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 admission[1]

During Hospital Stay

Many patients with normal nutrition status experience a decline during hospitalization[2]

Post-discharge

Weight loss and loss of muscle increase risk of readmissions[2,3]

1. Sriram K, Sulo S, VanDerBosch G, et al. *J Parenter Enteral Nutr.* 2016;1-8. http://journals.sagepub.com/doi/abs/10.1177/0148607116681468. 2. Allaudeen N, et al. *J Hosp Med* 2011;6:54-60. 3. Allaudeen N, Vidyarthi A, Maselli J, Auerbach A. *J Hosp Med*. 2011;6:54–60.

Unrecognized Poor Nutrition is Associated with Costly Consequences

- Increased LOS[1]
- Increased readmission rates[1]
- Increased cost of care[1]
- Higher complication rates[3]
- Increased risk of pressure ulcers[2]
- Increased morbidity/mortality[4]

1. Philipson TS, et al. *Am J Manag Care*. 2013;19(2):121-128. 2. Shahin ES, et al. *Nutrition*. 2010;26(9):886-889. 3. Thomas MN, et al. *Nutrition.* 2016;32:249-254.
4. Isabel M, et al. *Clin Nutr.* 2003;22:235-239.

Malnutrition Remains a Common and Costly Healthcare Problem

$157 Billion

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

$51.3 Billion

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

1. Snider JT, et al. JPEN. 2014. https://doi.org/10.1177/0148607114550000.

Nutrition Intervention is an Important but Often Overlooked Step in the Care Process

BENEFITS OF NUTRITION CARE IN HOSPITAL AND HOME HEALTH PATIENTS

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Impact of Oral Nutritional Supplementation Provided During Hospitalization was Studied in a Retrospective Health Economic Analysis[1]

Sample

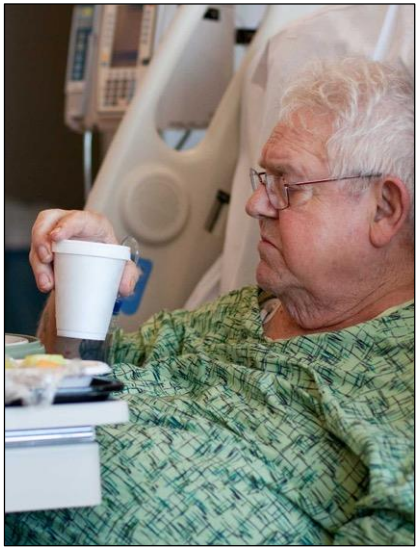
11-year database from 2000-2010

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%



1. Philipson T, et al. *Am J Manag Care*. 2013;19(2):121-128.

Health Economic Study Shows the Impact of Oral Nutrition Supplements on Probability of Hospital Readmissions, LOS, and Episode Costs[1]

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.

1. Philipson T, et al. *Am J Manag Care*. 2013;19(2):121-128.

Six Principles of Nutrition Care to Design the Process Change[1]

Principles to Transform the Hospital Environment

Principles to Guide Clinical Action

I. Create Institutional Culture

II. Redefine Clinicians' Roles to Include Nutrition

III. Communicate Nutrition Care Plans

IV. **Recognize and Diagnose ALL Patients at Risk**

V. **Rapidly Implement Interventions and Continue Monitoring**

VI. **Develop Discharge Nutrition Care and Education Plan**

1. Tappenden KA, et al. *JPEN J Parenter Enteral Nutr.* 2013;37(4):482-97.

Advocate Health Care Quality Improvement Study Overview[1]

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%)

