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
How to put in your own Photo:

Go to 'View' -> 'Insert'

Browse to the image you would like to place. Image should be 1024x768, 1200x900, or other 4:3 aspect ratio. Select image and click OK.

Scale to full screen size if necessary.

Click image, go to 'Format' -> 'Send to Back'.

Go to 'View' to return to slides.
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
What did we see in 2015?
Bundled Payments for Care Improvement (BPCI): Financial Model Schematic

Professional Services

Index Admission
DRG 291-293

Inpatient Rehab

Home Health

Outpatient

30 days post-discharge
“transitional care period”

Readmission

Readmission Professional

SNF

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There is Tremendous Variability in Episode Cost

Data Source: CMS Limited Data Set, DataGen and Single Track Analytics BPCI<sup>360</sup> Data Model; CHF “Completed” Bundle Episodes (includes MS-DRGs 291, 292, 293)

NMH CHF 90 day Episodes: Q1 2013 – Q2 2014, n = 602

Data Source: CMS Limited Data Set, DataGen and Single Track Analytics BPCI<sup>360</sup> Data Model; CHF “Completed” Bundle Episodes (includes MS-DRGs 291, 292, 293)
Readmissions and SNF Use Drive Episode Cost

INDEX ADMISSION
READMISSIONS
POST ACUTE CARE

COST TO MEDICARE

Data Source: CMS Limited Data Set, DataGen and Single Track Analytics BPCI^360 Data Model; CHF “Completed” Bundle Episodes (includes MS-DRGs 291, 292, 293)

NMH CHF 90 day Episodes: Q1 2013 – Q2 2014, n = 602

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What Drives Cost for a HF Episode of Care?

- Index Hospitalization
- Skilled Nursing Facility
- Readmission
- Outpatient Visits
- Home Health
- Inpatient Rehab
What Drives Cost for a HF Episode of Care?

- Index Hospitalization
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- Inpatient Rehab
- Readmission

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What was our plan?
HF BAT Team
High Level Process Overview

Strategic Goal: **Identify patients early** to build relationships and intervene
Northwestern HF Bridge and Transition Team
Multidisciplinary Care Model

EDW Screen

Clinical
Education
Social Work
Pharmacy
Transition
48h Call
7d APN Visit
14d PCP
21d Cards
How did we do? (Hits)
Enterprise Data Warehouse Screening Strategy

<table>
<thead>
<tr>
<th>Heart Failure Flags in EDW Query:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heart Failure on Problem List</td>
</tr>
<tr>
<td>Administration of intravenous diuretic</td>
</tr>
<tr>
<td>Carvedilol order</td>
</tr>
<tr>
<td>BNP ≥ 100 ng/dl</td>
</tr>
<tr>
<td>Telemetry order of heart failure</td>
</tr>
<tr>
<td>Previous ICD9 or ICD10 primary diagnosis of heart failure</td>
</tr>
<tr>
<td>Previous cardiac MRI performed</td>
</tr>
<tr>
<td>Previous MUGA scan performed</td>
</tr>
<tr>
<td>Previous cardiopulmonary exercise test performed</td>
</tr>
</tbody>
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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


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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

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Queuing Theory to Improve Discharge Clinic

Discharge Demand

Discharge Clinic Slots

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Cardiology Discharge Clinic Access Has Improved


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## 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.

<table>
<thead>
<tr>
<th>Average Weekly Discharge Volume</th>
<th>Below, enter hypothetical scenario:</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Current Weekly Clinic Capacity</th>
<th>Future Weekly Clinic Capacity</th>
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<tbody>
<tr>
<td>21</td>
<td>24</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Current Utilization</th>
<th>Future Utilization</th>
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<tbody>
<tr>
<td>0.95238</td>
<td>0.83333</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Avg Wait for Appointment</th>
<th>Future Avg Wait for Appt</th>
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<tbody>
<tr>
<td>6.67 days</td>
<td>1.46 days</td>
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</table>

<table>
<thead>
<tr>
<th>% Seen in 7 days</th>
<th>Future % Seen in 7 days</th>
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<tbody>
<tr>
<td>64.99 %</td>
<td>99.17 %</td>
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</table>

<table>
<thead>
<tr>
<th>% Seen in 14 days</th>
<th>Future % Seen in 14 days</th>
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<tbody>
<tr>
<td>87.74 %</td>
<td>99.99 %</td>
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</table>

<table>
<thead>
<tr>
<th>% Seen in 21 days</th>
<th>Future % Seen in 21 days</th>
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<tbody>
<tr>
<td>95.71 %</td>
<td>100.00 %</td>
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</table>

<table>
<thead>
<tr>
<th>Percent Seen in 28 days</th>
<th>Future % Seen in 28 days</th>
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<tbody>
<tr>
<td>98.90 %</td>
<td>100.00 %</td>
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</table>
How did we do? (Runs)
Medicare Risk-Adjusted 30-Day Unplanned Readmissions

![Bar chart showing readmission rates from 2011Q3 to 2017Q2, with data for national and NMH RSRR.](chart.png)
Lowest Risk-Adjusted HF Mortality (2013-2016)

Number of included patients: 881

http://medicare.gov/hospitalcompare
Financial Impact of the Model

Net Reconciliation Amount per Quarter

- $300,000
- $200,000
- $100,000
- $0

Quarter

p < 0.05 that slope significantly different than zero

R² = 0.48

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How did we really do it?
Heart Failure Bridge and Transition Team

Michelle Fine
Katie Sandison
Sara Vander Ploeg
Pharmacy

Josie Rhoades
Transitional Care Liaison

Hannah Alphs Jackson
Jennifer Faltin
Jess Walradt
Value-Based Care

Robin Fortman
Nicki Pincus
Nurse Practitioners

Daniel Navarro
TJ Elliot
Nora Lewin

Mozzi Etemadi
Jan Van Mieghem
Itai Gurvich
Nick Soulakakis
Academic Collaborators

Corrine Benacka
Jess Debrocke
Courtney Montgomery

Amanda Vlcek
Social Work

Dominique Kosk
Registered Dietitian

Carly Koziol
Nurse Educator

Preeti Kansal
Physician Co-Lead

Abbey Lichten
Health Education

Kayleigh Nolan
Takesha Pate
Galter 10 Cardiology

Kannan Mutharasan
Physician Co-Lead

Clyde Yancy
Allen Anderson

Gopi Astik
Maya Defoe
Hospital Medicine

Michelle Montpetit
CDH Cardiology

Charles Davidson
Division of Cardiology

Shilpa Shelton
Bluhm Cardiovascular Institute

Erica Saito
Kate Thomas
Quality

Jane Domingo
Process Improvement

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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

Ideas → Agile Process Improvement → Great People → Good Process → Process Wins (Hits) → Outcomes Wins (Runs)
How did we really do it?
Thank You!
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Readmission Reduction and Mortality Reduction Do Not Correlate

Dharmarajan, et al. JAMA 2017;318(3):270-278

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Heart Failure: What Clinicians See

Non Medicare Patients

Procedural DRGs

Comorbid Conditions:
- Pulmonary Disease
- Chronic Kidney Disease

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BPCI: What Works Reasonably Well

- Episode of Care for Chronic Condition: Tractability

- Payment sufficient to support effective multidisciplinary team