



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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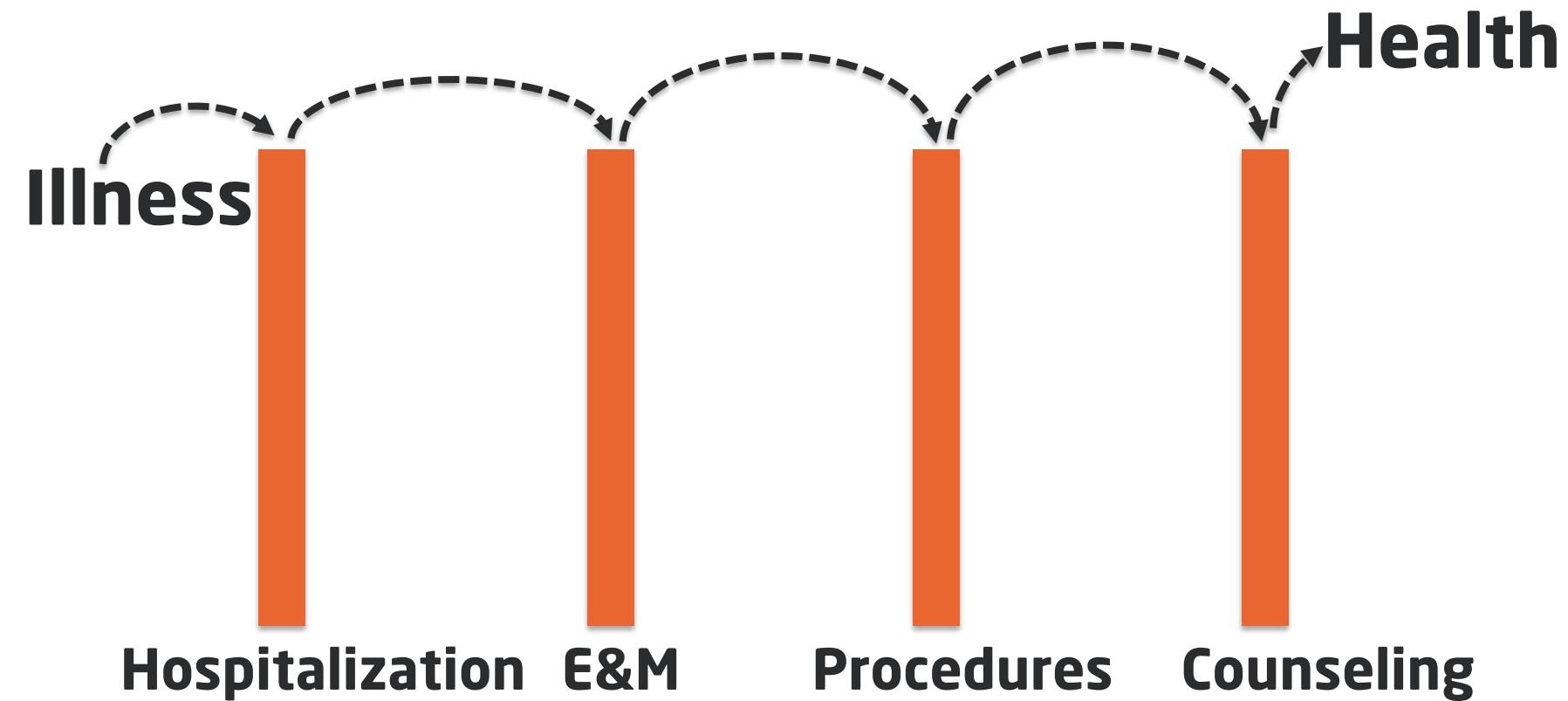
No Disclosures

Agenda

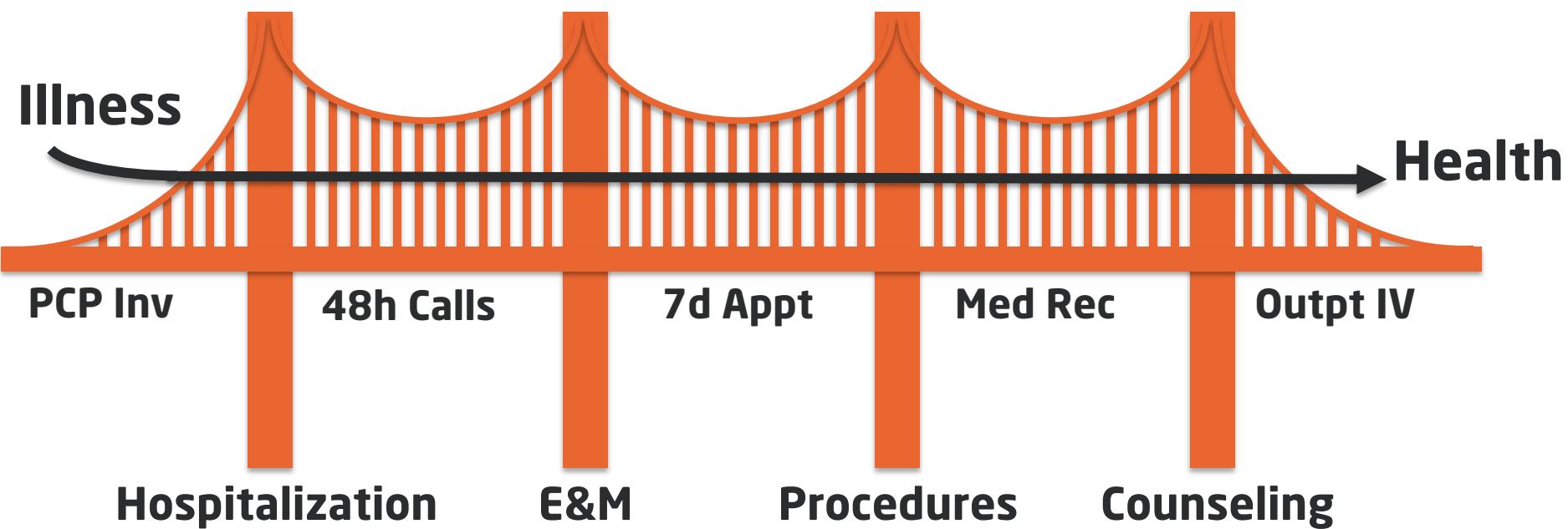
- **The vision for Bundled Payments**
- **What we saw in 2015**
- **Brief overview of our care redesign**
- **Process Outcomes**
- **Outcome Outcomes**
- **The secret sauce?**
- **The next episode**



