



The Heart Failure Bundle: A Clinician's Perspective

Bundled Payments for Care Improvement

American Medical Association
Integrated Physician Practice Section Annual Meeting

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@DoctorFitHeart

08 June 2018

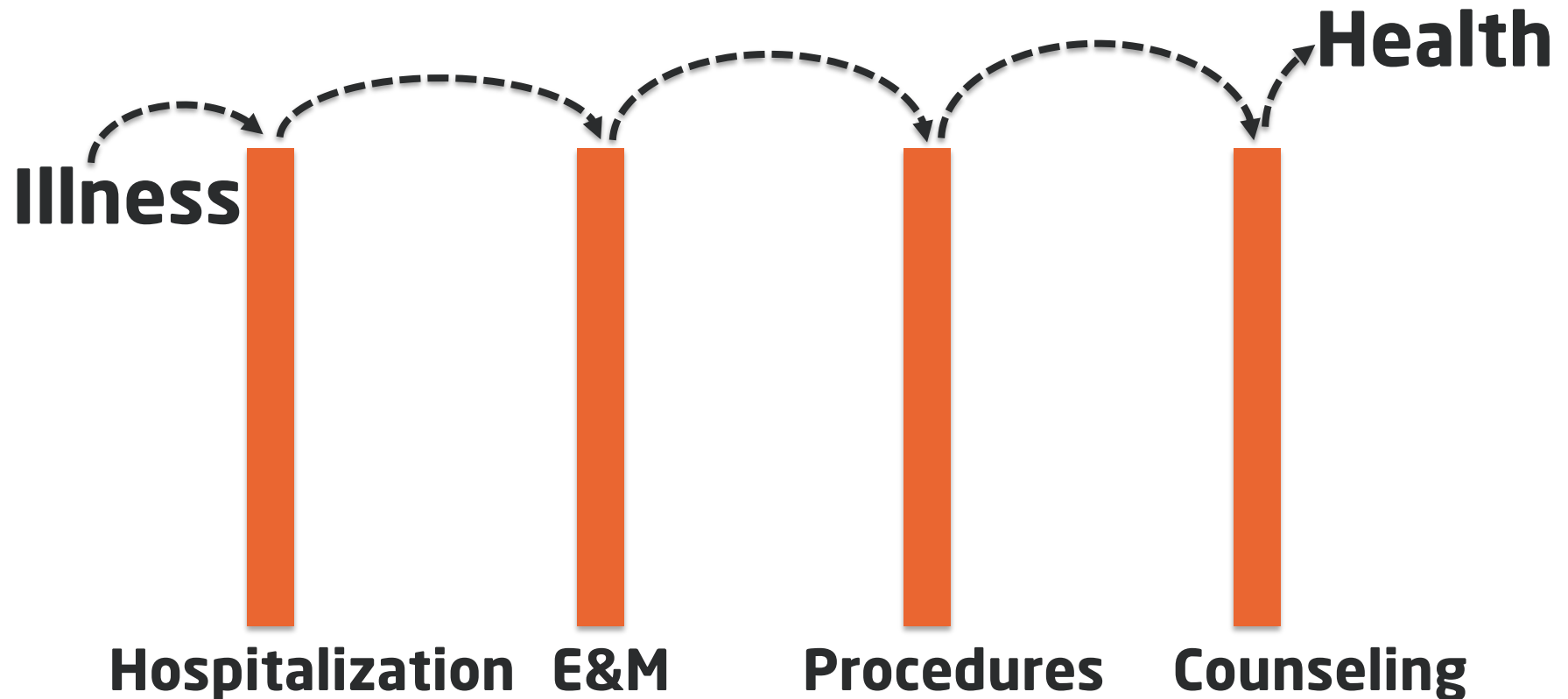
No Disclosures

Agenda

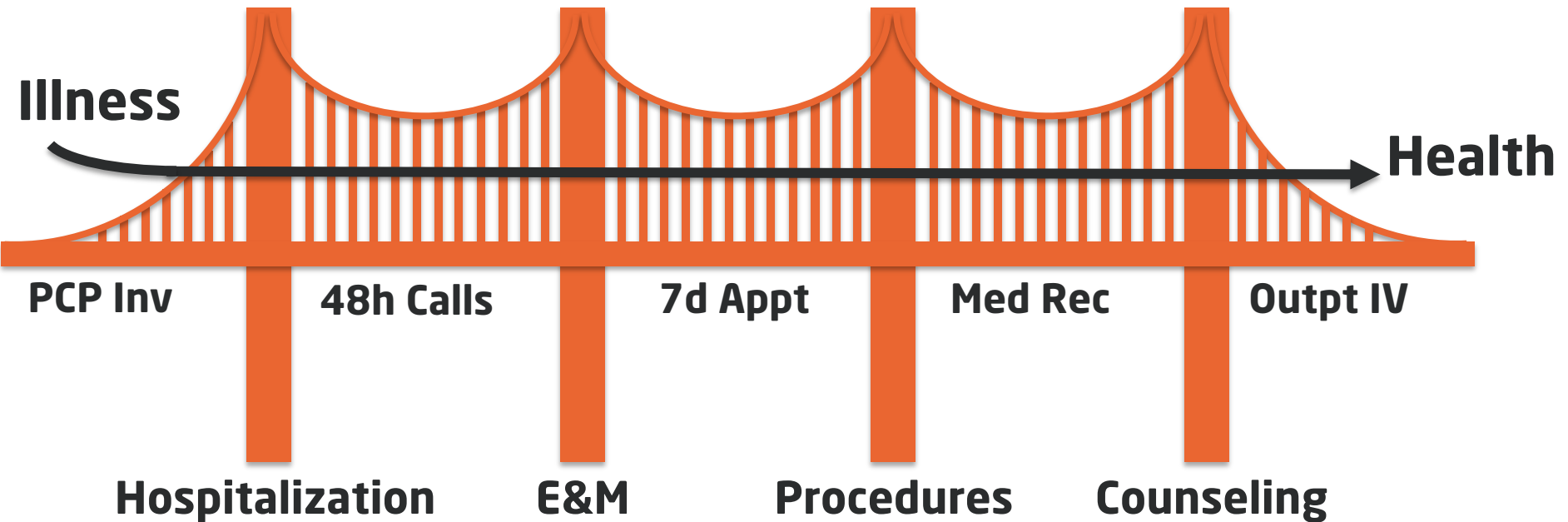
- **The vision for Bundled Payments**
- **What we saw in 2015**
- **Brief overview of our care redesign**
- **Process Outcomes**
- **Outcome Outcomes**
- **The secret sauce?**
- **The next episode**



