site, 2-group, pre-post QIP study  
Conducted from October 13, 2014 to April 2, 2015

### Patient Population

(N=1269*; 45.2% at risk for malnutrition)  
- Older adults; mean age of 66.6 ± 17.2 years  
- Most were white/Caucasian (70.4%)  
- Admitted for a primary medical diagnosis (77.3%)

### Study Scheme

<table>
<thead>
<tr>
<th>Two hospitals implemented a QIP-basic program—QIP-b</th>
<th>Two hospitals implemented a QIP-enhanced program—QIP-e</th>
</tr>
</thead>
</table>

*2808 patients were screened with 1269 patients enrolled.  
QI in healthcare has a direct correlation between the level of improved health services and the desired health outcomes of individuals and populations.¹

Hospital Nutrition Program was Associated with Significant Reductions in Readmissions and Length of Stay

<table>
<thead>
<tr>
<th></th>
<th>Pre-QIP</th>
<th>QIP-Basic</th>
<th>QIP-Enhanced</th>
</tr>
</thead>
<tbody>
<tr>
<td>Readmission Rate</td>
<td>22%</td>
<td>16.4%</td>
<td>15.6%</td>
</tr>
<tr>
<td>Length of Stay</td>
<td>7.2 days</td>
<td>5.4 days</td>
<td>5.3 days</td>
</tr>
<tr>
<td>Screenining</td>
<td>Non-validated screening tool</td>
<td>Validated (MST) screening tool integrated into EMR</td>
<td>Validated (MST) screening tool integrated into EMR</td>
</tr>
<tr>
<td>Intervention</td>
<td>No early intervention</td>
<td>ONS intervention within 24-48 hours</td>
<td>ONS intervention within 24 hours</td>
</tr>
<tr>
<td>Education</td>
<td>No formalized nutrition discharge education</td>
<td>No formalized nutrition discharge education</td>
<td>Formalized nutrition discharge education with coupons</td>
</tr>
<tr>
<td>Post-Discharge</td>
<td>Follow up post-discharge phone calls</td>
<td>Follow up post-discharge phone calls</td>
<td>Follow up post-discharge phone calls with added questions about ONS adherence</td>
</tr>
</tbody>
</table>

MST = Malnutrition Screening Tool  EMR = Electronic Medical Record

Advocate Phase I Quality Improvement Project was Associated with a Reduction in Readmissions, LOS, and Costs²

- **All-cause 30-day Readmissions¹**
  -29%*

- **Length of Hospital Stay¹**
  -26%*

- **Costs²**
  Est. 6-Month Savings: $4,896,758
  Net savings > $3800 per patient²

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*Data from QIP-e intervention, percentage expressed as relative risk reduction (RRR) compared to pre-QIP.
†Data from baseline comparison cohort: 6-month hospital savings for the 4 QIP hospitals was $5,452,309 (when QIP program cost is subtracted).
Malnutrition Post Hospital Discharge

Post-discharge

Fastest growing costs

About 25% of adults receiving home health services were at moderate-to-high nutritional risk\(^1\)

Post-acute care is one of the fastest growing areas of healthcare spending in the US, accounting for the largest increase in Medicare\(^2,3\)

2. Chandra A, Dalton MA, Holmes J. Large increases in spending on postacute care in Medicare point to the potential for cost savings in these settings. Health Aff (Millwood) 2013;32:864-872.
Advocate Transitions of Care Study Overview

Outcomes:
- **Primary**: 90-Day Hospitalization Rate
- **Secondary**: Healthcare Resource Utilization
- **Exploratory**: Patient Experience Data

Enrolled Patient Characteristics:
- ~80% were 65+ years and on Medicare
- Most common diagnoses include: CHF, AMI, orthopedic, COPD, pneumonia, diabetes, oncology