Heart Failure Care: Fee for Service



Heart Failure Care: Value Era

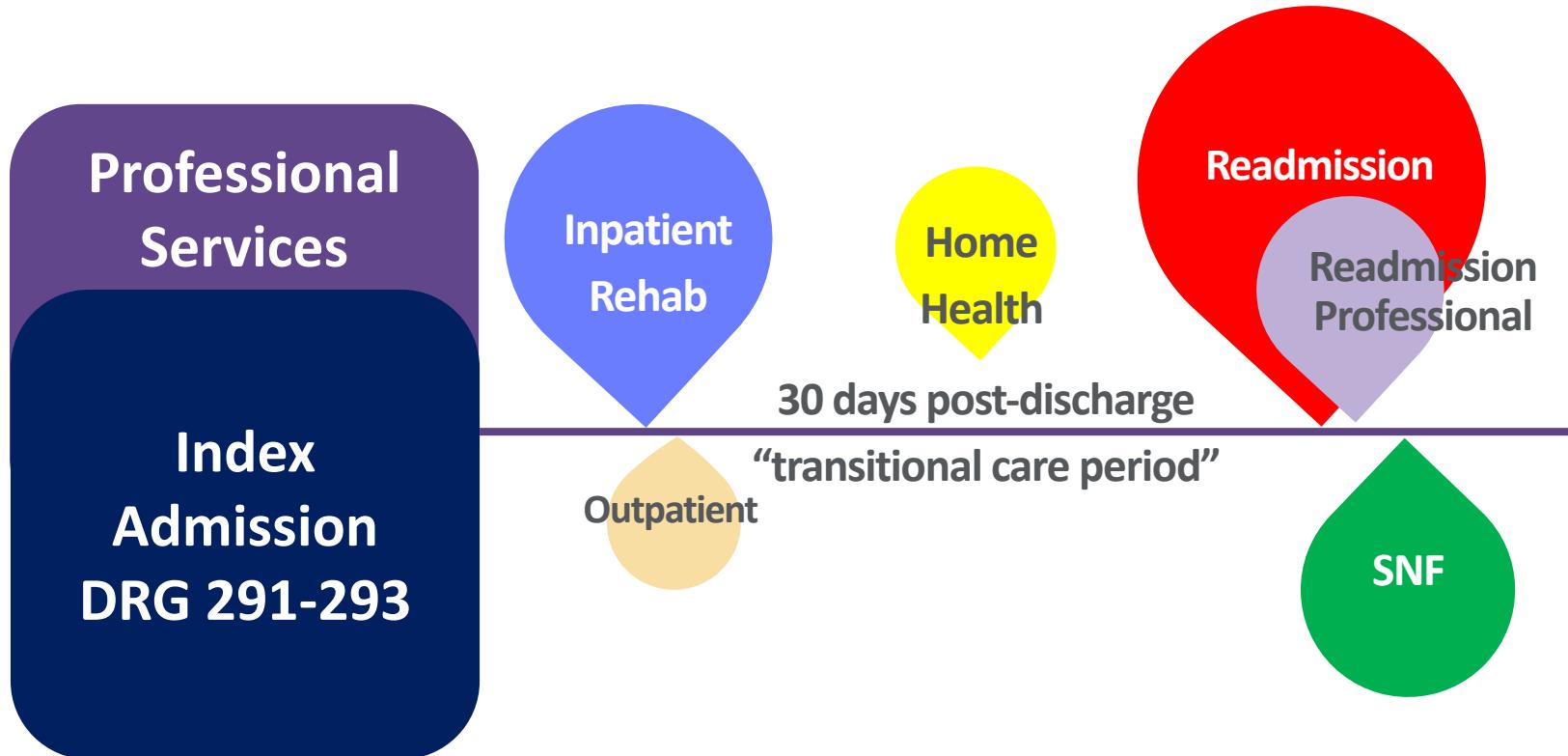




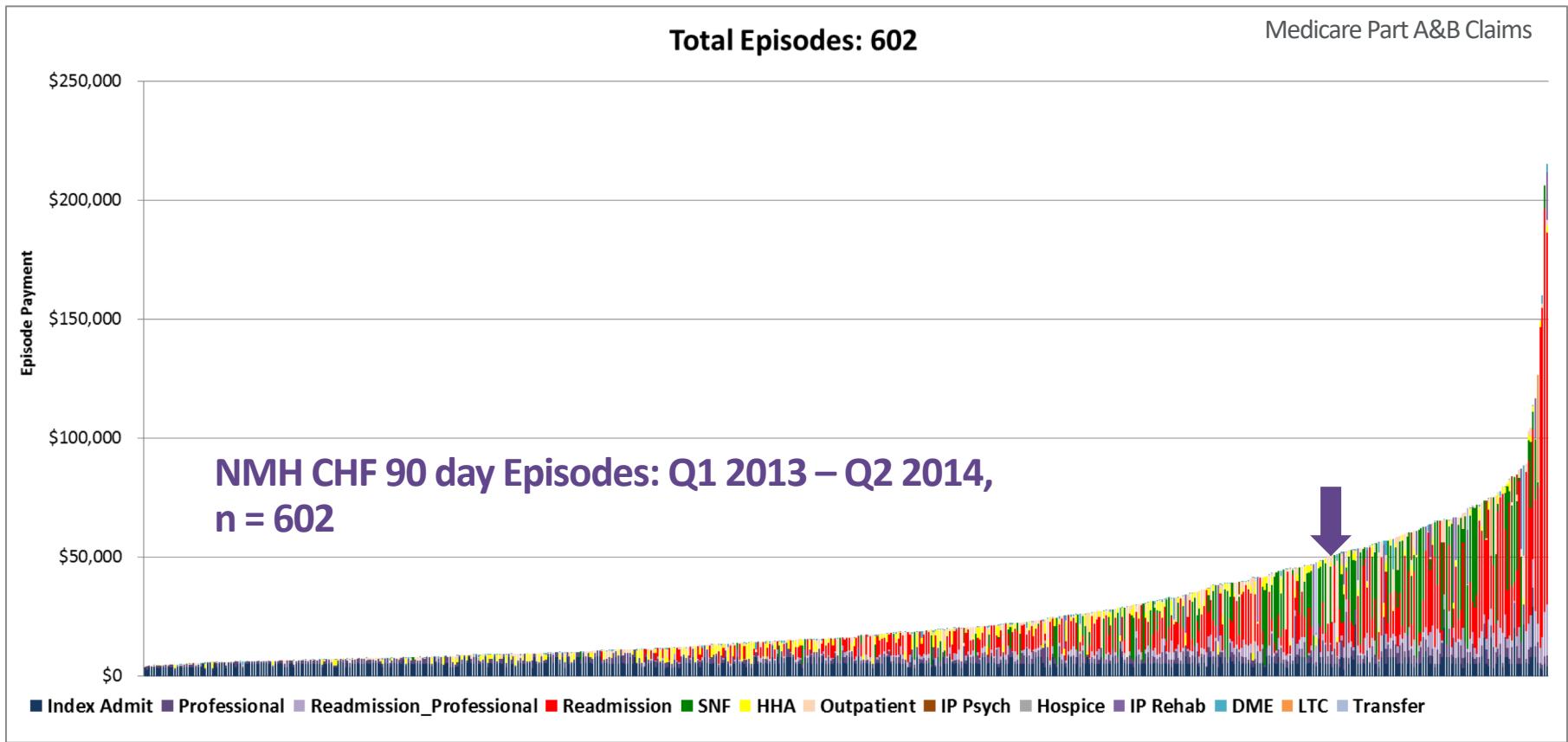


What did we see in 2015?