Heart Failure Care: Fee for Service



Heart Failure Care: Value Era



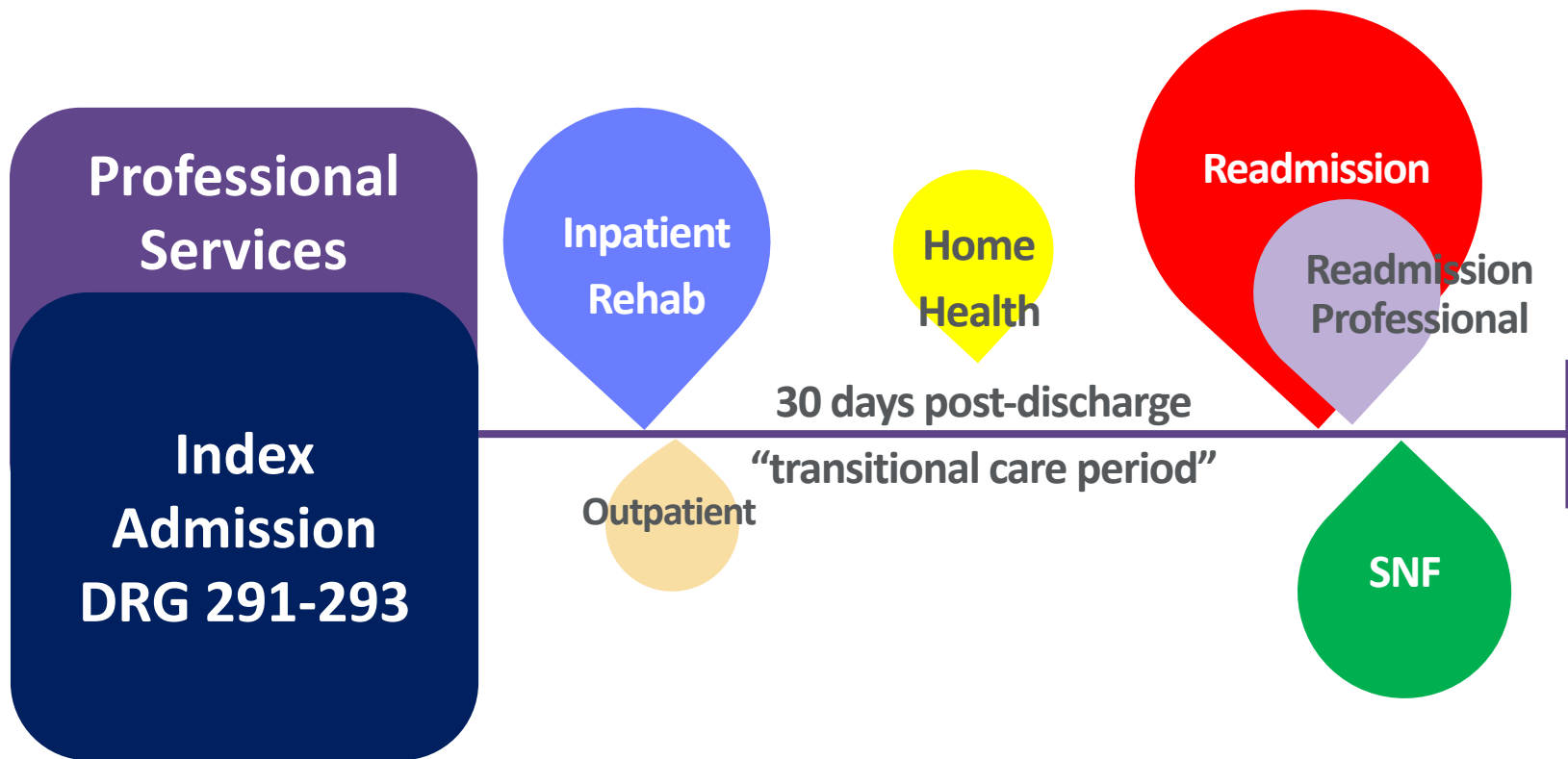




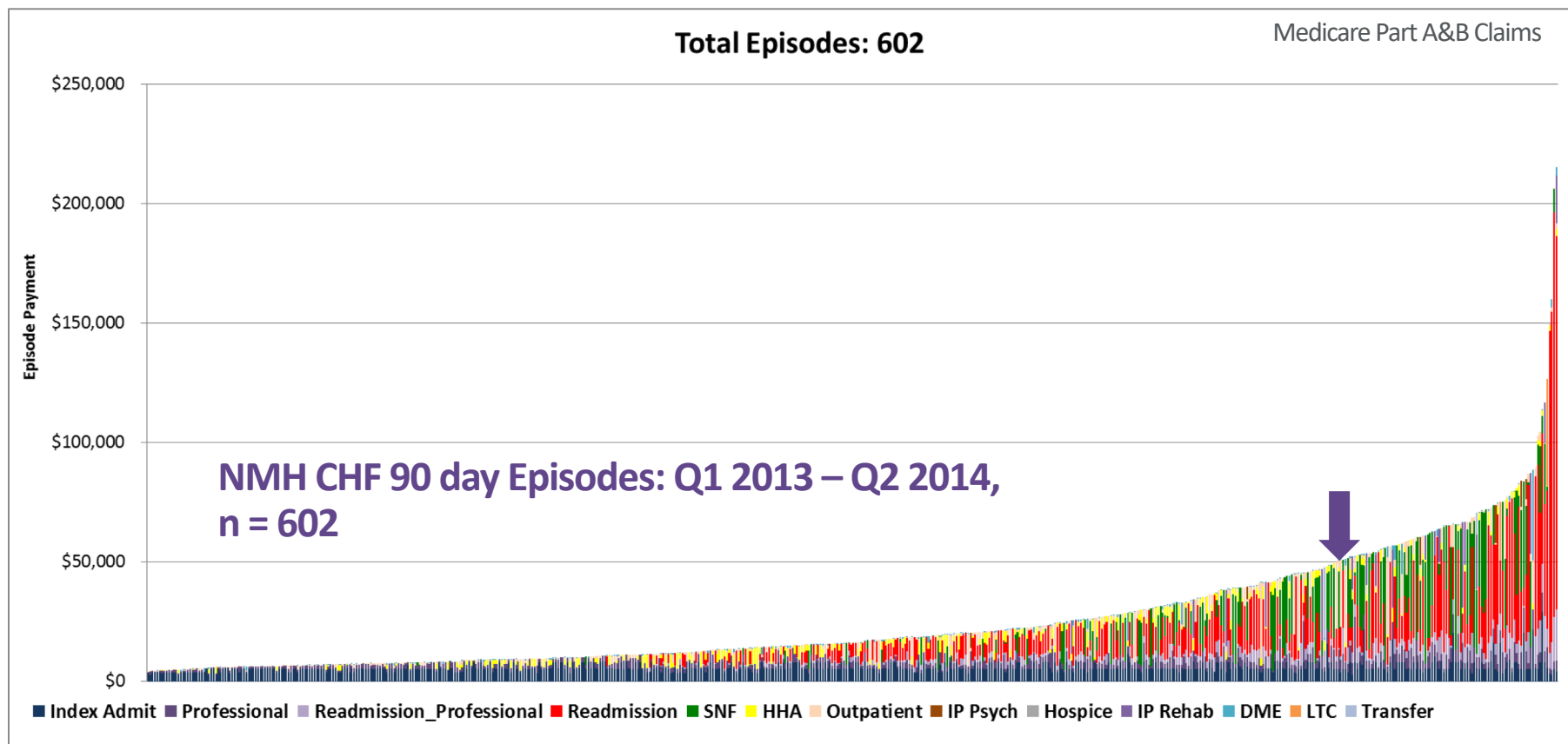


What did we see in 2015?

