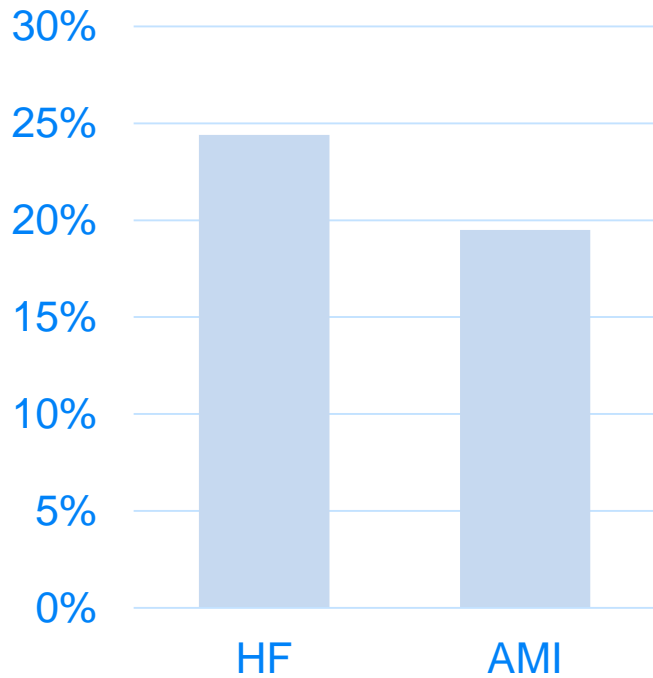


STRATEGIES TO REDUCE CARDIAC READMISSIONS

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The Problem



Readmission rates for Medicare patients



Readmitted within 30 days

\$17.4 B

Total cost of readmissions



AMERICAN COLLEGE of CARDIOLOGY

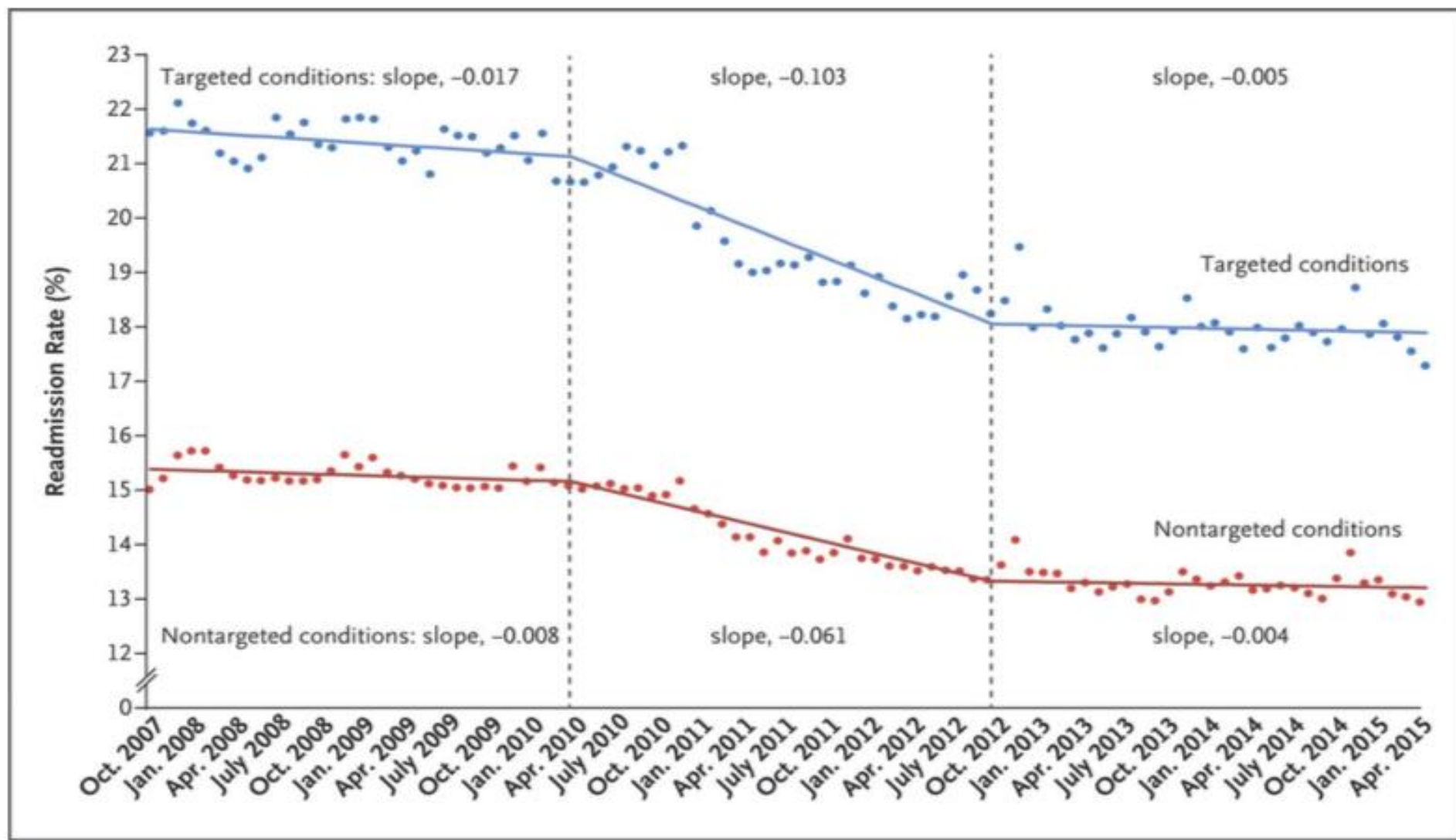
HOSPITAL READMISSION REDUCTION PROGRAM (HRRP)