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

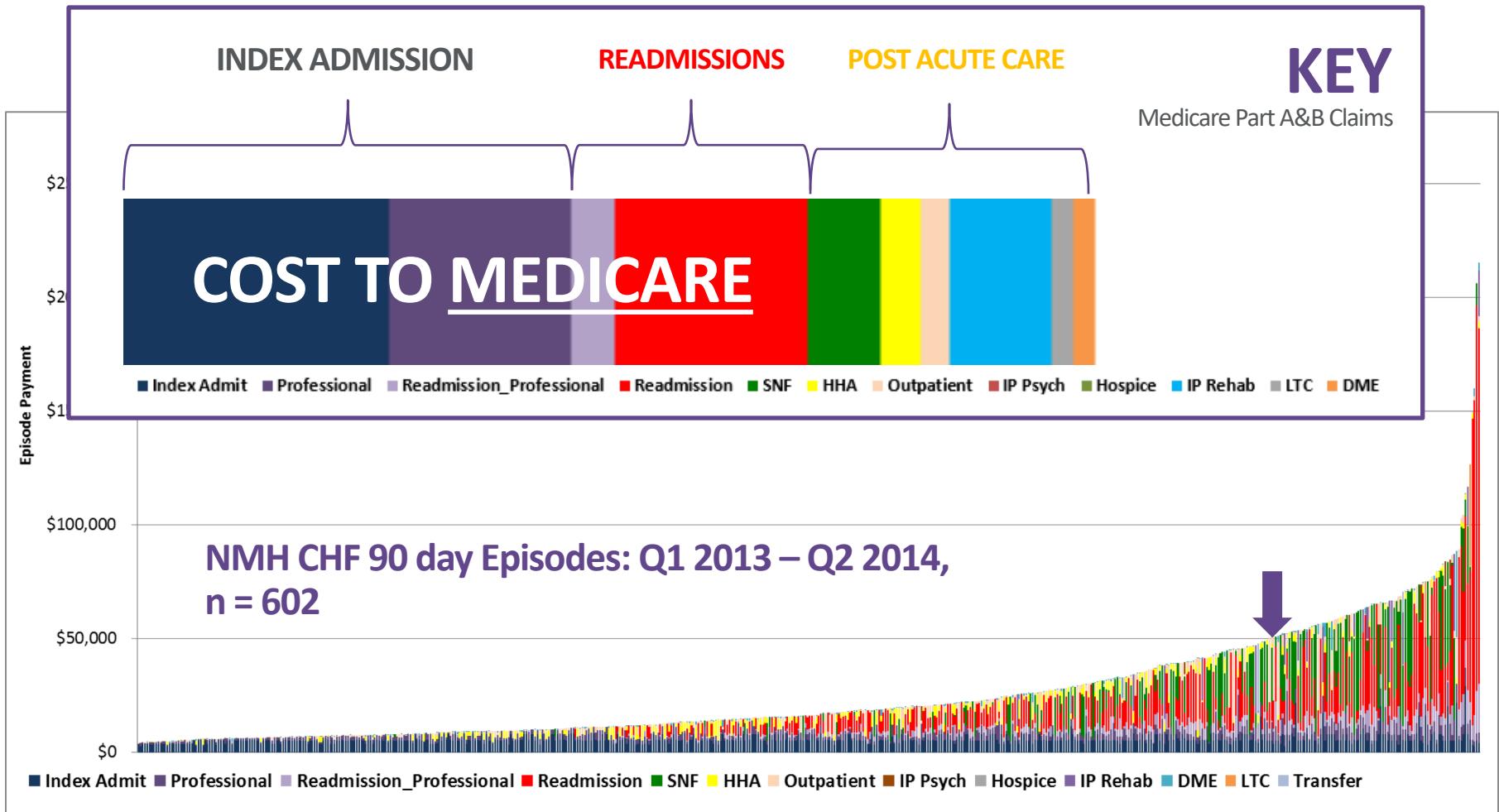


There is Tremendous Variability in Episode Cost



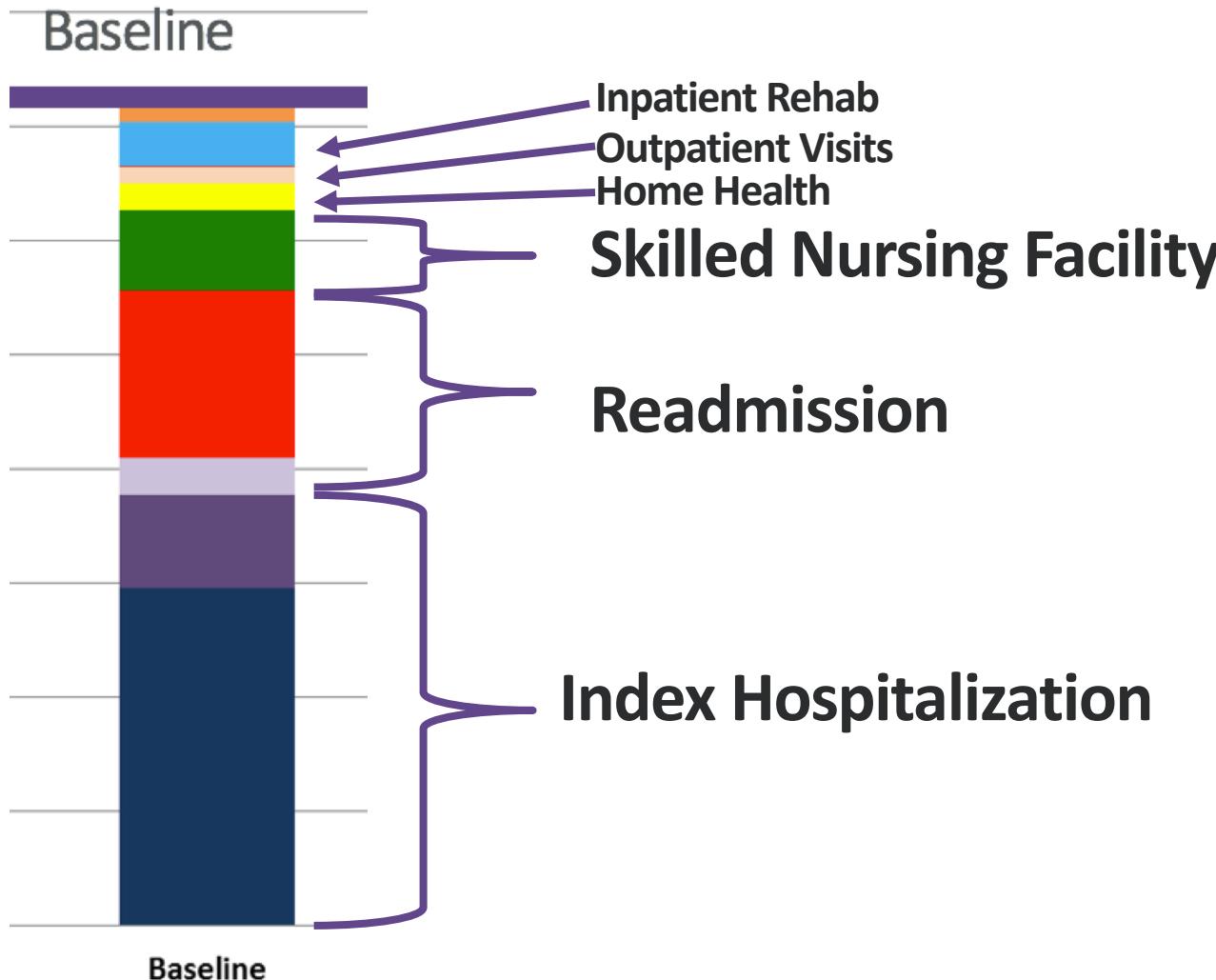
Data Source: CMS Limited Data Set, DataGen and Single Track Analytics BPCI³⁶⁰ Data Model; CHF “Completed” Bundle Episodes (includes MS-DRGs 291, 292, 293)