Bundled Payments for Care Improvement (BPCI): Financial Model Schematic

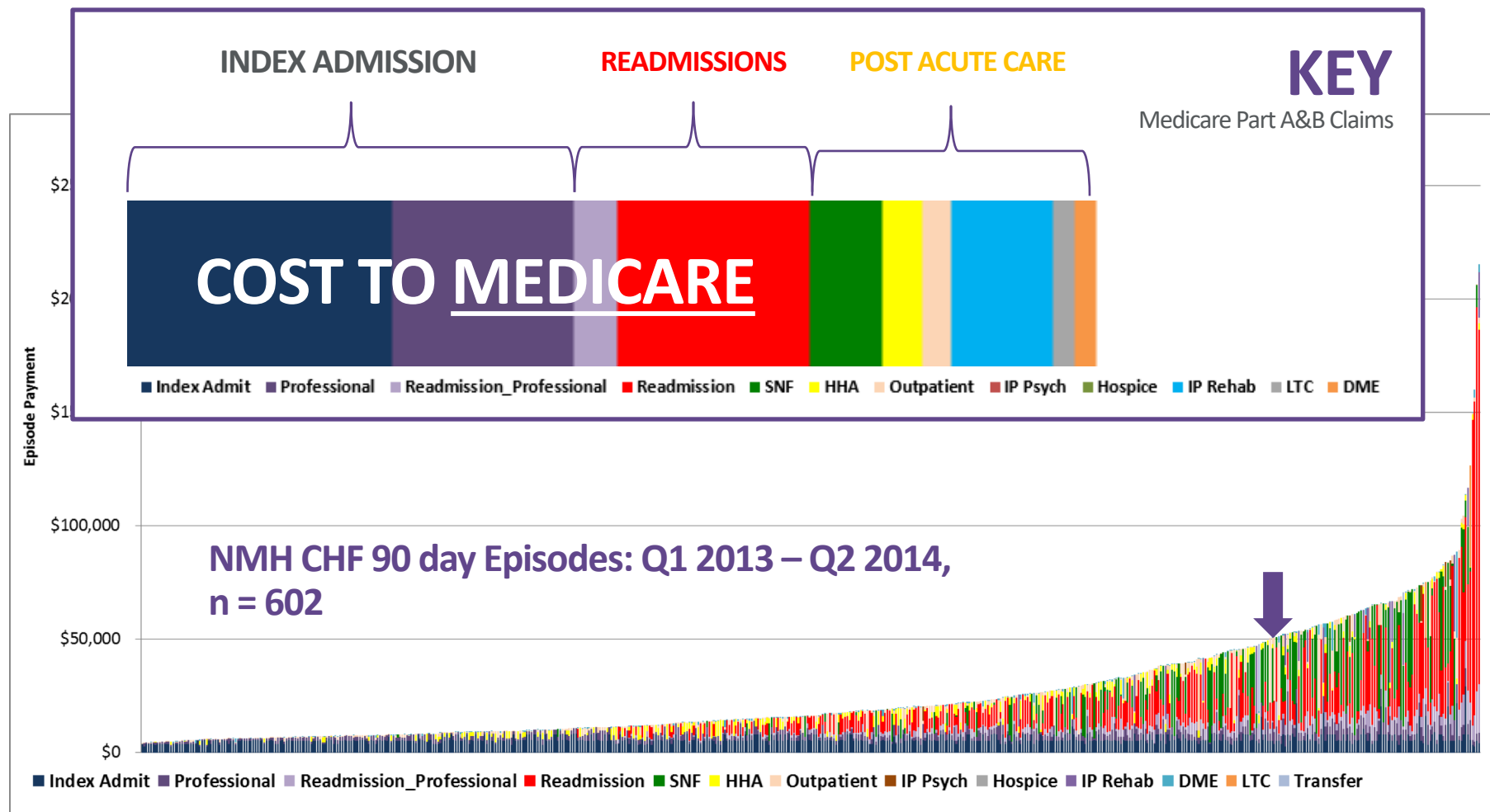


There is Tremendous Variability in Episode Cost



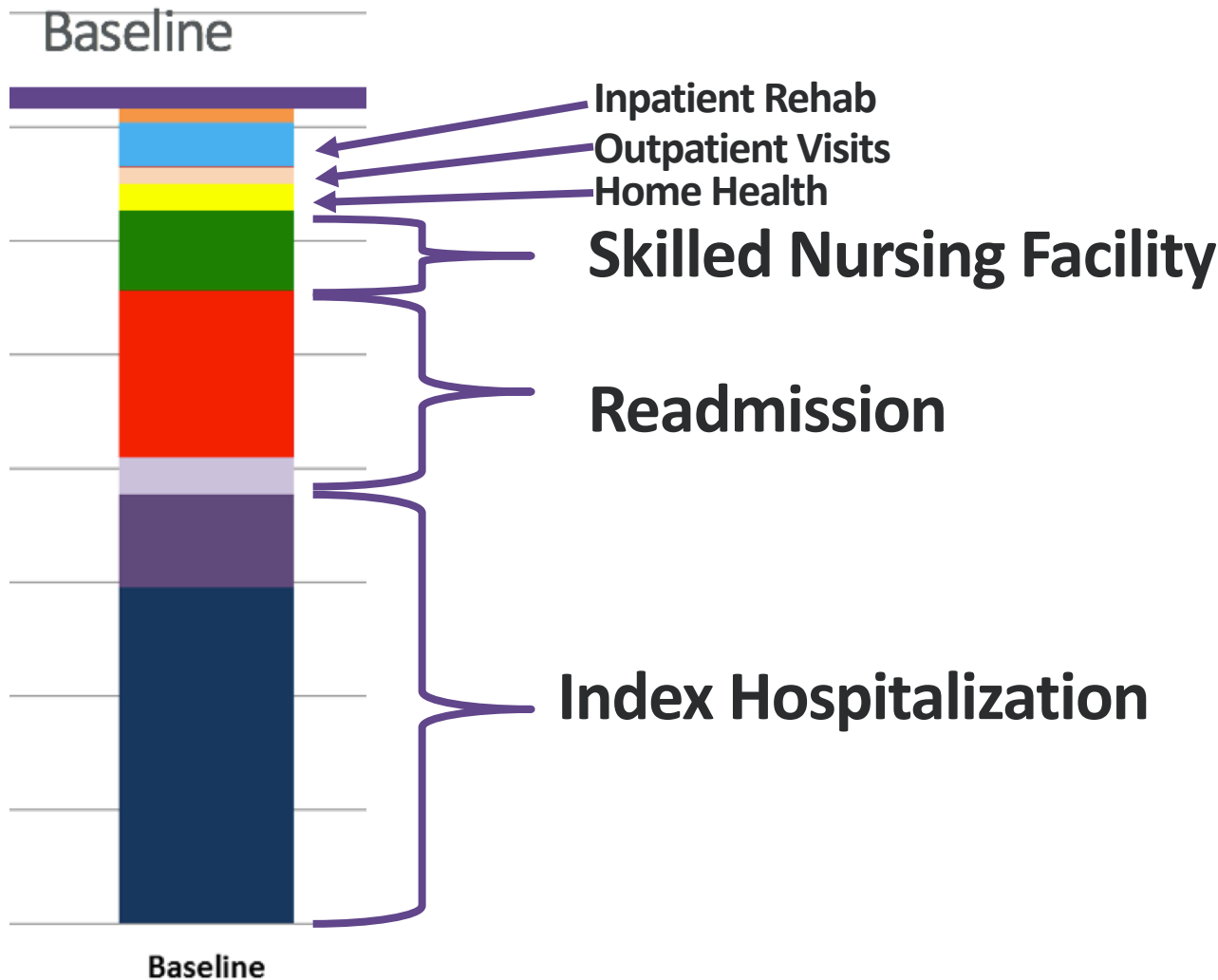
Data Source: CMS Limited Data Set, DataGen and Single Track Analytics BPCI³⁶⁰ Data Model; CHF “Completed” Bundle Episodes (includes MS-DRGs 291, 292, 293)