- Prior to 2012, 20% of Medicare discharge had a readmission within 30 days.
- 12% of estimated to be potentially avoidable
- ACA required CMS to reduce the readmission rates, so CMS adopted the HRRP.
- 80% of hospital have received penalties (1-3% deduction from the Medicare payments).
- In past 5 years, cost savings (penalties) \$1.9 billion, much less than the \$7.5 billion estimated.
- Readmission rates for targeted conditions were reduced by 3.7%.

Table 1. The first five years of the Hospital Readmission Reduction Program

Year penalties applied	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017
Performance (measurement) period	June 2008- July 2011	June 2009- July 2012	June 2010- July 2013	June 2011- July 2014	June 2012- July 2015
Diagnoses of initial hospitalization	Heart attack Heart failure Pneumonia	Heart attack Heart failure Pneumonia	Heart attack Heart failure Pneumonia COPD Hip or knee replacement	Heart attack Heart failure Pneumonia COPD Hip or knee replacement	Heart attack Heart failure Pneumonia (expanded)* COPD Hip or knee replacement CABG
Penalties: Percentage reduction in base payments on all Medicare inpatient admissions					
Maximum rate of penalty	1%	2%	3%	3%	3%
Average hospital payment adjustment (among all hospitals)	-0.27%	-0.25%	-0.49%	-0.48%	-0.58%
Average hospital penalty (among penalized hospitals only)	-0.42%	-0.38%	-0.63%	-0.61%	-0.74%
Percent of hospitals penalized	64%	66%	78%	78%	79%
Percent of hospitals at max penalty	8%	0.6%	1.2%	1.1%	1.8%
CMS estimate of total penalties	\$290 million	\$227 million	\$428 million	\$420 million	\$528 million

Figure 1. Line Graph Showing Change in Readmission Rates for Targeted Conditions and Nontargeted Conditions Within 30 Days After Discharge



Source: Zuckerman, RB, Sheingold SH, Orav EJ, et al. Readmissions, observation, and the Hospital Readmissions Reduction Program. *N Engl J of Med.* 2016;374(16):1543-1551.

HRRP PROVIDES COST SAVINGS BUT WHAT ABOUT PATIENT OUTCOMES?

- For most diagnoses saw no change or slight improvement in mortality with readmission reduction.
- Heart Failure appears to be the exception.

READMISSIONS AND MORTALITY

Association of the Hospital Readmissions Reduction Program Implementation With Readmission and Mortality Outcomes in Heart Failure.