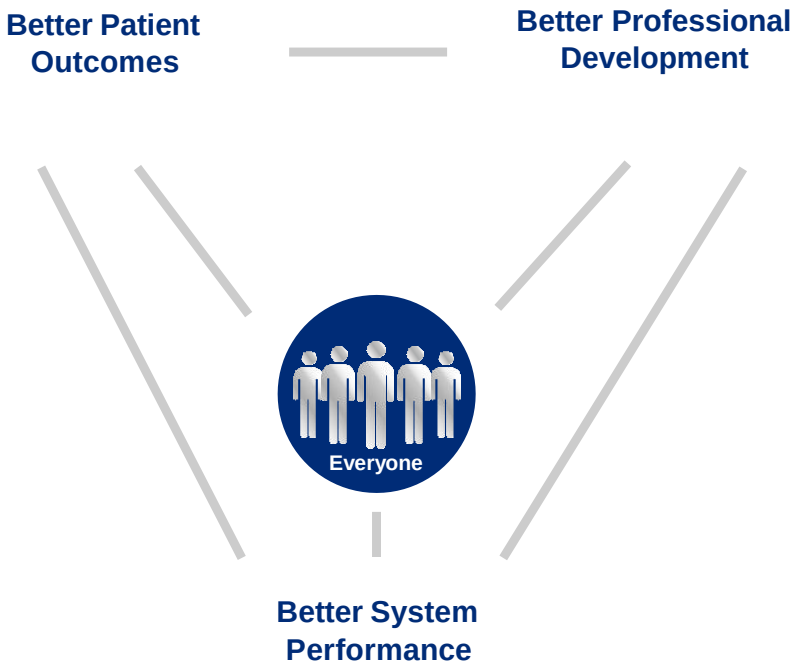
Study Scheme

Two hospitals implemented a QIP-basic program—QIP-b	Two hospitals implemented a QIP-enhanced program—QIP-e

*2808 patients were screened with 1269 patients enrolled.

1. Sriram K, et al. *J Parenter Enteral Nutr*. 2016;41(3): 384-391.

Linked Aims of Quality Improvement (QI)



QI in healthcare has a direct correlation between the level of improved health services and the desired health outcomes of individuals and populations.[1]

1. Batalden PB, et al. Qual Saf Health Care. 2007;16:2-3.

Hospital Nutrition Program was Associated with Significant Reductions in Readmissions and Length of Stay[1]

Advocate Health Care

	Pre-QIP	QIP-Basic	QIP-Enhanced
	Readmission Rate: 22% Length of Stay: 7.2 days	Readmission Rate: 16.4% Length of Stay: 5.4 days	Readmission Rate: 15.6% Length of Stay: 5.3 days
SCREENING	Non-validated screening tool	Validated (MST) screening tool integrated into EMR	Validated (MST) screening tool integrated into EMR
INTERVENTION	No early intervention	ONS intervention within 24-48 hours	ONS intervention within 24 hours
EDUCATION	No formalized nutrition discharge education	No formalized nutrition discharge education	Formalized nutrition discharge education with coupons
POST-DISCHARGE	Follow up post-discharge phone calls	Follow up post-discharge phone calls	Follow up post-discharge phone calls with added questions about ONS adherence

MST = Malnutrition Screening Tool EMR = Electronic Medical Record

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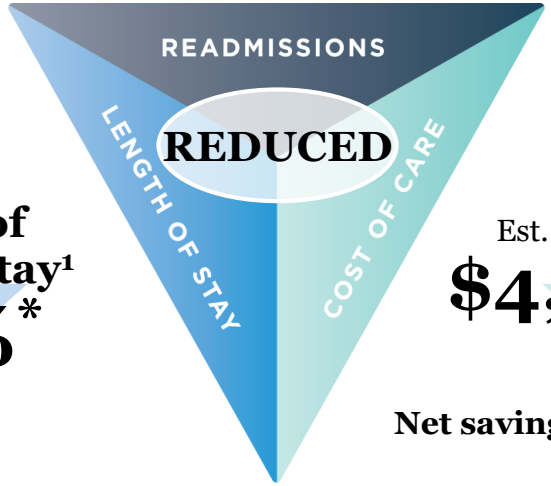
1: Sriram K, et al. *JPEN J Parenter Enteral Nutr.* 2017;41(3):384-91; 2: Sulo S, et al. *Am Health Drug Benefits*. 2017;10(5):262-270.