Readmissions and SNF Use Drive Episode Cost

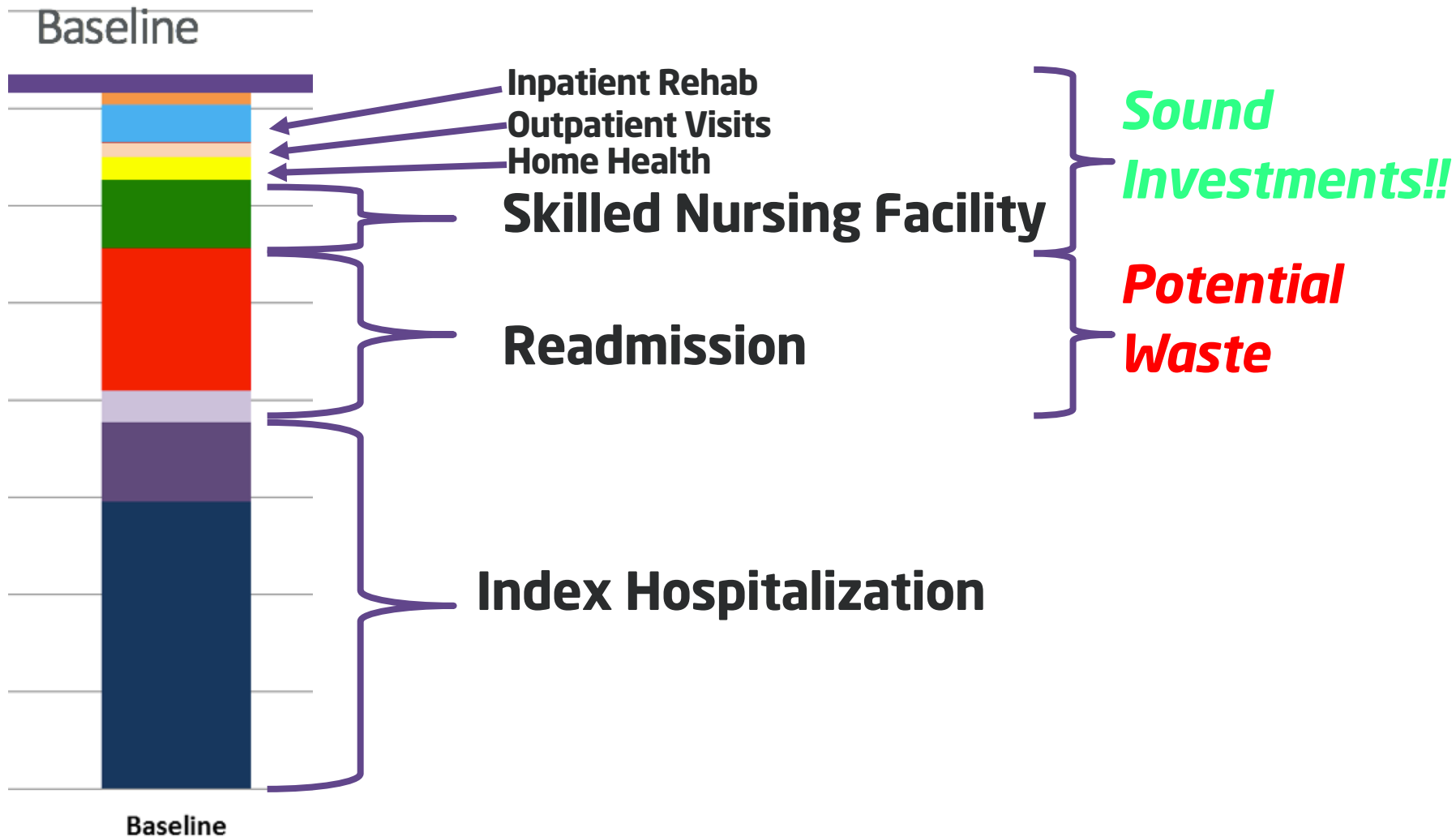


Data Source: CMS Limited Data Set, DataGen and Single Track Analytics BPCI³⁶⁰ Data Model; CHF "Completed" Bundle Episodes (includes MS-DRGs 291, 292, 293)

What Drives Cost for a HF Episode of Care?



What Drives Cost for a HF Episode of Care?





What was our plan?

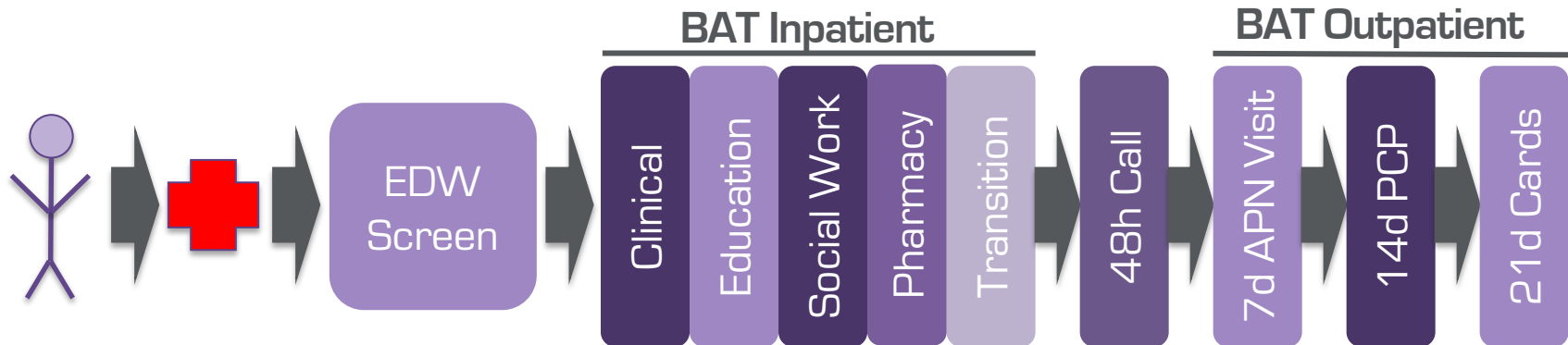


High Level Process Overview



Strategic Goal: Identify patients early to build relationships and intervene

Northwestern HF Bridge and Transition Team Multidisciplinary Care Model





How did we do? (Hits)

Enterprise Data Warehouse Screening Strategy

Heart Failure Flags in EDW Query:

Heart Failure on Problem List

Administration of intravenous diuretic

Carvedilol order

BNP ≥ 100 ng/dl

Telemetry order of heart failure

Previous ICD9 or ICD10 primary diagnosis of heart failure

Previous cardiac MRI performed

Previous MUGA scan performed

Previous cardiopulmonary exercise test performed



If any ONE Condition TRUE:

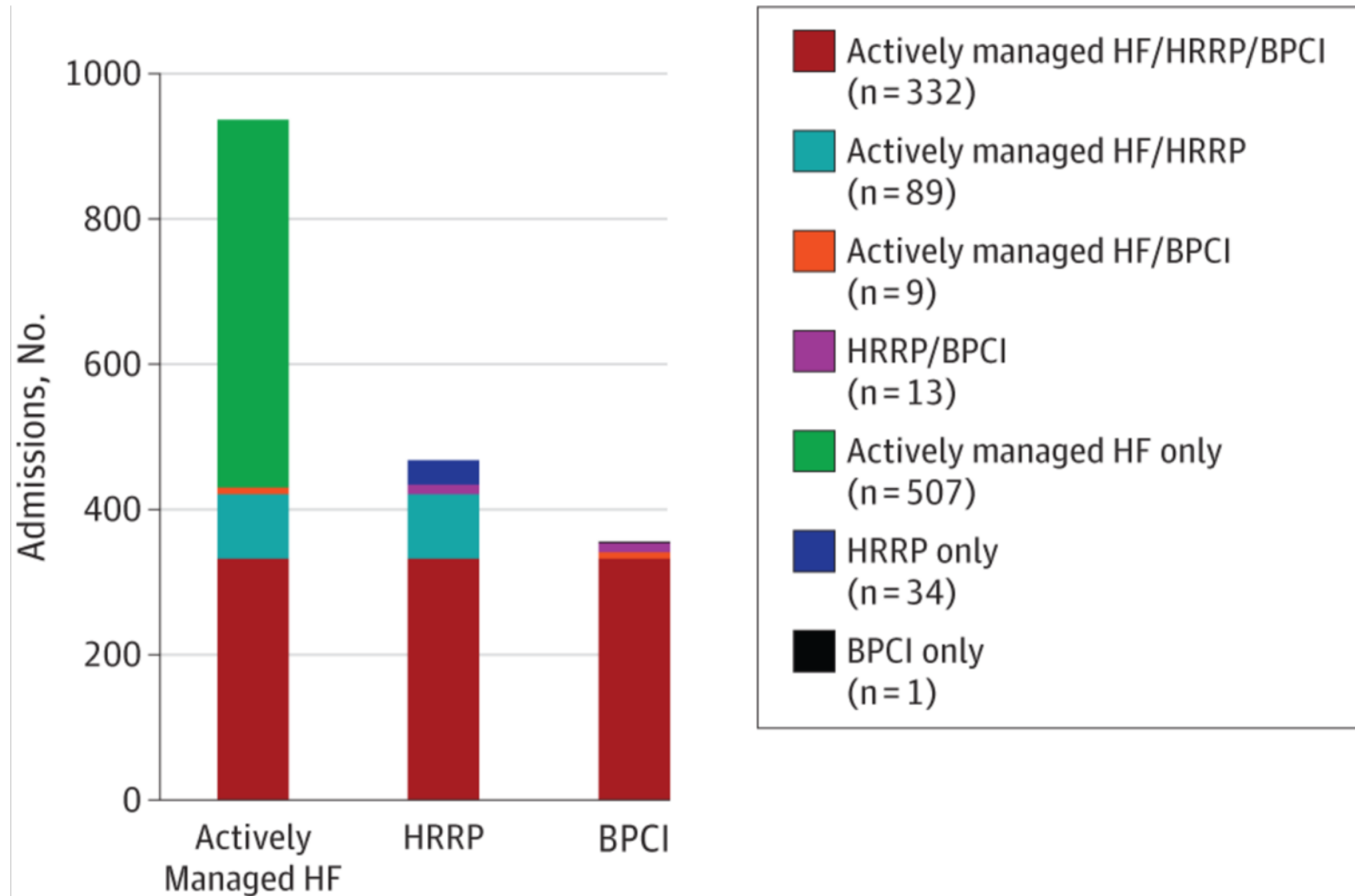
**Potential Acute
Heart Failure Case**



95% sensitivity

**Expert Clinician
Review**

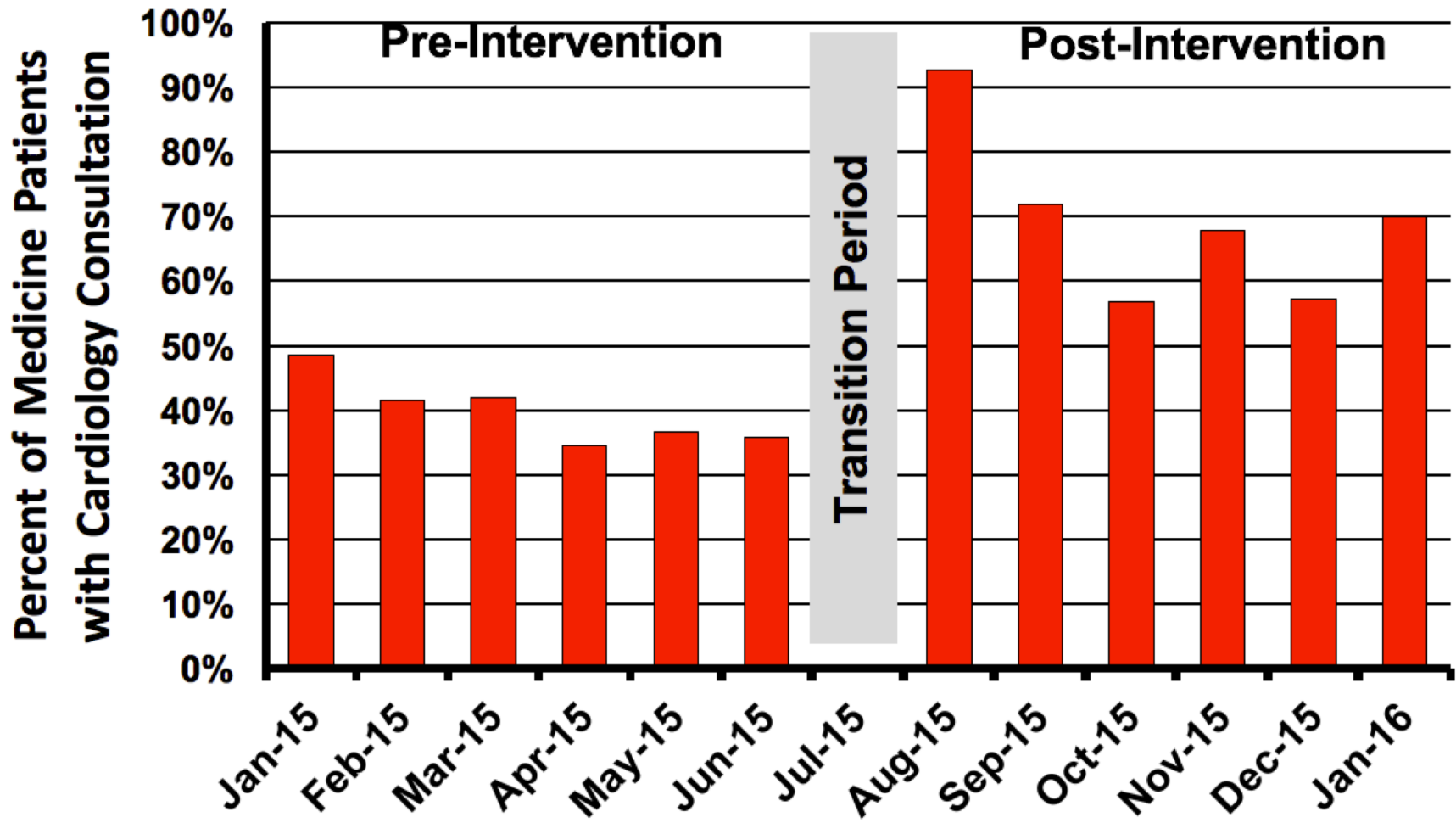
BPCI Accounts for Approximately 1/3 of Medicare Hospitalized HF Patients



Ahmad FS, et al. Targeting the Correct Population When Designing Transitional Care Programs for Medicare Patients Hospitalized With Heart Failure. JAMA Cardiol. 2017 Nov 1;2(11): 1274-1275.