Readmissions and SNF Use Drive Episode Cost

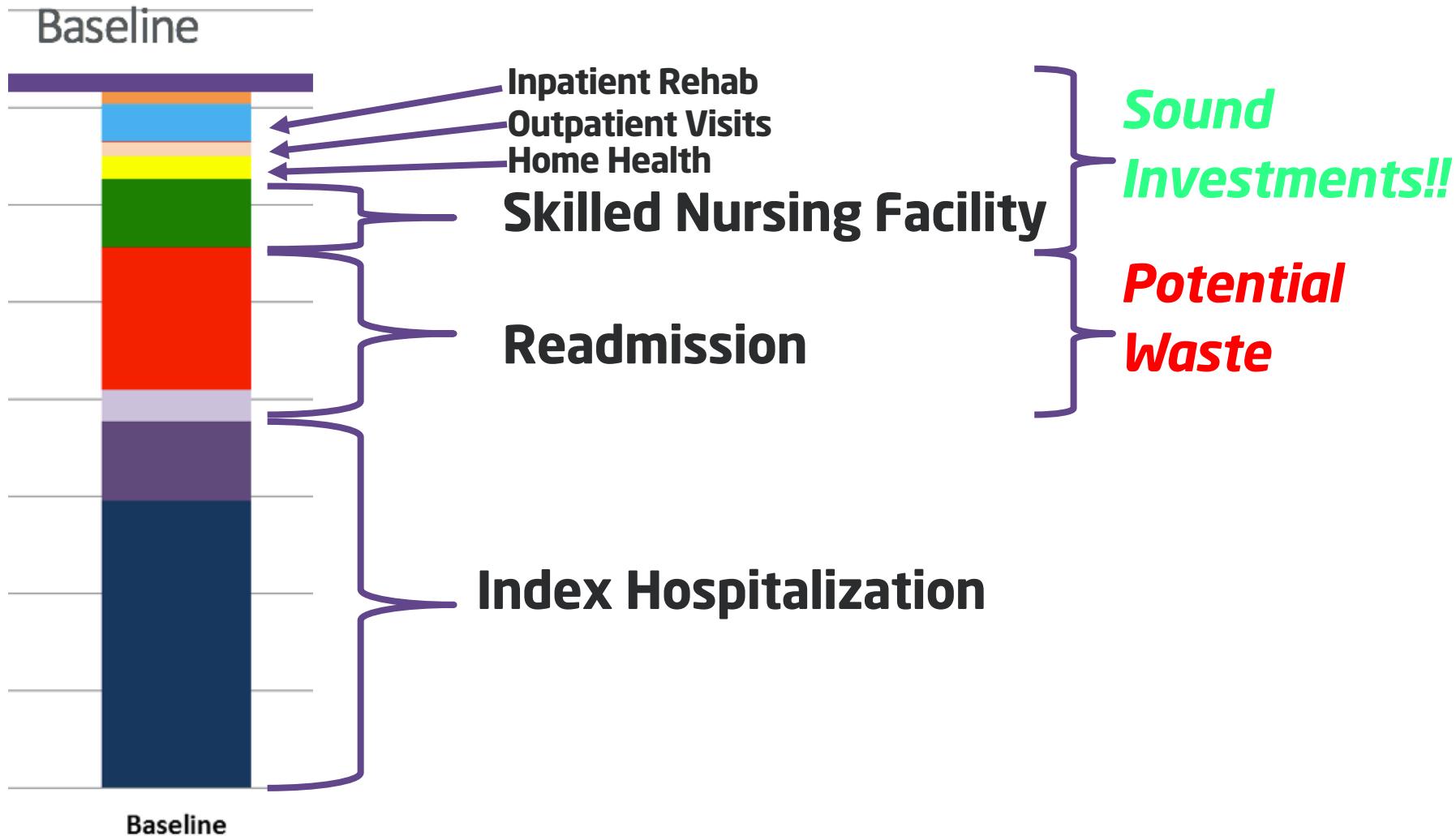


Data Source: CMS Limited Data Set, DataGen and Single Track Analytics BPCI³⁶⁰ Data Model; CHF “Completed” Bundle Episodes (includes MS-DRGs 291, 292, 293)

What Drives Cost for a HF Episode of Care?



What Drives Cost for a HF Episode of Care?



What was our plan?

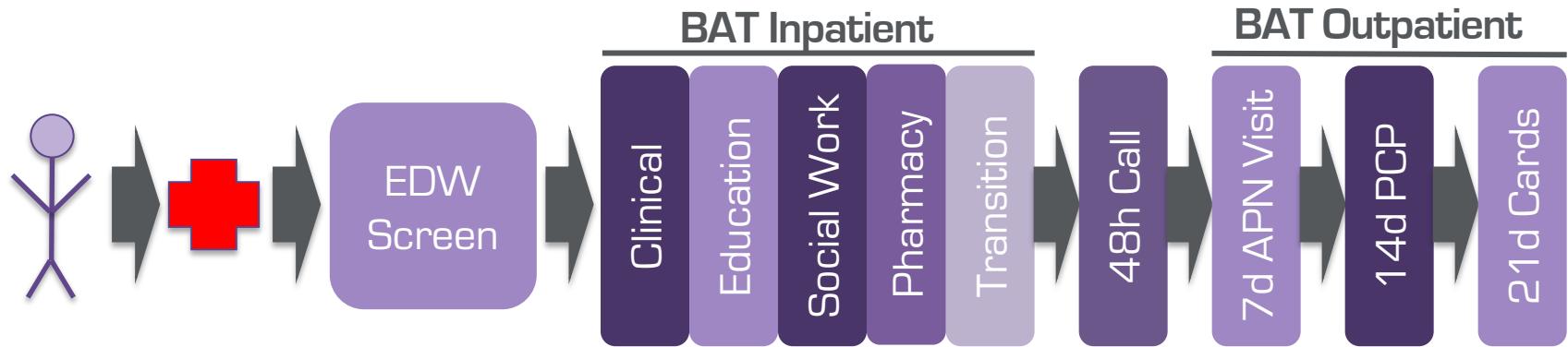


High Level Process Overview



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 \geq 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

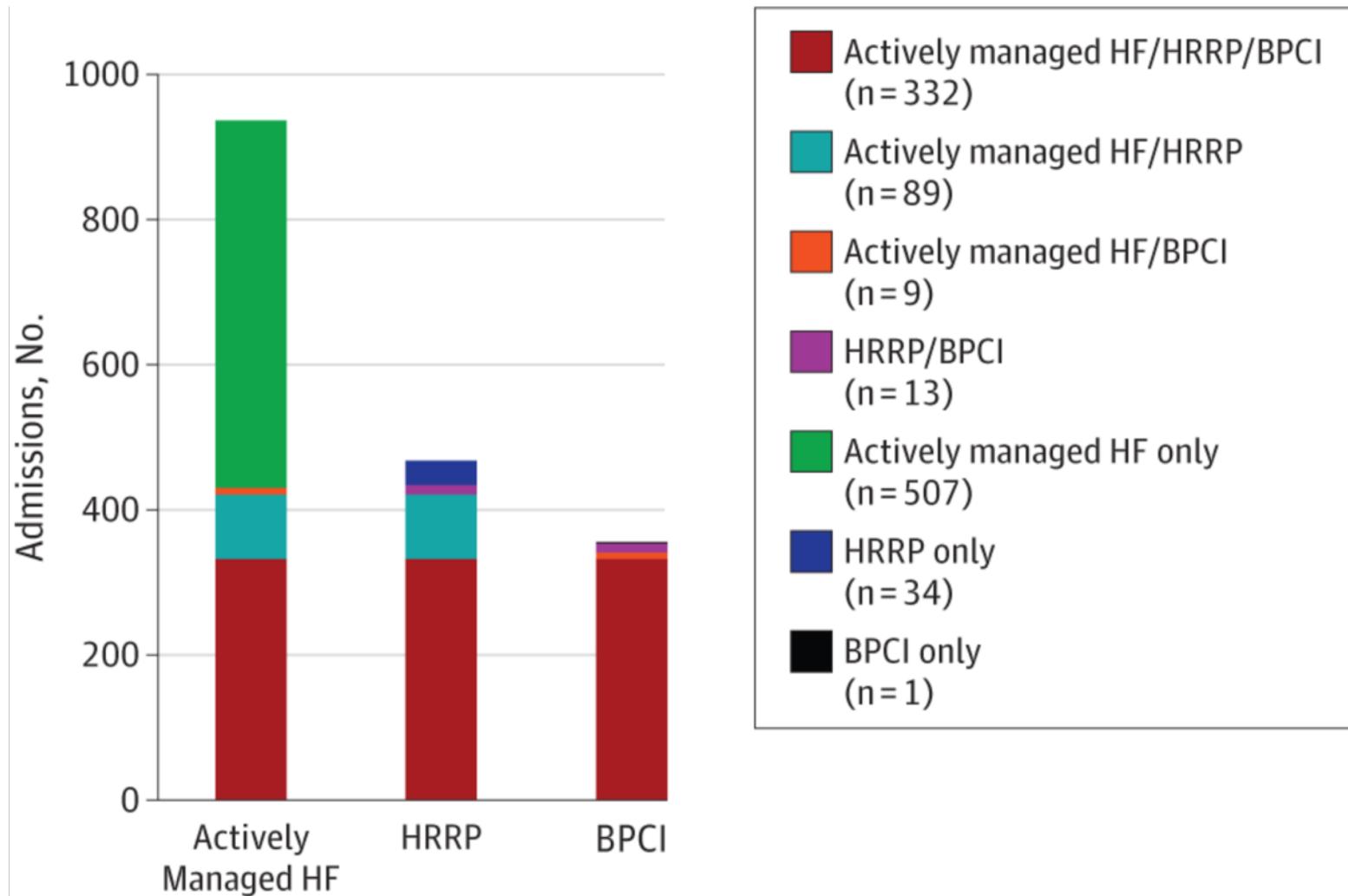
If any ONE Condition TRUE:

**Potential Acute
Heart Failure Case**

95% sensitivity

**Expert Clinician
Review**

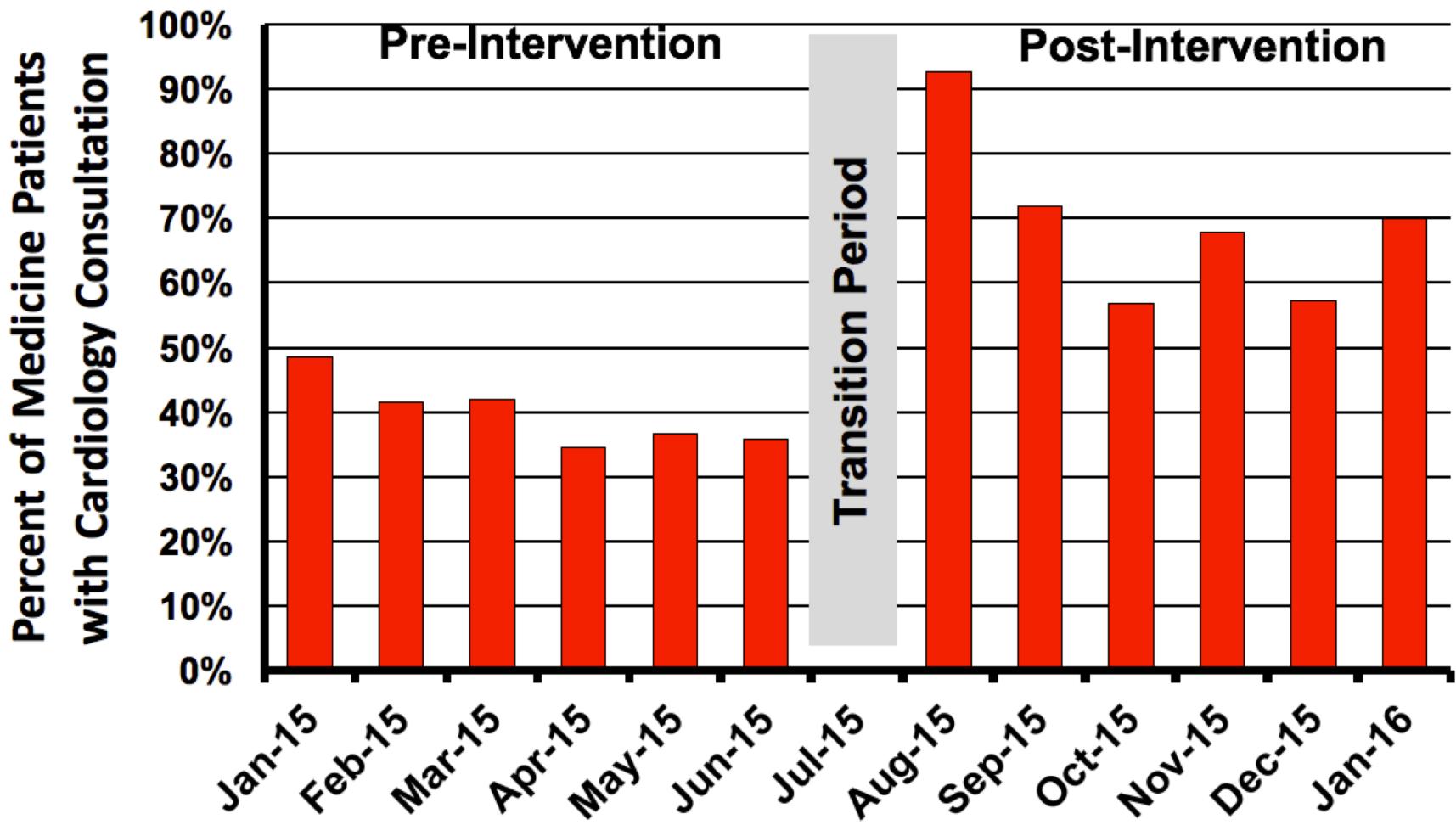
BPCI Accounts for Approximately 1/3 of Medicare Hospitalized HF Patients



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.

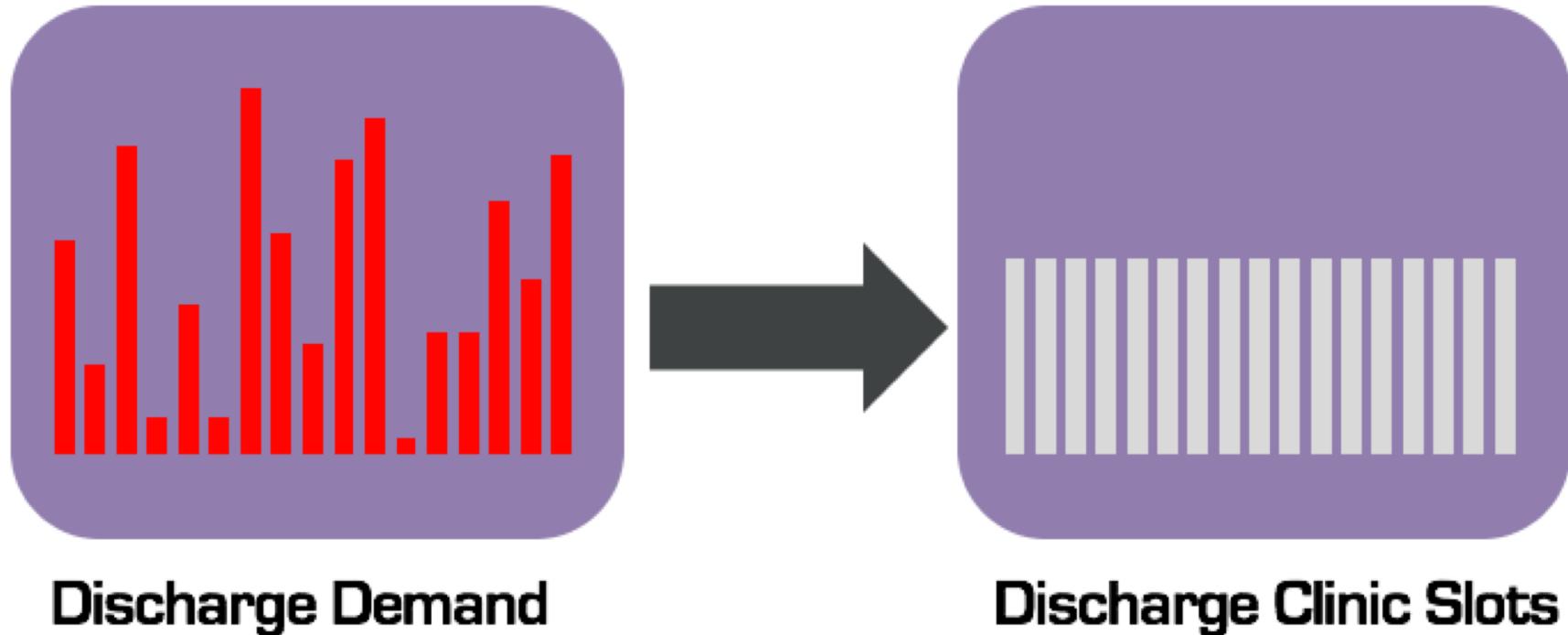
Rate of Cardiology Consultation post EDW Intervention