Advocate Phase I Quality Improvement Project was Associated with a Reduction in Readmissions, LOS, and Costs[2]

All-cause 30-day Readmissions[1]

-29%*



Length of Hospital Stay[1]

-26%*

Costs[2]

Est. 6-Month Savings:

$4,896,758

Net savings > $ 3800 per patient[2]

*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).

1. Sriram K, et al. *JPEN J Parenter Enteral Nutr*. 2016;40(1):1. http://journals.sagepub.com/doi/abs/10.1177/0148607116681468.

2. Sulo S, et al. *Am Health Drug Benefits*. 2017;10(5):262-270.

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Malnutrition Post Hospital Discharge

Post-discharge

About 25% of adults receiving home health services were at moderate-to-high nutritional risk[1]

Fastest growing costs

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]

1.Bayada Nurses & Abbott Nutrition. A collaborative approach to improving outcomes in home health. November 2011

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.

3. Mechanic R. Post-acute care--the next frontier for controlling Medicare spending. *N Engl J Med* 2014;370:692-694.

Advocate Transitions of Care Study Overview[1]

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

Advocate Hospital

n=1049

Advocate Medical Group

n=203

Advocate-affiliated SNF

n=294

Advocate Home Health

1. Riley K, et al. *A nutrition-focused quality improvement program reduces hospitalization rates of post-acute care patients at risk of malnutrition. Clin Nutrition.* 2018; 37(1): S302.

Home Health Nutrition Program Achieved Significant Reductions in Hospitalizations Over 90-Days[1]

Advocate Health Care

REDUCTION IN HOSPITALIZATIONS

	Pre-QIP 90-Day Hospitalization Rate: 27.2%	Post-QIP 90-Day Hospitalization Rate: 22.3%
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

1. Riley K, et al. *A nutrition-focused quality improvement program reduces hospitalization rates of post-acute care patients at risk of malnutrition. Clin Nutrition.* 2018; 37(1): S302.

Advocate Transitions of Care Program was Associated with Reduced Hospitalizations and Health Care Costs[1]

All-cause 90-day Hospitalizations*

18%

Total Est. Cost Savings†
(Based on 1,546 QIP Patients)