[Gupta A](#)¹, [Allen LA](#)², [Bhatt DL](#)¹, [Cox M](#)³, [DeVore AD](#)³, [Heidenreich PA](#)⁴, [Hernandez AF](#)^{3,5}, [Peterson ED](#)³, [Matsouaka RA](#)³, [Yancy CW](#)^{6,7}, [Fonarow GC](#)^{8,9}. [10.1001/jamacardio.2017.4265](https://doi.org/10.1001/jamacardio.2017.4265)

CONCLUSIONS AND RELEVANCE:

Among fee-for-service Medicare beneficiaries discharged after heart failure hospitalizations, implementation of the HRRP was temporally associated with a reduction in 30-day and 1-year readmissions but an increase in 30-day and 1-year mortality. If confirmed, this finding may require reconsideration of the HRRP in heart failure.

Current healthcare payment systems do not support or reward providers' efforts to reduce readmissions. Only prevents penalties.

- Critics advocate that we take what has been learned and devote the time, money and resources to develop a positive incentive focusing on improved clinical quality and patient outcomes, instead of focusing solely on cost savings.

Bundled Payments

Medicare establishes a total budget for all services provided to a beneficiary throughout a given episode of care. If the episode's spending on services is below budget, then the providers may share in Medicare savings; alternatively, if providers' costs exceed the budget, then the providers may incur losses. In some cases, bundled payment models can span across multiple health care settings.

Research has shown that bundled payments can align incentives for providers – hospitals, post-acute care providers, physicians, and other practitioners – allowing them to work closely together across all specialties and settings. Focus here would be on quality of care, not quantity.

BUNDLED PAYMENTS

- The Episode Payment Models (AMI, CABG, and SHFFT models) and the Cardiac Rehabilitation Incentive Payment model were slated to begin in 2018, but CMS recently canceled them before they started. CMS recently announced the second iteration of BPCI – “BPCI Advanced” – which will start October 1, 2018 and run through 2023.
- Continue BPCI for Joint Replacements and Oncology Care

SUCCESS RATE FOR READMISSION REDUCTION

- **Trends in 30-Day Readmission Rates for Patients Hospitalized With Heart Failure**
Findings From the Get With The Guidelines-Heart Failure Registry
- Kristin E. Bergethon, BA; Christine Ju, MS; Adam D. DeVore, MD; N. Chantelle Hardy, MPH; Gregg C. Fonarow, MD; Clyde W. Yancy, MD; Paul A. Heidenreich, MD; Deepak L. Bhatt, MD, MPH; Eric D. Peterson, MD, MPH; Adrian F. Hernandez, MD, MHS
- **(*Circ Heart Fail.* 2016;9:e002594. DOI: 10.1161/CIRCHEARTFAILURE.115.002594.)**

- **Background**—Reducing hospital readmissions for patients with heart failure is a national priority, and quality improvement campaigns are targeting reductions of $\geq 20\%$. However, there are limited data on whether such targets have been met.
- **Methods and Results**—Only 1 in 70 (1.4%) hospitals achieved the 20% relative reduction in 30-day risk-adjusted readmission rates. A multivariable linear regression model was used to determine hospital-level factors associated with relative improvements in 30-day risk-adjusted readmissions between 2009 and 2012.
- **Conclusions**—Although there has been slight improvement in 30-day all-cause readmission rates during the past 4 years in patients with heart failure, few hospitals have seen large success.

VARIATION IN PENALTIES BY TYPE OF HOSPITAL

- Major teaching hospitals and hospitals with relatively greater shares of low-income beneficiaries received higher penalties.
- Teaching hospitals tend to provide safety-net for a higher proportion of low-income patients.
 - 86% of Teaching hospitals were fined.
- Hospitals with smallest share of low-income beneficiaries were less likely to be assessed any penalties.
 - 66% of these hospitals were fined.