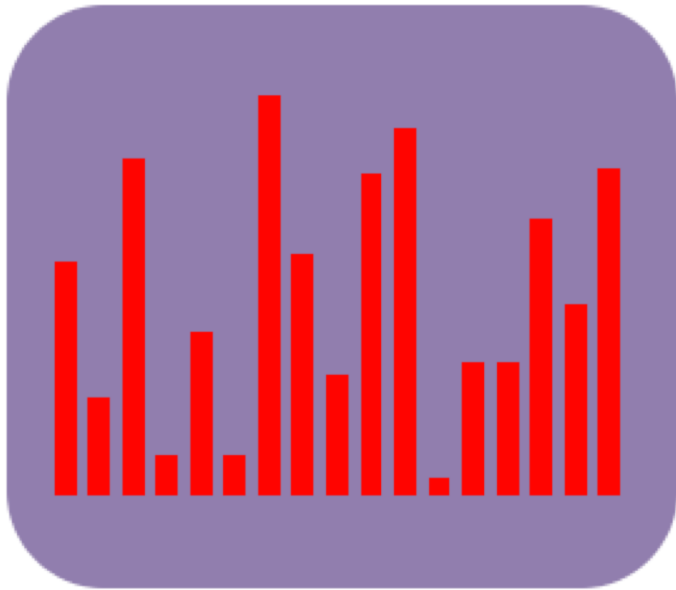
Rate of Cardiology Consultation post EDW Intervention

Rate of Cardiology Consultation on patients coding into HF DRGs (291, 292, 293) for Medicine Patients pre- and post-BAT intervention



Youmans, Q. *et al.* Circ: Quality and Clinical Outcomes, 2016: Vol 9, Suppl 2

Queuing Theory to Improve Discharge Clinic

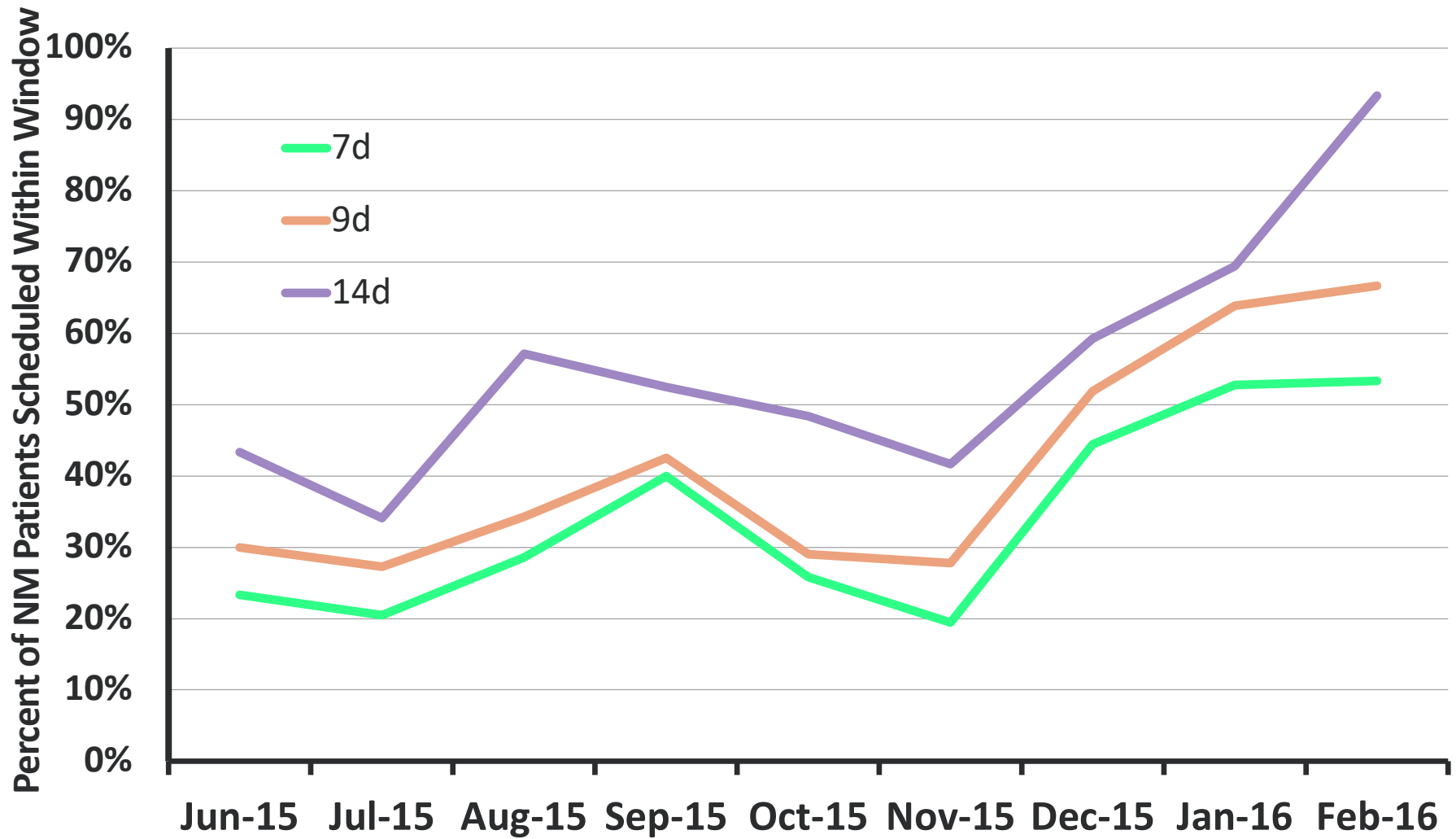


Discharge Demand



Discharge Clinic Slots

Cardiology Discharge Clinic Access Has Improved



Mutharasan RK, et al. Buffer or Suffer: Redesigning Heart Failure Discharge Clinic Using Queuing Theory. *Circ: Quality and Clinical Outcomes*. *In Press*.

Online Calculator: www.hfresearch.org

Discharge Clinic Capacity Sizer

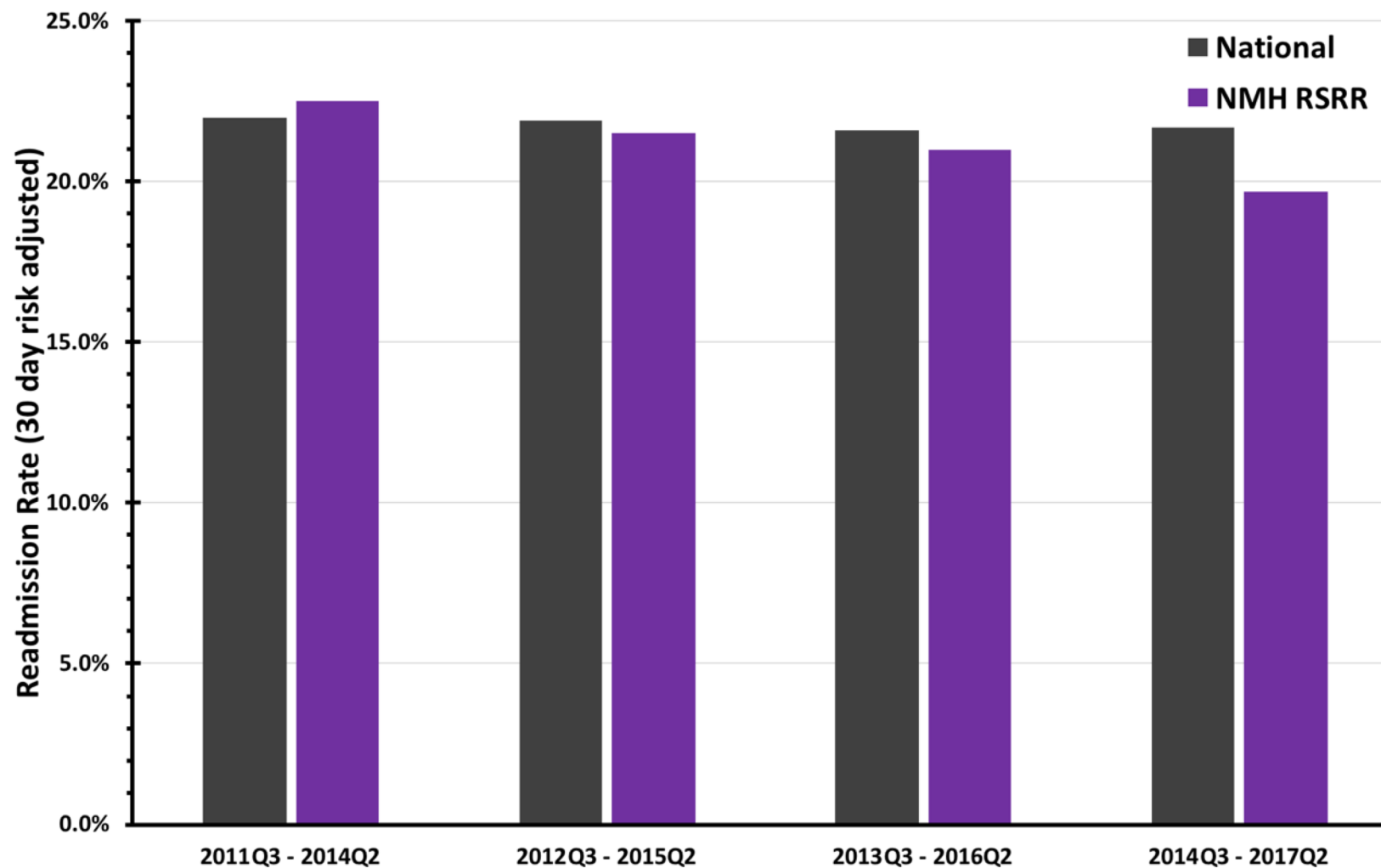
Using queuing theory principles, this calculator determines the amount of weekly capacity needed to accommodate a given, variable discharge volume within an arbitrary level of service and arbitrary time constraint.