# Home Health Nutrition Program Achieved Significant Reductions in Hospitalizations Over 90-Days


<table>
<thead>
<tr>
<th>Pre-QIP</th>
<th>Post-QIP</th>
</tr>
</thead>
<tbody>
<tr>
<td>90-Day Hospitalization Rate:</td>
<td><strong>22.3%</strong></td>
</tr>
</tbody>
</table>

## SCREENING
- No formalized nutrition screening at admission
- EMR based OASIS screening tool at admission

## INTERVENTION
- No documented intervention
- ONS intervention within 48 hours for 30-days shipped to patients homes

## EDUCATION
- No formalized nutrition discharge education
- Formalized nutrition discharge education with coupons

## POST-DISCHARGE
- Follow up post-discharge outreach
- Follow up 30-45 days post-discharge phone call with ONS adherence questions
Advocate Transitions of Care Program was Associated with Reduced Hospitalizations and Health Care Costs

<table>
<thead>
<tr>
<th>All-cause 90-day Hospitalizations*</th>
<th>Total Est. Cost Savings† (Based on 1,546 QIP Patients)</th>
<th>Per Patient Savings†</th>
</tr>
</thead>
<tbody>
<tr>
<td>18%</td>
<td>$2,318,894</td>
<td>$1,500</td>
</tr>
</tbody>
</table>

*18% represents the relative reduction in hospitalization risk in the QIP group compared with the pre-QIP control group. Hospitalizations refer to admissions and readmissions. Quality improvement programs (QIP) consist of systematic and continuous actions that lead to measurable improvement in health care services and the health status of targeted patient groups. Source: Institute for Healthcare Improvement http://www.ihi.org/resources/Pages/HowtoImprove/default.aspx

†The cost of hospitalizations, ED and outpatient visits, and QIP implementation were considered for the QIP and historical control group. Net savings were calculated by subtracting the total per episode cost in the QIP group from the total per episode cost in the historical comparison group.

There is a Constant Interplay Between Poor Nutrition in the Hospital and in the Community

Community
Poor nutrition is common in community-dwelling adults\(^1\)\(^-\)\(^2\)

Poor nutrition increases risk of complications and infections\(^1\)\(^3\)

Hospital
30% to 50% are malnourished upon admission\(^3\)\(^-\)\(^9\)

Nutritional status does not improve\(^1\)\(^0\)\(^-\)\(^1\)\(^3\)

~1/3 of patients (well-nourished or not) can experience nutritional decline\(^9\)

Admission

Readmission

Discharge

IMPLEMENTATION OF NUTRITION CARE IN OUTPATIENT CLINICS AND ITS BENEFITS
Study Overview

Impetus for Study

Up to 1 in 3 community-dwelling older adults is either at risk of becoming or is poorly nourished.¹

Study Design Overview²

Three primary care clinics at the University of Southern California adopted a pre-post nutrition quality improvement program (QIP) consisting of:

- Systematic identification of nutritional risk
- Oral nutritional supplement (ONS) recommendations*
- Patient education on the importance of nutrition and ONS compliance
- ONS voucher and coupons
- Follow-up calls to support compliance (over 90 days)

* ONS recommendations included a voucher and coupons for Ensure®, Glucerna®, or Nepro®.

# QIP Study Intervention

<table>
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<tr>
<th>Identification of Nutritional Risk</th>
<th>Intervention</th>
<th>Education</th>
<th>Follow-up</th>
</tr>
</thead>
<tbody>
<tr>
<td>NON-QIP CARE PROCESS</td>
<td>No nutrition care pathway screening tool used</td>
<td>ONS recommendation sporadically provided by HCP</td>
<td>Sporadically provided by HCPs</td>
</tr>
<tr>
<td>QIP CARE PROCESS</td>
<td>Systematically screen patients for poor nutritional status using the nutrition care pathway</td>
<td>Provide recommendation and instructions for ONS, plus vouchers and coupons to patient</td>
<td>Educate patient on the importance of proper nutrition and ONS compliance</td>
</tr>
</tbody>
</table>