$2,318,894

Per Patient Savings†

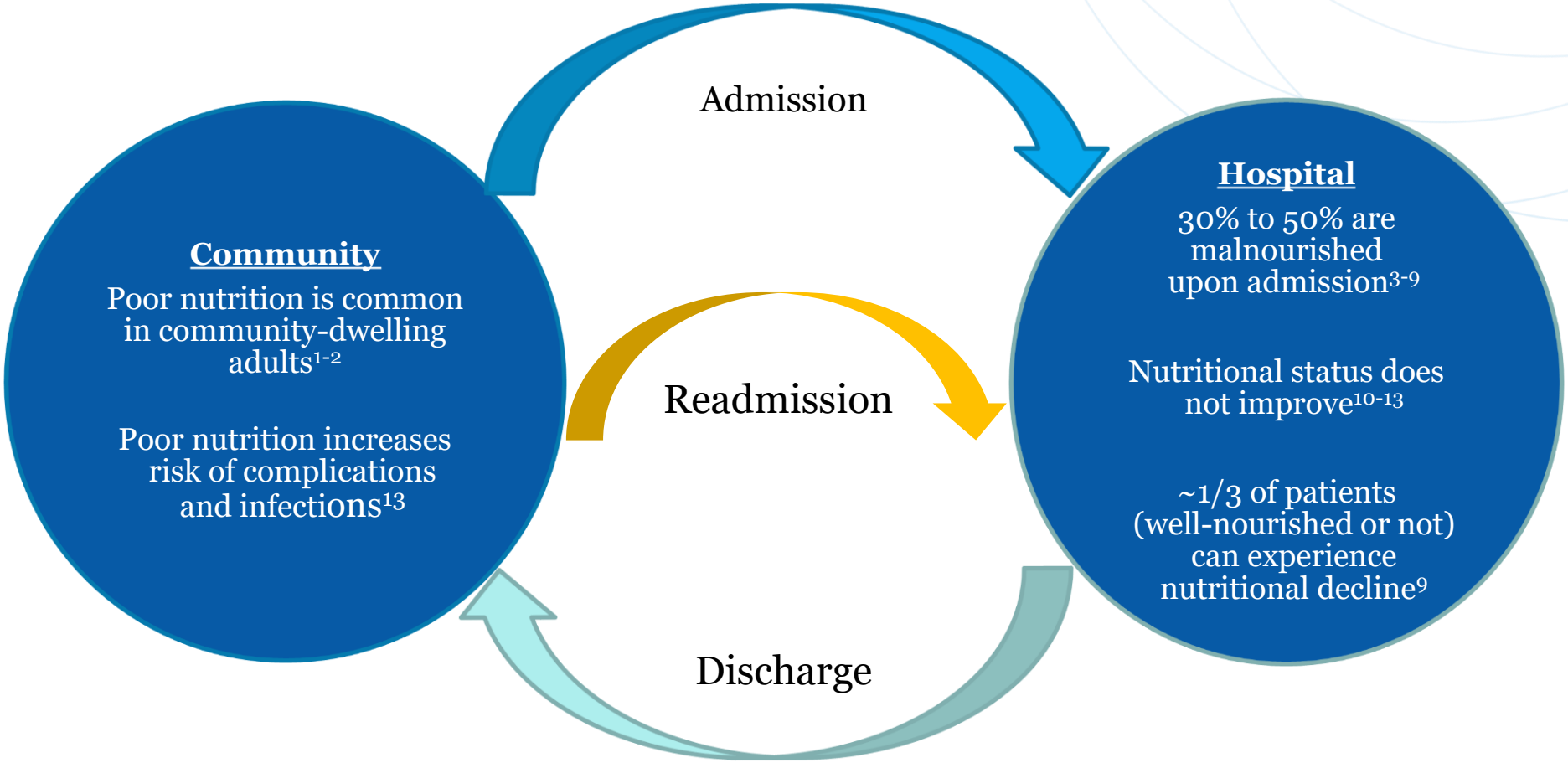
$1,500

*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.

1. Riley K, et al. *Clinical Nutrition.* 2018;37(S1):S302. https://www.clinicalnutritionjournal.com/article/S0261-5614(18)32333-1/abstract

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



1. Agarwal E, et al. *Clin Nutr*. 2013;32:737-745. 2. Oral nutritional supplements to tackle malnutrition: a summary of the evidence base. Medical Nutrition International Industry; 3rd Version, 2012; Brussels, Belgium. 3. Felder S, et al. *Nutr*. 2015;31:1385-1393. 4. Guenter P, et al. *Jt Comm J Qual Patient Saf*. 2015;41:469-473. 5. Rahman A, et al. *Nutr Clin Pract*. 2015;30:709-713. 6. Corkins MR, et al. *JPEN*. 2014;38:186-195. 7. Tappenden KA, et al. *JPEN*. 2013;37(4):482-497. 8. Somanchi M, et al. *JPEN J Parenter Enteral Nutr*. 2011;35(2):209-216. 9. Braunschweig C, et al. *J Am Diet Assoc*. 2000;100(11):1316-1322. 10. Krumholz HM. *N Engl J Med*. 2013;100-102. 11. Stratton RJ, et al. Disease-related mlanutrition: an evidence-based approach to treatment. CABI Publishing, UK; 2008. 12. White JV, et al. *JPEN*. 2012;36:275-283. 13. Norman K, et al. *Clin Nutr*. 2008;27: 5-15.

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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 Overview[2]

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®.

1, Kaiser MJ, et al. *J Am Geriatr Soc.* 2010;58(9):1734-1738. 2. Hong K, et al. Nutrition program reduces health care use of adult outpatients with poor status. Abstract presented at ESPEN September 19-21, 2020.