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

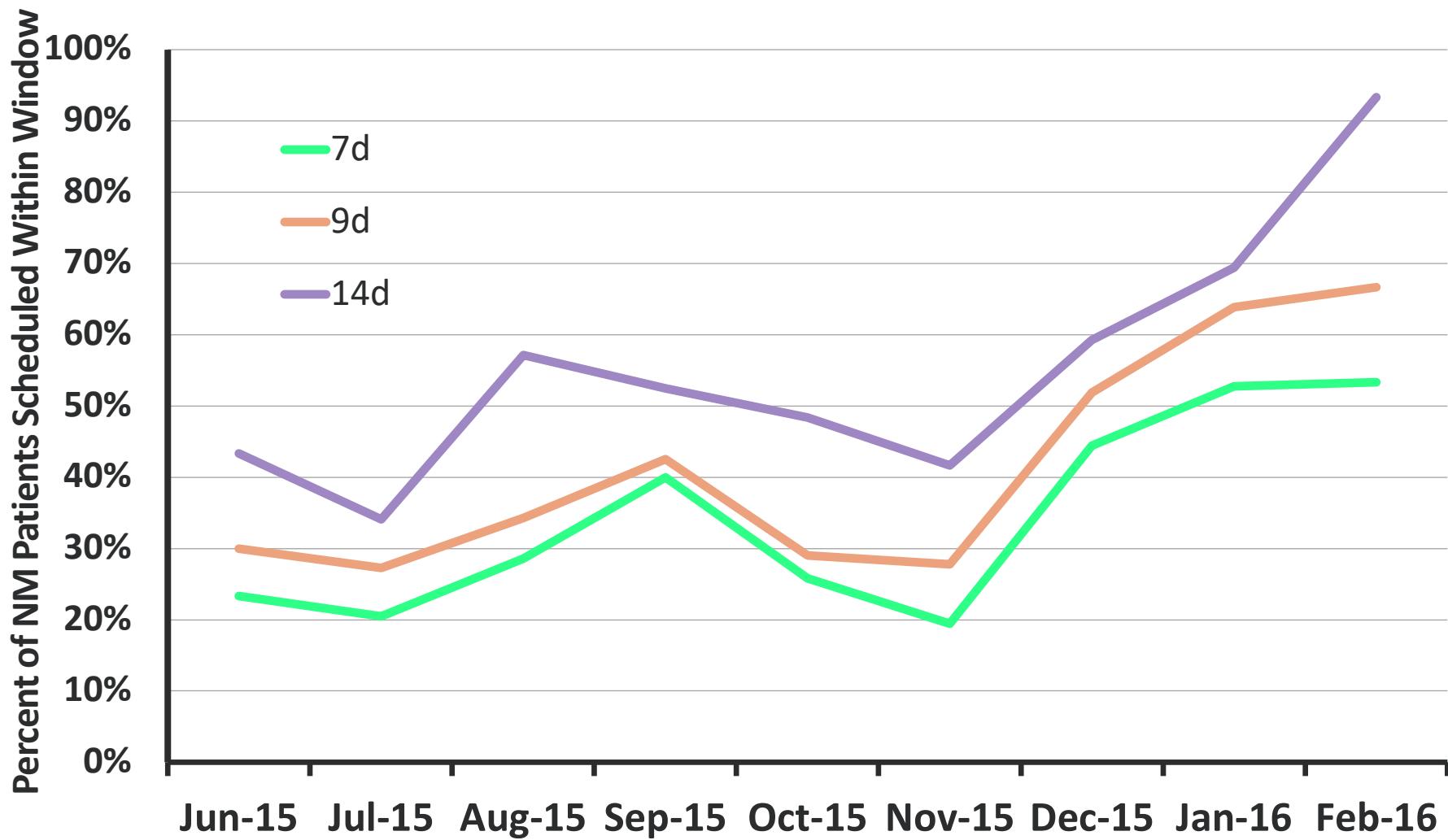


Youmans, Q. et al. Circ: Quality and Clinical Outcomes, 2016: Vol 9, Suppl 2

Queuing Theory to Improve Discharge Clinic



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

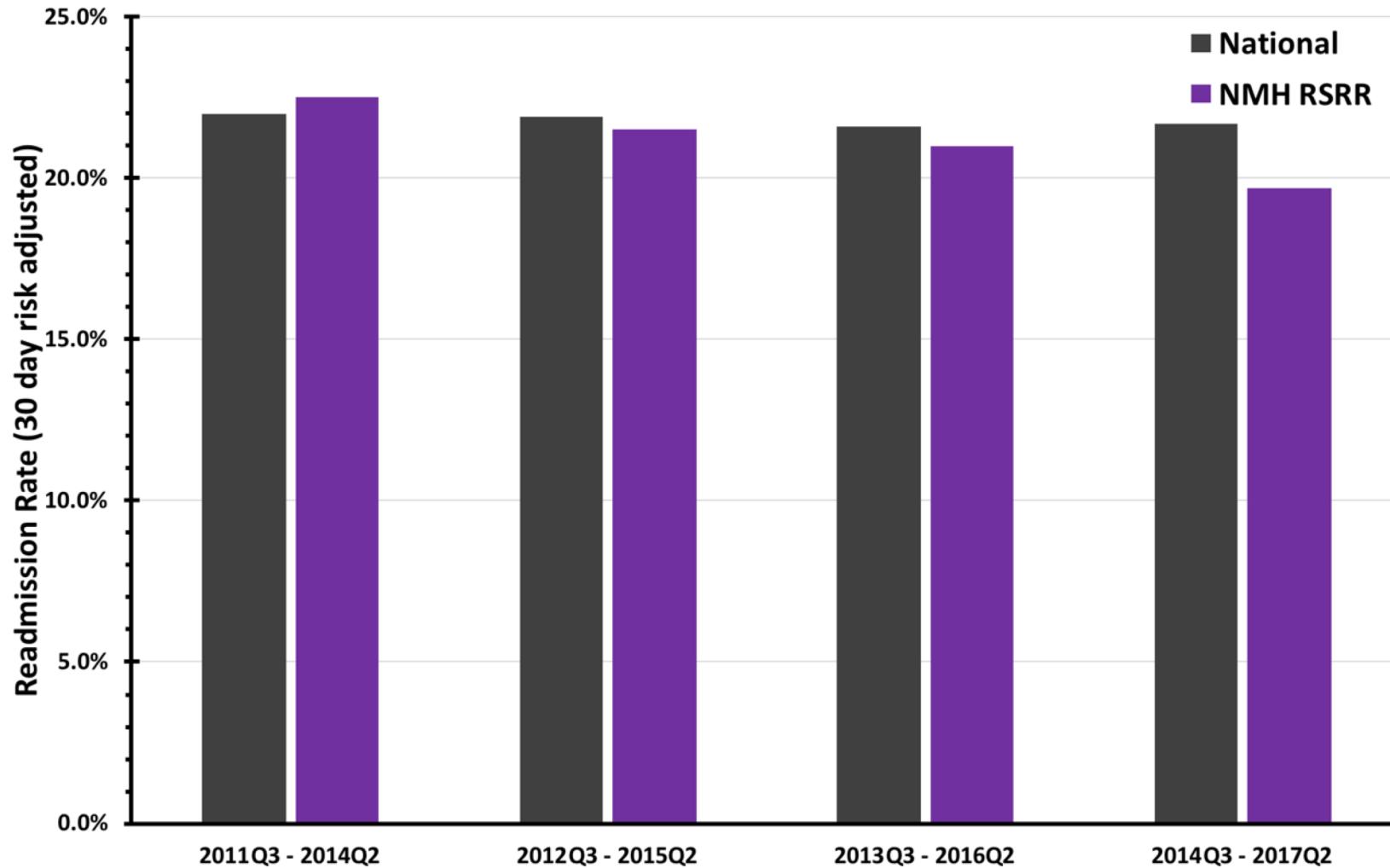
Discharge Clinic Capacity Sizer

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

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

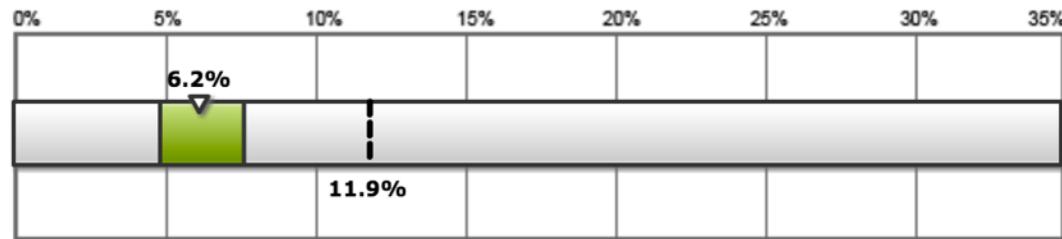
How did we do? (Runs)

Medicare Risk-Adjusted 30-Day Unplanned Readmissions



Lowest Risk-Adjusted HF Mortality (2013-2016)