Average Weekly Discharge Volume <input type="text" value="20"/>	Below, enter hypothetical scenario: <input type="text"/>
Current Weekly Clinic Capacity <input type="text" value="21"/>	Future Weekly Clinic Capacity <input type="text" value="24"/>
Current Utilization 0.95238	Future Utilization 0.83333
Avg Wait for Appointment 6.67 days	Future Avg Wait for Appt 1.46 days
% Seen in 7 days 64.99 %	Future % Seen in 7 days 99.17 %
% Seen in 14 days 87.74 %	Future % Seen in 14 days 99.99 %
% Seen in 21 days 95.71 %	Future % Seen in 21 days 100.00 %
Percent Seen in 28 days 98.50 %	Future % Seen in 28 days 100.00 %



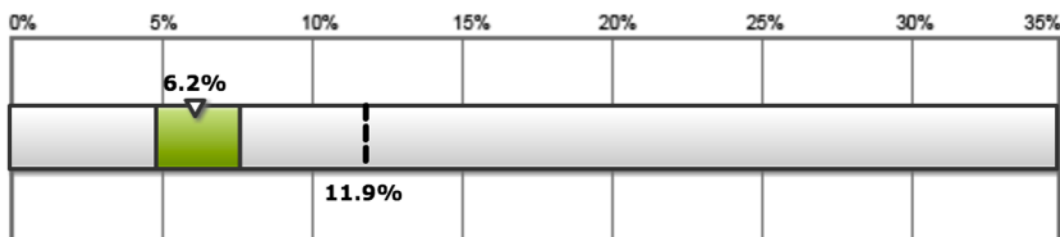
How did we do? (Runs)

Medicare Risk-Adjusted 30-Day Unplanned Readmissions



Lowest Risk-Adjusted HF Mortality (2013-2016)

**NORTHWESTERN
MEMORIAL
HOSPITAL**



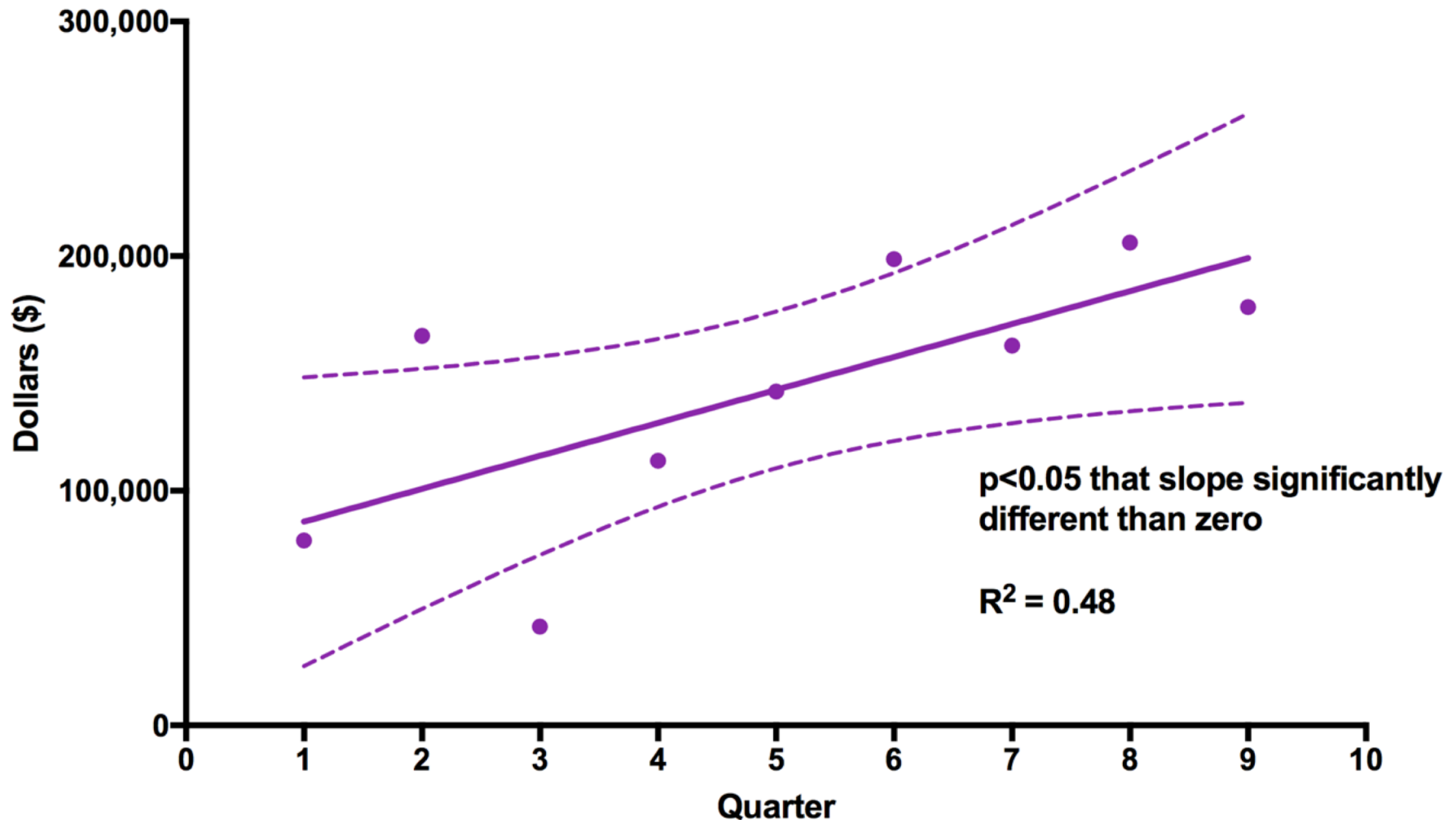
**Number of included
patients:**

881

<http://medicare.gov/hospitalcompare>

Financial Impact of the Model

Net Reconciliation Amount per Quarter





How did we really do it?