QIP Study Intervention[1]

	Identification of Nutritional Risk	Intervention	Education	Follow-up
NON-QIP CARE PROCESS	No nutrition care pathway screening tool used	ONS recommendation sporadically provided by HCP	Sporadically provided by HCPs	No nutrition-focused follow-ups
QIP CARE PROCESS	Systematically screen patients for poor nutritional status using the nutrition care pathway	Provide recommendation and instructions for ONS, plus vouchers and coupons to patient	Educate patient on the importance of proper nutrition and ONS compliance	Follow-up calls with patient to ensure compliance at 30, 60, and 90 days

1. Hong K, et al. Nutrition program reduces health care use of adult outpatients with poor status. Abstract presented at ESPEN September 19-21, 2020.

Patient Population[1]

QIP Group

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

62.5% FEMALE | **37.5%** MALE

61.6 YEARS OLD
MEAN AGE

81.7%
OVERWEIGHT/OBESE

11.6%
NORMAL WEIGHT

6.7%
UNDERWEIGHT

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

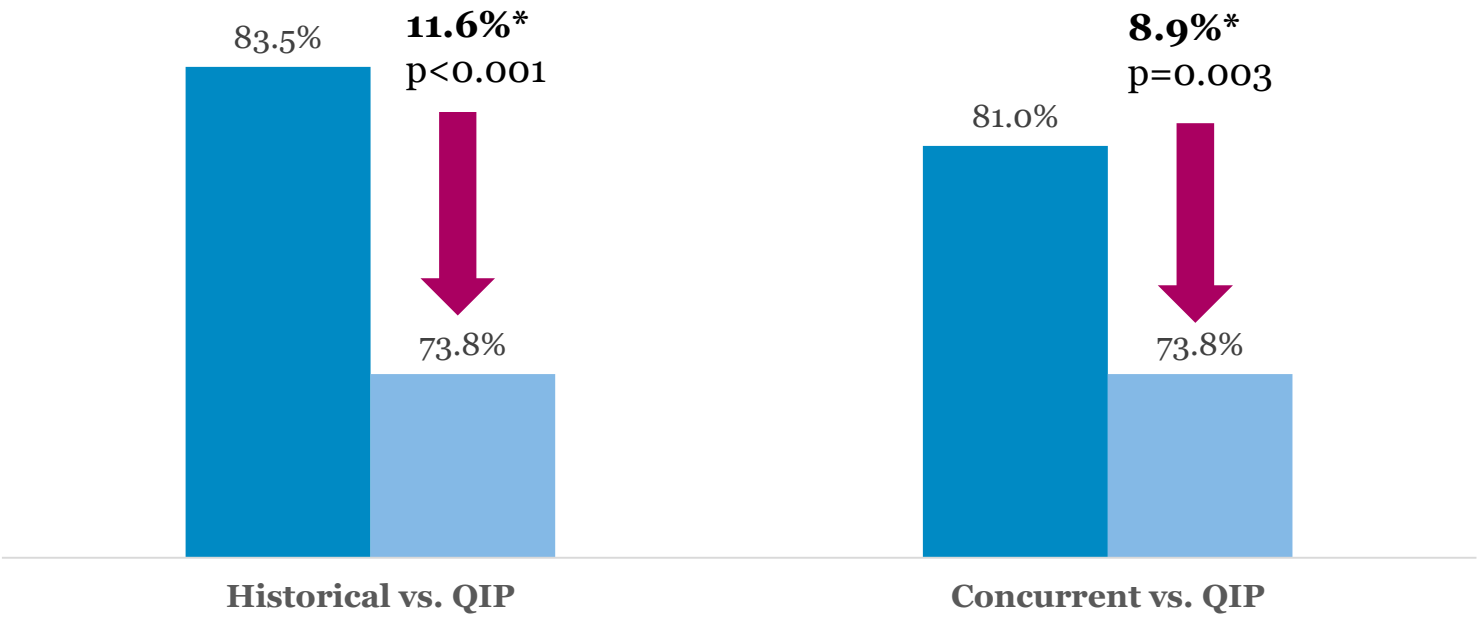
OBESITY

DIABETES

DEPRESSION

1. Hong K, et al. Nutrition program reduces health care use of adult outpatients with poor status. Abstract presented at ESPEN September 19-21, 2020.