NORTHWESTERN
MEMORIAL
HOSPITAL

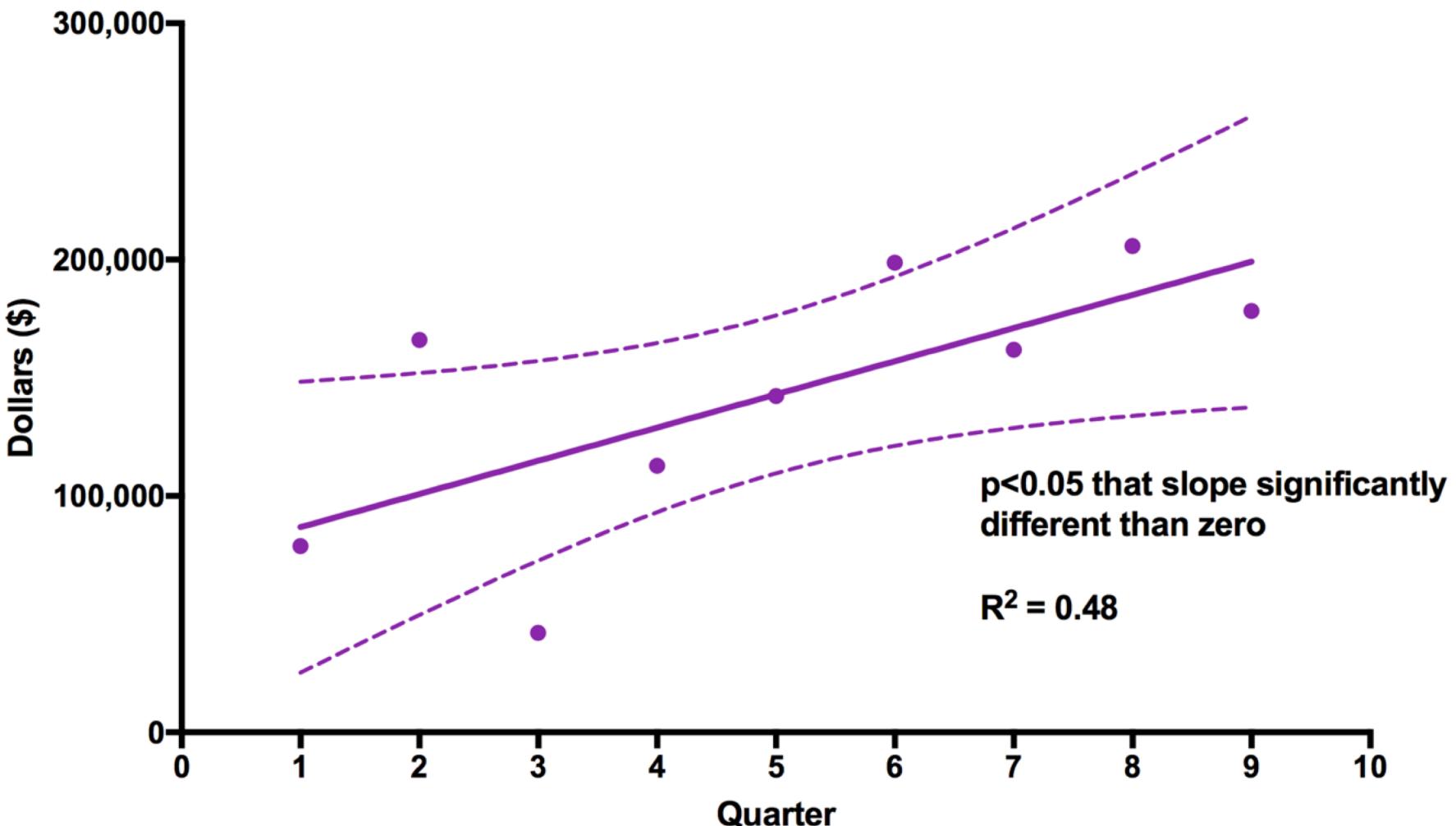


Number of included patients:

881

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

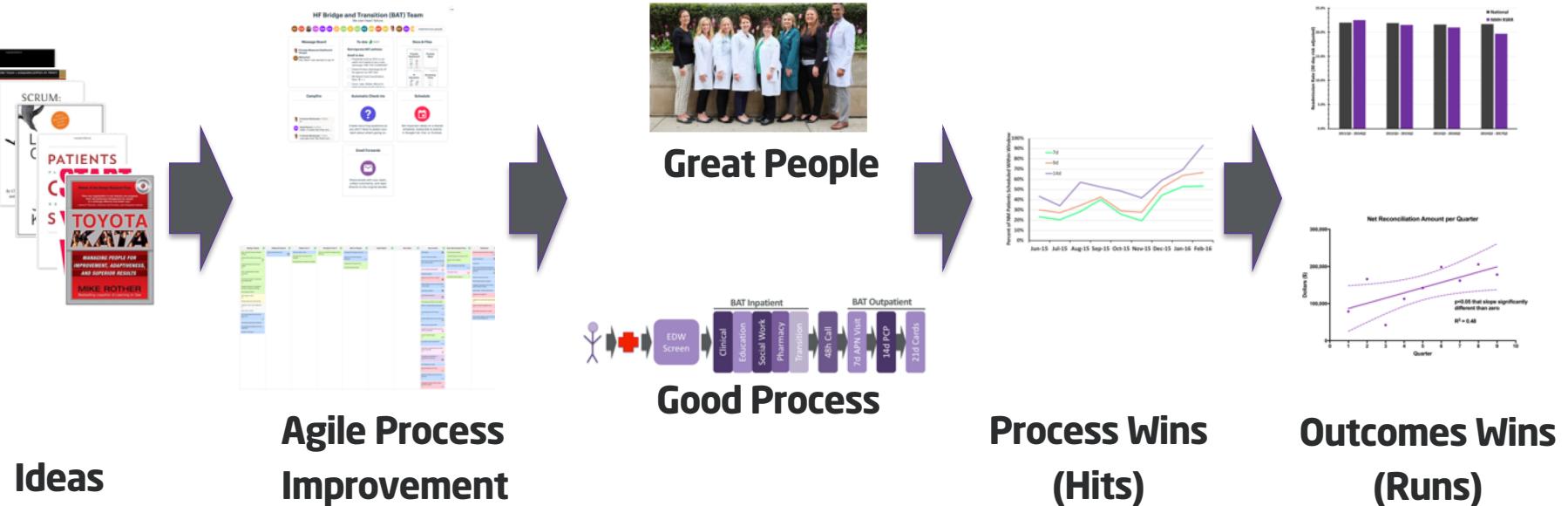
Jane Domingo

Process Improvement

Clinical Program Development as Software Development

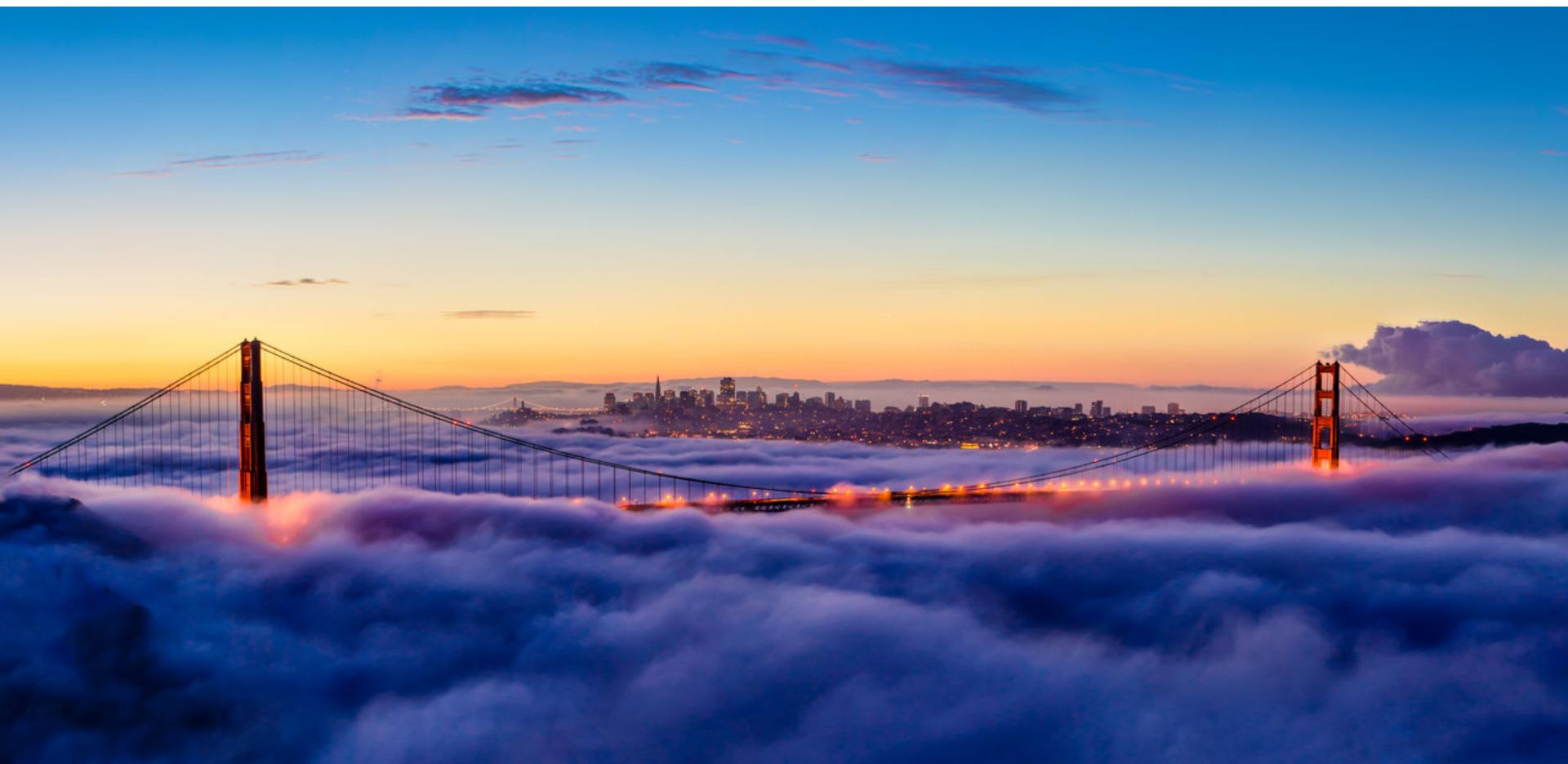
- Rapidly **prototype**, test, and ship features
- No **value** accrues to patients or enterprise until new processes are shipped
- **Scrum** (An Agile Implementation)
- Business **velocity**
- **Learning** Health System

Mindset of Continuous Quality Improvement





How did we really do it?