Heart Failure Bridge and Transition Team

Michelle Fine

Katie Sandison

Sara Vander Ploeg
Pharmacy

Corrine Benacka

Jess Debrocke

Courtney Montgomery

Carly Koziol
Nurse Educator

Kayleigh Nolan

Takesha Pate
Galter 10 Cardiology

Michelle Montpetit
CDH Cardiology

Josie Rhoades
Transitional Care Liason

Hannah Alphs Jackson

Jennifer Faltin

Jess Walradt
Value-Based Care

Amanda Vlcek
Social Work

Preeti Kansal
Physician Co-Lead

Kannan Mutharasan
Physician Co-Lead

Clyde Yancy

Allen Anderson

Charles Davidson
Division of Cardiology

Robin Fortman

Nicki Pincus
Nurse Practitioners

Daniel Navarro

TJ Elliot

Nora Lewin
Information Technology

Chelsea Keenan

Mae Weddle

Ashley Pritchard
HF Clinic Nurses

Erica Saito

Kate Thomas
Quality

Shilpa Shelton
Bluhm Cardiovascular Institute

Mozzi Etemadi

Jan Van Mieghem
Itai Gurvich

Nick Soulakis
Academic Collaborators

Dominique Kosk
Registered Dietitian

Abbey Lichten
Health Education

Gopi Astik

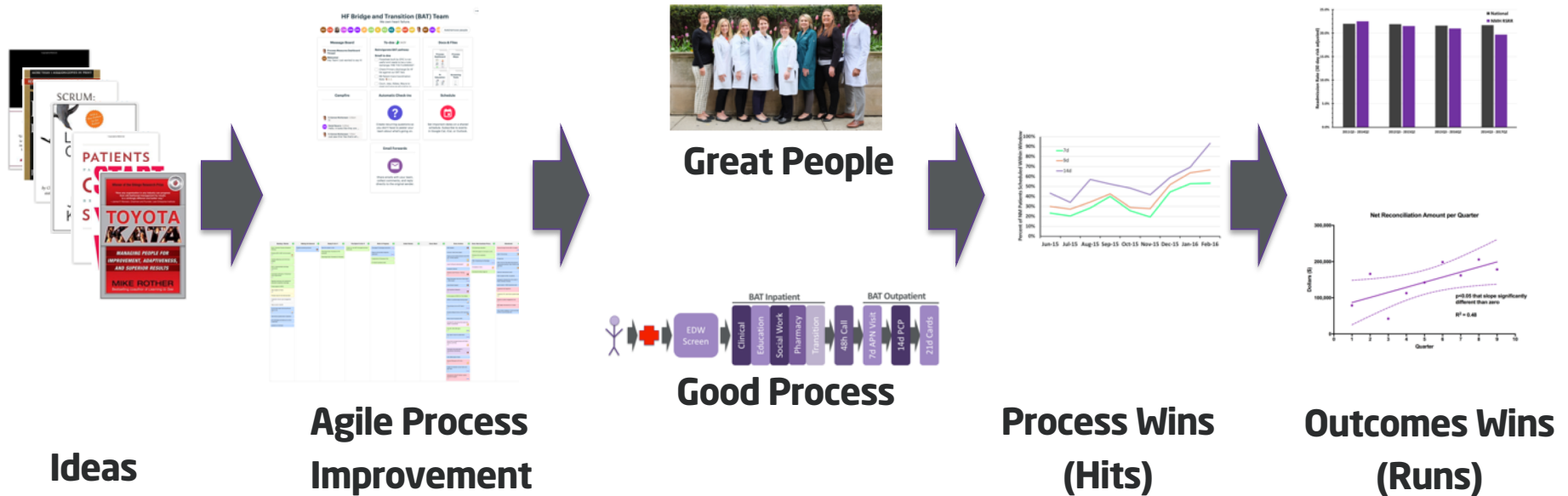
Maya Defoe
Hospital Medicine

Jane Domingo
Process Improvement

Clinical Program Development as Software Development

- Rapidly **prototype**, test, and ship features
- No **value** accrues to patients or enterprise until new processes are shipped
- **Scrum** (An Agile Implementation)
- Business **velocity**
- **Learning** Health System

Mindset of Continuous Quality Improvement







How did we really do it?



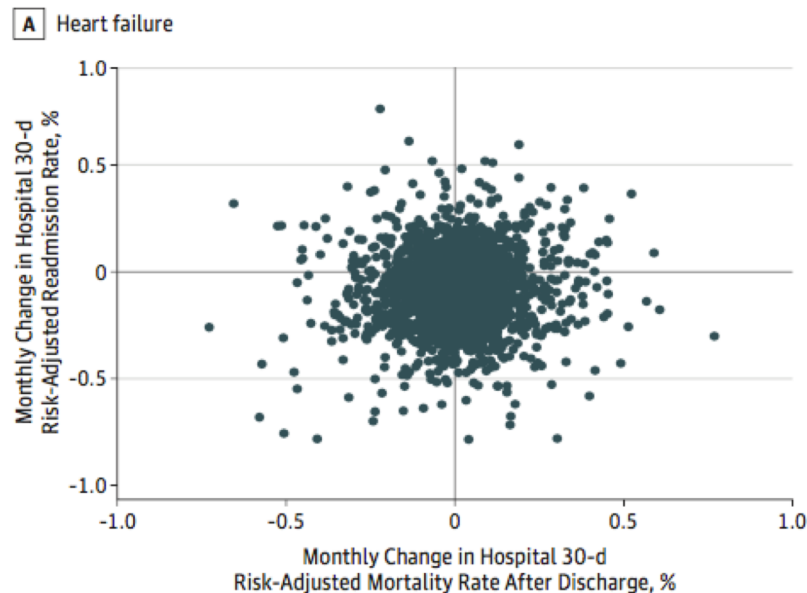
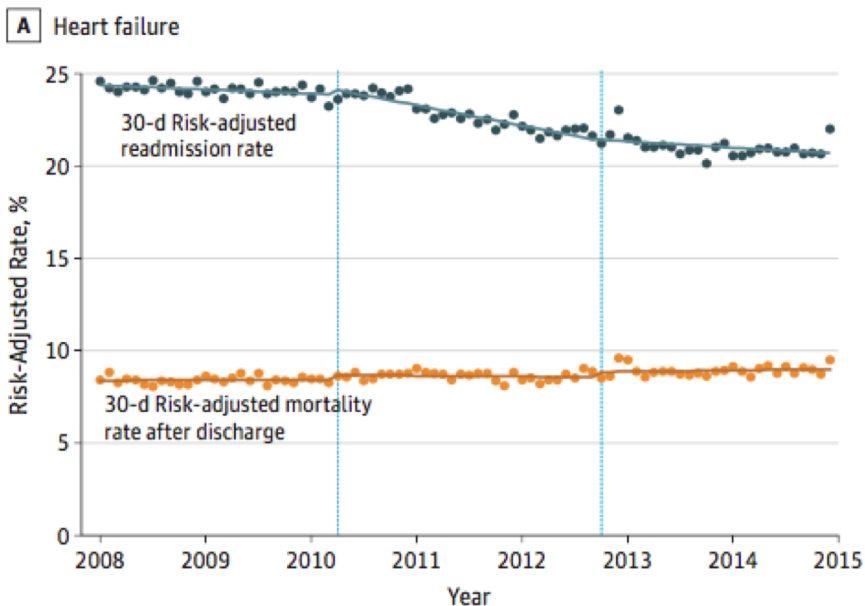




Thank You!

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@DoctorFitHeart

Readmission Reduction and Mortality Reduction Do Not Correlate



Dharmarajan, et al. JAMA2017;318(3):270-278

Heart Failure: What BPCI Sees



BPCI

Heart Failure: What Clinicians See

Non Medicare Patients

Procedural DRGs

Comorbid Conditions:
-Pulmonary Disease
-Chronic Kidney Disease

BPCI: What Works Reasonably Well

- Episode of Care for Chronic Condition: Tractability
- Payment sufficient to support effective multidisciplinary team