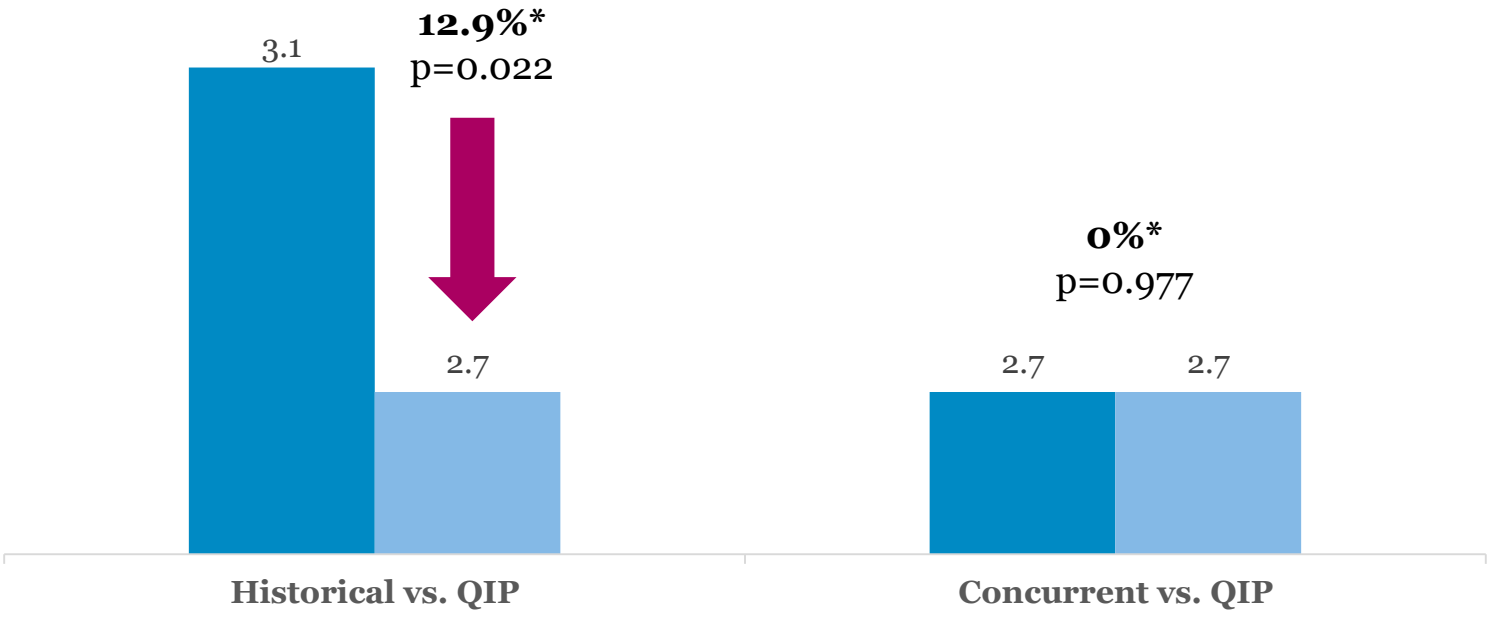
A Significantly Lower Number of QIP Patients Reported Healthcare Resource Utilization Over 90-Days When Compared to Control Groups[1]



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

1. Hong K, et al. Nutrition program reduces health care use of adult outpatients with poor status. Abstract presented at ESPEN September 19-21, 2020.