Patient Population

QIP Group
- n=600 outpatients
- ≥45 years of age
- ≥2 chronic conditions
- Enrolled between September 2018 and December 2019

Historical Group Comparison
- n=600 outpatients
- ≥45 years of age
- ≥2 chronic conditions
- Patients seen in clinics between September 2017 and December 2018

Most Frequent Comorbidities of QIP Patients
- CARDIOPULMONARY-RELATED
- HYPERLIPIDEMIA
- OBESITY
- DIABETES
- DEPRESSION

- 62.5% FEMALE
- 37.5% MALE
- 61.6 YEARS OLD
- MEAN AGE
- 81.7% OVERWEIGHT/OBESE
- 11.6% NORMAL WEIGHT
- 6.7% UNDERWEIGHT

A Significantly Lower Number of QIP Patients Reported Healthcare Resource Utilization Over 90-Days When Compared to Control Groups¹

**Historical vs. QIP**
- Historical: 83.5%
- QIP: 73.8%
- Relative Risk Reduction (RRR): 11.6%*, p<0.001

**Concurrent vs. QIP**
- Concurrent: 81.0%
- QIP: 73.8%
- Relative Risk Reduction (RRR): 8.9%*, p=0.003

*Number represents Relative Risk Reduction or RRR for hospitalizations + ED visits + Outpatient Visits

Average Number of Healthcare Resource Utilization Visits over 90-Days Was Significantly Lower for QIP Patients When Compared to Historical Cohort¹

- **Historical vs. QIP**: 3.1 vs. 2.7, 12.9%* reduction, p=0.022
- **Concurrent vs. QIP**: 2.7 vs. 2.7, 0%* reduction, p=0.977

*Number represents Relative Risk Reduction or RRR for hospitalizations + ED visits + Outpatient Visits
90-Day Medication Utilization for QIP Remained Constant While Control Groups Saw a Significant Increase Over 90-Day Period

*Number represents Relative Risk Increase or RRI

QIP Implementation Costs\(^1\),\(^*\)

Costs that **do not vary with number of patients**

- IT Support
- Clinician education

Costs that **vary with number of patients**

- QIP management
- Patient Screening
- Patient Education
- Follow-up

\*NOTE: Costs reported are informed by USC QIP study and national averages. Economic calculations can be tailored to other institutions or practices; however, potential implementation costs should be pretty close to those reported here.

Healthcare Resource Utilization Costs


- Hospitalization: $14,892 per episode\(^2\)
- ED visit: $1,016 per episode\(^2\)
- Outpatient visit: $265 per episode\(^2\)

Average cost of healthcare resource utilization weighted by study participant usage: $1,537

Avg cost healthcare utilization per patient: $1,537
Study Results

† Number represents relative risk reduction (RRR) for hospitalizations + emergency department (ED) visits + outpatient visits when comparing QIP group and historical control.
‡ Represents savings when comparing health care resource use of QIP group and historical control.

3 Steps for Addressing Malnutrition Across the Care Continuum

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 office visit with education on why nutrition is important to recovery.
Call to Action

**Nutrition care at your institution:**

- Be aware and on the lookout for opportunities to enhance value for your at-risk/malnourished patients
- Develop a team with which to work, no solo acts
- Engage institutional support departments such as quality, information technology, medical education, supply chain, research, etc.

**Successful nutrition programs at your institution:**

- Foster a culture of nutrition care
- Promote multidisciplinary team work
- Empower clinicians and provide continuous education
- Monitor and adjust the process to ensure continuous value to patients
- Sustain the effective nutrition care processes over time and inform scalable models of care for others to learn from and adapt
Nutrition in the Era of COVID-19

• The COVID-19 pandemic has all the makings of a perfect storm for global malnutrition.¹

• Many people who are at risk of getting coronavirus may also be at high risk of malnutrition.²

• Recommendations from ASPEN, ESPEN, and Other Professional Organizations highlight the importance of good nutrition and nutrition supplementation.³⁴

THANK YOU!