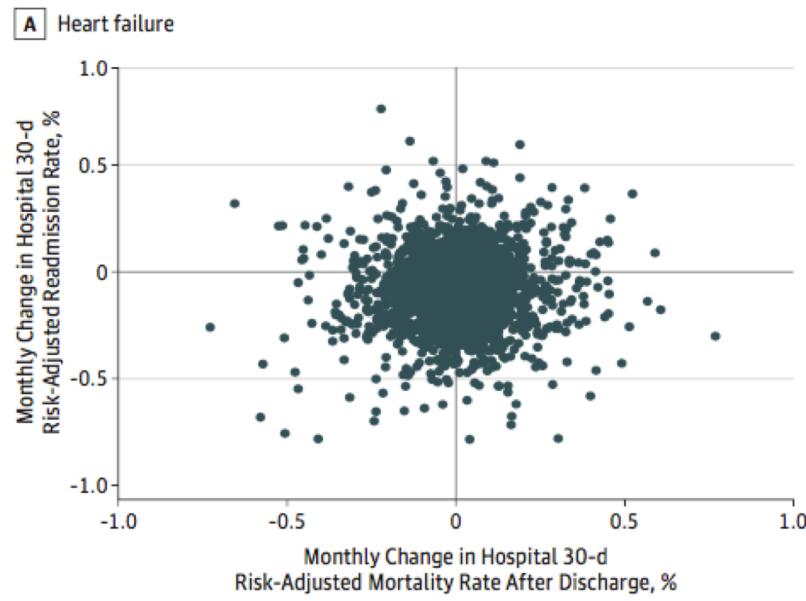
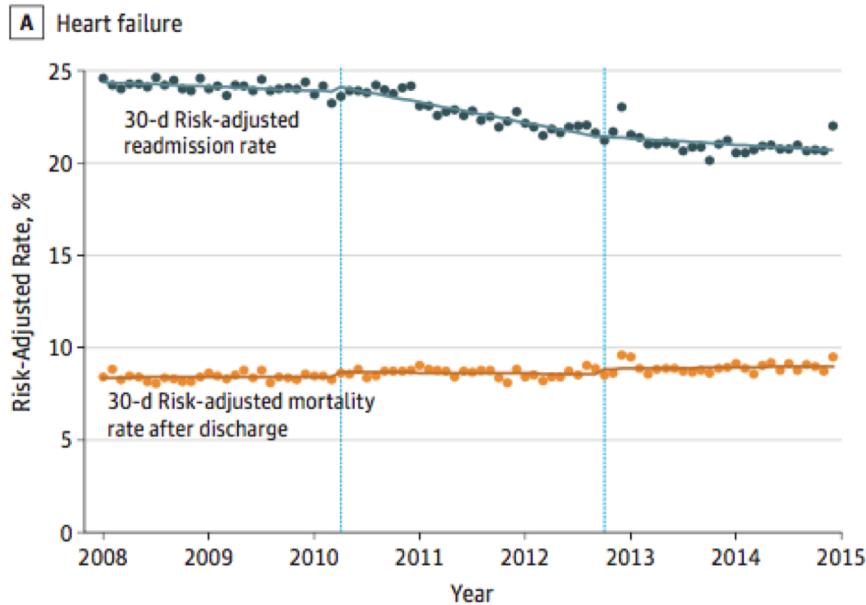




Thank You!

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Readmission Reduction and Mortality Reduction Do Not Correlate



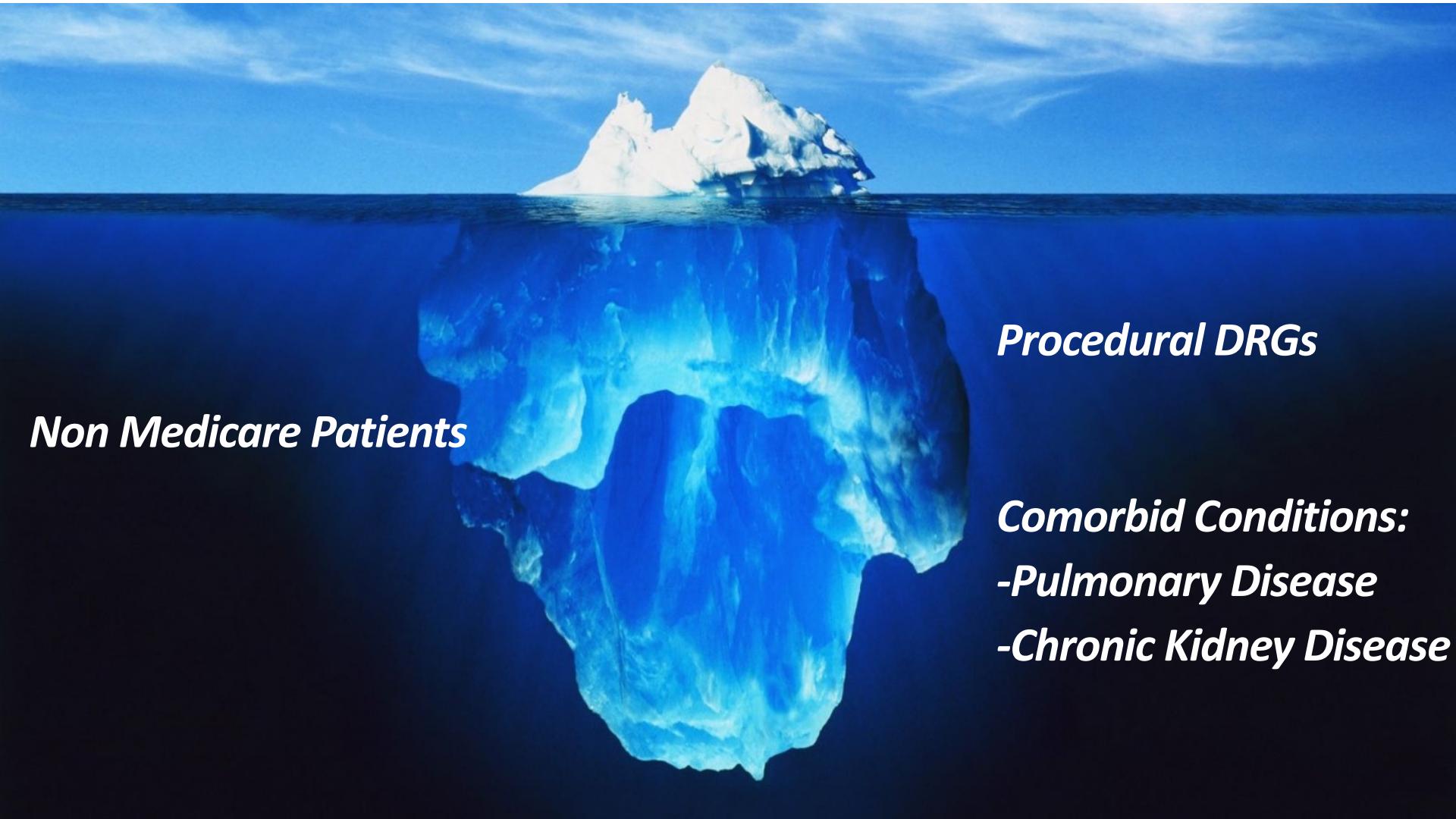
Dharmarajan, et al. JAMA2017;318(3):270-278

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