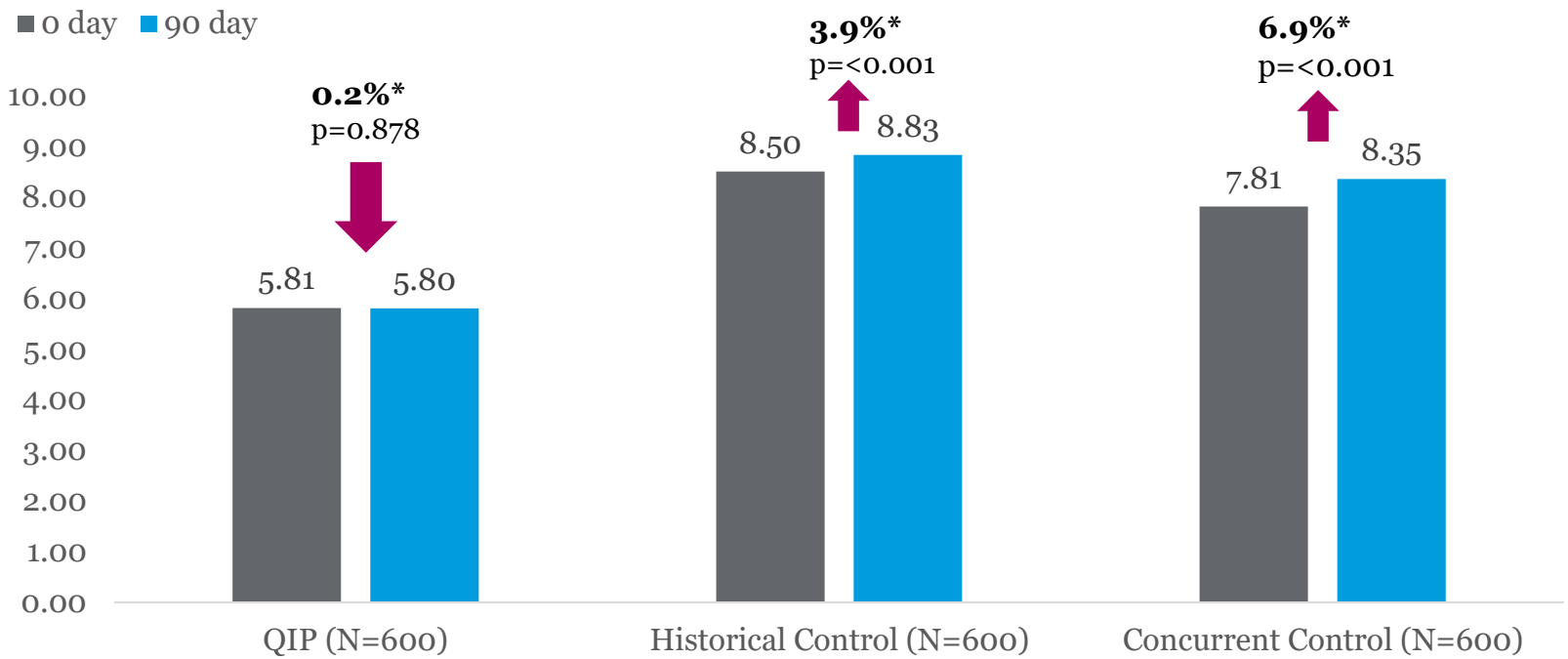
Average Number of Healthcare Resource Utilization Visits over 90-Days Was Significantly Lower for QIP Patients When Compared to Historical Cohort[1]



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

1. Hong K, et al. Nutrition program reduces health care use of adult outpatients with poor status. Abstract presented at ESPEN September 19-21, 2020.

90-Day Medication Utilization for QIP Remained Constant While Control Groups Saw a Significant Increase Over 90-Day Period[1]



	QIP vs. Historical control P Value	QIP vs. Concurrent control P Value
90 Day Differences	<0.001	<0.001

*Number represents Relative Risk Increase or RRI

1. Hong K, et al. Nutrition program reduces health care use of adult outpatients with poor status. Abstract presented at ESPEN September 19-21, 2020.

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.*

1. Data on File: Nutrition Program Reduces Healthcare Use and Costs of Adult Outpatients at Nutritional Risk. Abbott Nutrition. August 2020.