FOR MANY DIAGNOSES: CAUSE OF READMISSIONS IS A MOVING TARGET

- Characterizing Types of Readmission After **Acute Coronary Syndrome**
- Hospitalization: Implications for Quality Reporting
- Danielle A. Southern, MSc; Jennifer Ngo, MD; Billie-Jean Martin, MD, PhD; P. Diane Galbraith, BN, MSc; Merrill L. Knudtson, MD; William A. Ghali, MD, MPH; Matthew T. James, MD, PhD; Stephen B. Wilton, MD, MSc
- (J Am Heart Assoc. 2014;3:e001046 doi: 10.1161/ JAHA.114.001046)

- Methods and Results—A total of 1170 (34.3%) patients had ≥ 1 hospital readmission within 30 days, reaching 2106 (61.7%) within 1 year of ACS discharge. Renal disease and diabetes predicted all-cause readmissions at 30 days and 1 year, but there were no robust predictors of cardiovascular readmissions.
-

- Conclusions—Hospital readmissions within 30 days after discharge for **ACS** are common, and associated with increased mortality. However, our findings underline that readmissions are quite heterogeneous in nature, and that many readmissions are unrelated to index stay and thus not easily predicted with common clinical variables. All-cause 30-day readmission rates may be too simplistic, and perhaps even misleading, as a hospital performance metric.

CABG READMISSION CAUSES ARE BETTER DEFINED

- [Int J Surg](#). 2018 Jun;54(Pt A):7-17. doi: 10.1016/j.ijso.2018.04.022. Epub 2018 Apr 17.
- **Coronary artery bypass graft readmission rates and risk factors - A retrospective cohort study.**
- [Feng TR](#)¹, [White RS](#)¹, [Gaber-Baylis LK](#)², [Turnbull ZA](#)¹, [Rong LQ](#)³.

- **METHODS:**

- A retrospective review was performed on 2007-2011 data from California, Florida, and New York from the State Inpatient Databases, Healthcare Cost and Utilization Project. All patients ≥ 18 years of age who underwent isolated CABG and met inclusion/exclusion criteria were included.
-

- **RESULTS:**

- Risk factors for readmission included non-private insurance, age, female sex, non-white race, low median household income, non-routine discharge, length of stay, and certain comorbidities and complications.

Causes for readmissions:

AF 26.7%

Pleural effusions 26.7%.

Wound infection 17.7%

Results were the same for 90 day readmits

MANY HOSPITALS HAVE FOCUSED IN THE CAUSE OR READMISSIONS

- But when there is little evidence for a trend in the cause for readmissions, this approach can be ineffective.
- A better approach might be a systematic, broader approach for all hospitalized patients.

HF READMISSIONS

- AHRQ National Readmission Database
- 36 million discharges from 21 states with reliable numbers; 49.1% of total US hospitalizations
- 301,892 index admissions with 64,264 readmits within 30 days
- LOS 5.3 days for both

CAUSES OF HF READMISSIONS

- Cardiac 49.8% (34.5% HF, 4.4% CAD, 4.3% Arrhythmias)
- Respiratory 13.1%
- Kidney/GU 8.9% (5.1% AKI on CKD)
- Infectious 8.1%
- Arora S et al, Am J Cardiol 2017

[J AM HEART ASSOC](#). 2014 OCT; 3(5): E001290.

PUBLISHED ONLINE 2014 SEP 26. DOI: [10.1161/JAHA.114.001290](#)

CLINICAL PREVENTABILITY OF 30-DAY READMISSION AFTER **PERCUTANEOUS CORONARY INTERVENTION**

[JASON H. WASFY](#), MD, MPHIL, [JORDAN B. STROM](#), MD, [STEPHEN W. WALDO](#), MD, [CASHEL O'BRIEN](#), BA, [NEIL J. WIMMER](#), MD, MSC, [ADRIAN H. ZAI](#), MD, PHD, MPH, [JENNIFER LUTTRELL](#), MBA, [JOHN A. SPERTUS](#), MD, MPH, [KEVIN F. KENNEDY](#), MS, [SHARON-LISE T. NORMAND](#), PHD, [LAURA MAURI](#), MD, MSC, AND [ROBERT W. YEH](#), MD, MSC

- After aggregation of scores, 380 (42.6%) readmissions were deemed preventable and 513 (57.4%) were deemed not preventable.
- Common causes of preventable readmissions included staged PCI without new symptoms (14.7%), vascular/bleeding complications of PCI (10.0%), and congestive heart failure (9.7%).

OTHER CONTRIBUTING FACTORS

- Fragility
 - degree of physical, cognitive, and psychological dependence
- Depression
- Anxiety
- Support Systems
- Functional status assessments
- Cognition

Cognitive Impairment in Older AMI/CHF Patients

MEGAN GIBSON², RN; STANLEY BIRGE, MD¹; LENISE CUMMINGS-VAUGHN, MD¹; KELLY DODDS, RN, ANP-BC, ACNS-BC²
NELDA MARTIN, RN, ANP-BC, CCNS²; ANGELA ROETHEMEYER, RN, ANP-BC²; CATHERINE POWERS, RN, ACNS-BC²

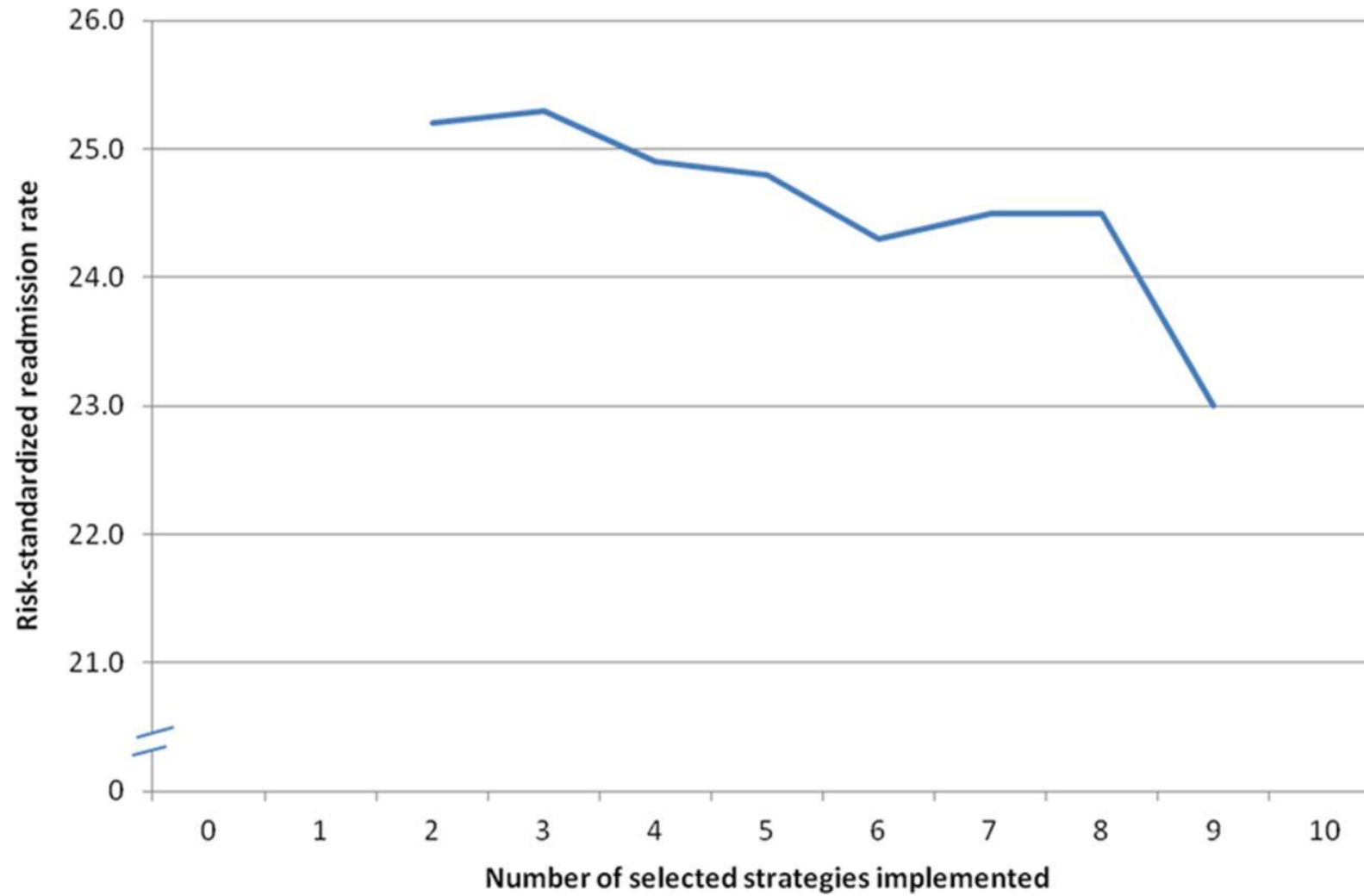
DIVISION OF GERIATRICS AND NUTRITIONAL SCIENCES, WASHINGTON UNIVERSITY SCHOOL OF MEDICINE HEART & VASCULAR
CENTER, BARNES-JEWISH HOSPITAL, SAINT LOUIS, MO²