Healthcare Resource Utilization Costs[1]

Hospitalization

$14,892

Per episode[2]

ED visit

$1,016

Per episode[2]

Outpatient visit

$265

Per episode[2]

Medication

$128

Per medication[2]

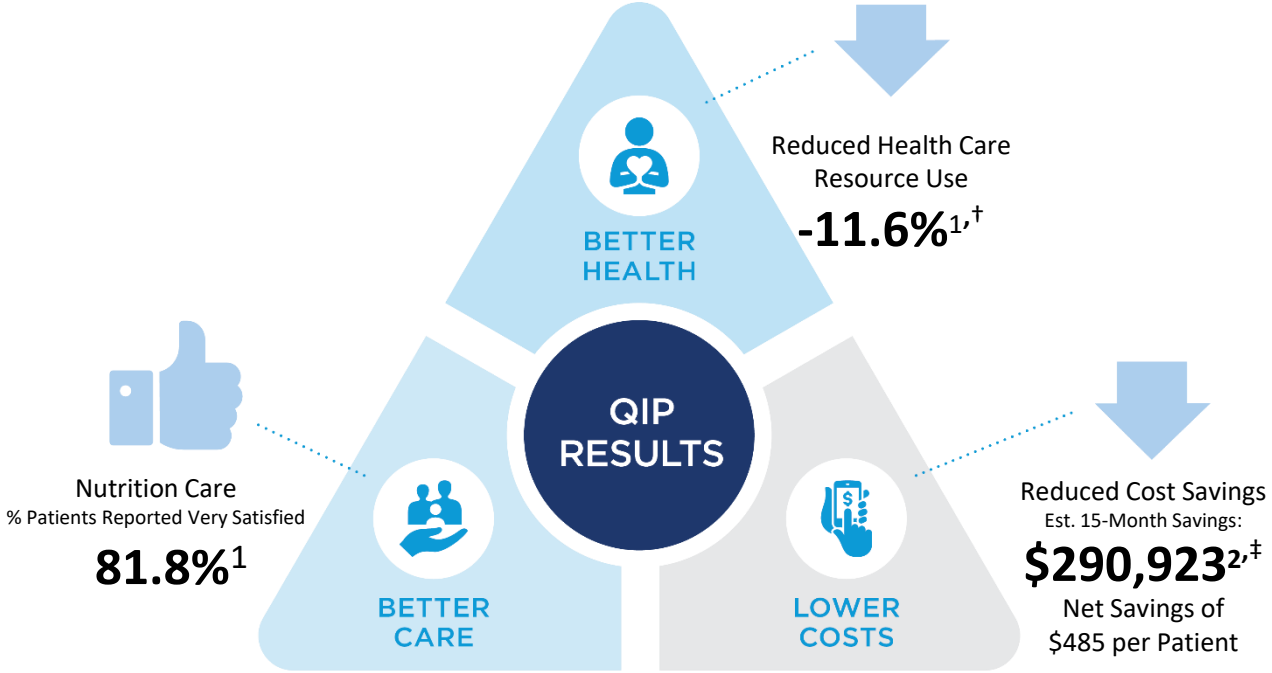
Average cost of healthcare resource utilization weighted by study participant usage

$1,537

Avg cost healthcare utilization per patient

1. Data on File: Nutrition Program Reduces Healthcare Use and Costs of Adult Outpatients at Nutritional Risk. Abbott Nutrition. August 2020. 2. Center for Financing, Access and Cost Trends, Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 1996-2017. https://meps.ahrq.gov/mepstrends/hc_use/ accessed August 2020.

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.

1. Hong K, et al. Nutrition program reduces health care use of adult outpatients with poor status. Abstract presented at ESPEN September 19-21, 2020. 2. Data on File: Nutrition Program Reduces Healthcare Use and Costs of Adult Outpatients at Nutritional Risk. Abbott Nutrition. August 2020.

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.[3,4]

1. https://www.ifpri.org/blog/covid-19-nutrition-crisis-what-expect-andhow-protect 2. https://www.guysandstthomas.nhs.uk/resources/patient-information/nutrition-and-dietetics/malnutrition%20and%20coronavirus.pdf ; 3. https://www.nutritioncare.org/Guidelines_and_Clinical_Resources/Resources_for_Clinicians_Caring_for_Patients_with_Coronavirus/; 4. Barazzoni R et al. Clinical Nutrition Volume 39, Issue 6, June 2020, Pages 1631-1638.

THANK YOU!

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