- Estimated 62% to 85% of all AMI and CHF patients.
- 50% of this population manages their own meds yet 81% have impaired executive function.
- Because in only 8% of patients was a diagnosis of dementia was appreciated.
- The two tests described here provide a simple, readily administered screening test for impaired executive function and the need for medication assistance that can inform discharge planning.

STRATEGIES TO REDUCE ADMISSIONS

- There is NO one intervention that reduces readmissions.
- Most success is in within bundled interventions

Number of selected strategies implemented and risk-standardized readmission rates (RSRRs).



Elizabeth H. Bradley et al. *Circ Cardiovasc Qual Outcomes*.
2013;6:444-450

NIH: META-ANALYSIS OF 42 TRIALS

- **Leppin, A. L. et al. 2014. Preventing 30-day hospital readmissions: a systematic review and meta-analysis of randomized trials** *NIH JAMA Intern Med.* 2014 July ; 174(7): 1095–1107.
doi:10.1001/jamainternmed.1608.
- Conducted by the National Institute of Health
- Hospitals implemented 1-7 unique interventions
- A decline in readmissions started being realized when hospitals implemented at least 5 interventions.

Most Common Interventions: When bundled, made a difference

- **Discharge Planning**

- Simply thinking about and formalizing an approach to prepare for discharge

- **Case Management**

- Logistical coordination of care and/or resources not specifically focused on self-management

- **Telephone Follow-up**

- Use of a telephone or videophone for provider-initiated communication after discharge. Most called within 2 days of discharge.

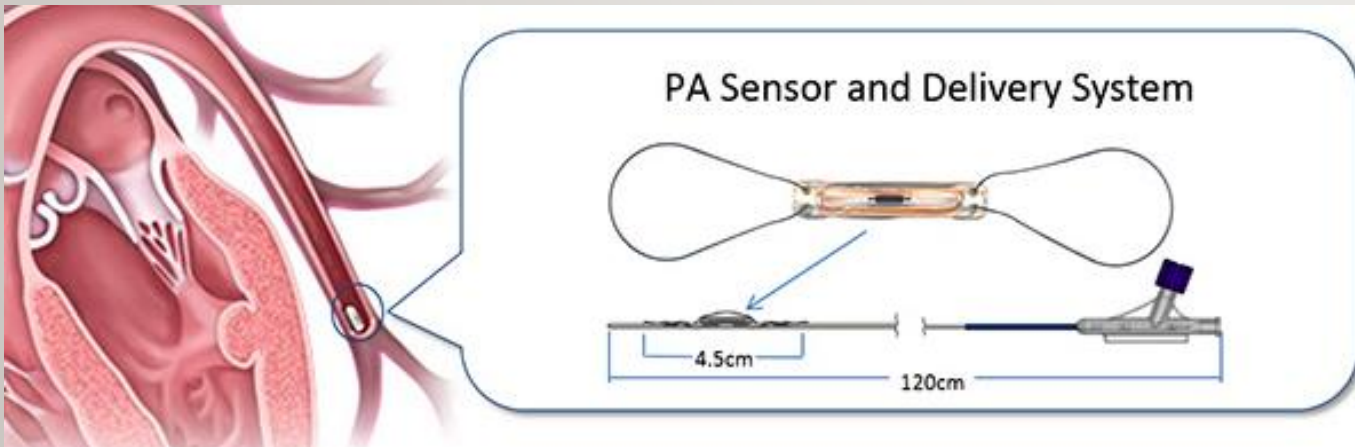
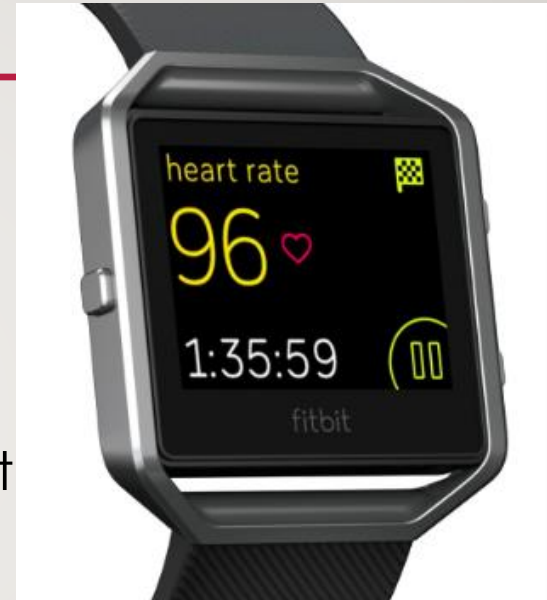
TELEMONITORING

- Use of remote technology designed for the patient to transmit objective measures of health status with or without connected subjective assessment
- I-pads, lap tops
- Videoconferencing



CONTINUOUS, WEARABLE TELEMONITORING

- FIT BIT: Sleep activity, HR, possibly SpO2
- APPLE WATCH: same
- CARDIOMEMS: Invasive ambulatory monitoring



STRATEGIES, CON'T

- **Patient Education**

- Patient-directed education related to diagnosis or treatment rationale but not focused on encouraging self-management

- **Self-Management**

- Patient-directed education or coaching directly focused on improving patient's ability to self-manage care needs. Must assess patient's capacity for self-care.

- **Medication Intervention**

- Medication reconciliation or special education aimed at improving medication understanding or adherence; often conducted by a pharmacist. Earlier transition to post-discharge medications. Med reminders, smart speakers

- **Home Visits**

- Physical visitation by intervention provider to patient's place of residence.

- **Follow-Up Scheduled** Scheduling of a follow-up visit prior to discharge.
- **Timely Follow-up Post-discharge** follow-up visit or communication with patient. Initially thought to be best at within 7 days. Now many high risk patients are seen within 3 days.
- **Provider Continuity** Increased provider presence on both sides of the hospital to home transition; may include involvement of PCP in inpatient care or strategic follow up with inpatient provider after discharge or “bridging” provider in a transitional care clinic.
- **Patient Centered Discharge** Some difference in the format or usability of discharge materials to make them more accessible or instructions relevant to various levels of cognition.

- **Timely PCP Communication**

- Engagement with PCP in communication about patient status
-

- **Patient Hotline**

- Presence of an open line for patient-initiated communication.
Preferably 24/7

- **Rehab Intervention**

- Patient-directed rehabilitation efforts that are not entirely diagnosis-specific but aimed at improving functional status

- **Streamlining**

- A general streamlining of services provided, often with dedicated assignment of responsibility

SOME INITIATIVES FOCUS ON CHANGING POST-ACUTE CARE

- INTERACT (Interventions to Reduce Acute Care Transfers)
 - Developed by Georgia Medical Care Foundation (QIO)
 - Provides tools for nursing homes/long term care facilities to use to monitor and redesign care to reduce readmissions
 - <http://interact2.net/>

OTHER POST-DISCHARGE STRATEGIES

PARTNERING WITH SNF'S

- An investigation of quality improvement initiatives in decreasing the rate of avoidable 30-day, skilled nursing facility-to-hospital readmissions: a systematic review
- Unnecessary hospital readmissions from skilled nursing facilities (SNFs) are gaining attention as a quality improvement focus due to their financial expense and association with increased patient complications. Approximately 20%–25% of patients discharged to SNFs are readmitted to acute care hospitals within 30 days of discharge in the USA.²

Strategies for Skilled Nursing Facilities

- Share of protocols for care of patients with congestive heart failure, post-MI, and pneumonia
- Patients with 3+ prior hospital admissions in past 6 months got palliative care consult. More likely to die outside of acute care setting according to wishes. Use of hospice teams to give palliative consults
- Multidisciplinary root cause analysis conferences for patients fitting within readmission parameters to review whether or not readmissions could have been prevented
- Medication reconciliation
- Use of a nurse practitioner and on site medical staff can assess acute medical

FUTURE

- 90-day readmission rates
- Overall Hospital Readmission Rate: all diagnoses
- Bundle Payments