Cost-Effective Management of a High-Risk Population Using Analytics: Care Processes That Make A Difference for Patients With Heart Failure

November 16, 2016
Panelists

• Corinne Bott-Silverman, M.D., Cardiologist, Cleveland Clinic
• Francis R. Colangelo, M.D., Chief Quality Officer, Premier Medical Associates
• Mary Laubinger, M.S.N., Executive Director of Quality, Mercy Clinic
• Moderator: Jill Powelson, RN, MBA, MPH, Director, Translation, AMGA
Learning Objectives

Upon completion of this activity, participants should be able to:

• Identify their high risk patients for readmissions
• Learn how to leverage ambulatory and inpatient interventions and tools to improve evidence based medication use for patients with heart failure
• Identify key roles to aid in care transitions and prevent readmissions
• Use “virtual care” strategies such as remote monitoring and telephone outreach
• Build collaborative relationships with skilled nursing facilities and home health agencies to support the care for patients post discharge
Leveraging the unique access to longitudinal, clinical data, AMGA Analytics is supporting members with deep analytical insights, providing comparative benchmarks, sharing research discovery, and disseminating best practices for all AMGA members.

**AMGA Analytics for Improvement (A4i)**

Formerly Anceta, A4i is the learning collaborative held in partnership with Optum for AMGA members using the Optum One population analytics platform.

**Research and Translation**

Studying ways to improve population health at lower overall cost, enhance the healthcare experience for patients, and increase provider and staff satisfaction. With expertise in quantitative and qualitative methods, we are uniquely positioned for dissemination and implementation of key research findings, with rigorous evaluation.

**Quality Measurement**

Together with OptumLabs, supporting the National Quality Forum’s new “measure incubator,” our goal is to develop more meaningful measures for external accountability, as well as robust measures that can be used internally, at the health system level, to manage care and cost.

**Data Support**

Analytical resources supporting AMGA initiatives:
- Best Practices Learning Collaboratives
- National Campaigns: Measure Up/Pressure Down® and Diabetes: Together 2 Goal®
- Provider Risk Readiness Survey

Find out more about AMGA Analytics at amga.org.
AMGA Foundation

AMGF enables medical groups and other organized systems of care to consistently improve health and health care.

AMGA Foundation is AMGA’s 501 (c)(3) affiliate
Foundation Programs

- Acclaim Award
- Chronic Care Challenge
- Best Practices Collaboratives
Best Practices In Managing Patients with Heart Failure Collaborative
Collaborative Participants

- Centura Health-Penrose
- Cleveland Clinic Foundation
- Kelsey-Seybold Clinic
- Mercy Clinic East Communities
- NorthShore University HealthSystem
- OhioHealth MedCentral
- Premier Medical Associates
- PriMed Physicians
- Springfield Clinic
- Summit Medical Group
- TriHealth Health Institute
- University of Utah Medical Group
- USMD
- Valley Physician Services, Inc.
- Watson Clinic
Heart Failure Collaborative

• Designed specifically for AMGA members striving to improve the care of patients with heart failure

• 1-2 year shared learning program

• Opportunities:
  – Evidence of best practices
  – Community of knowledge
  – Vehicle to leverage key learnings and disseminate best practices to all AMGA members and external stakeholders
How does the collaborative work?

- Host data, orientation webinars & kick-off meeting
- Convene monthly webinars for networking and sharing
- Spread adoption of best practices
- Provide additional support:
  - Website
  - Listserv
  - Getting Started Checklists
  - Site visits
  - Coaching
  - Action Plan
- Submit and analyze data on regular basis
- Host Wrap-up Meeting
- Develop individual Best Practices Case Studies
Overview of Collaborative Measures

• Three measures were selected by Collaborative Advisors

• Two process measures
  – ACE/ARB prescribed for HF patients with reduced LVEF (% of eligible patients)
  – Beta blocker prescribed for HF patients with reduced LVEF (% of eligible patients)

• One outcome measure
  – Hospital readmission rate (% of HF patients who were readmitted for any reason, excluding planned readmissions)
ACE Inhibitors or ARB Use or Beta Blocker Use

- Measure 1 - Proportion of HF patients with current or prior LVEF < 40% who are on ACE Inhibitor or ARB
- Measure 2 - Proportion of HF patients with current or prior LVEF < 40% who are on Beta Blocker
Readmission Rate

- Proportion of patients in Measure 3 denominator who have an unplanned readmission for any cause within 30 days of discharge, except for certain planned readmissions.
Care Processes That Make A Difference for Patients With Heart Failure

November 16, 2016

Corinne Bott-Silverman, MD
Introduction Of A Heart Failure Specialty Care Coordinator
Cleveland Clinic Medical Group Profile

• Founded in 1921

• 11 Community hospitals, 16 Family health centers;
  – 3 International locations (Canada, Abu Dhabi, London)

• ~3,600 Physicians; ~49 Heart failure specialists serve our enterprise

• Overall: 6.62 million outpatient visits; 164,700 acute admissions; 15,435 HF admissions (2014)
HF Specialty Care Coordinator (SCC) Pilot Study

• Cleveland Clinic Main Campus
  – Heart and Vascular Institute
  – Department of Cardiology
  – Section of Advanced Heart Failure and Heart Transplant

• The Heart Failure section has: 12 Physician HF specialists; 2 Inpatient Services (HFA + HFB); 2 Inpatient APN's; 1 Outpatient APN and 1 PA

• 1650 Inpatient admissions to this group and >10,000 outpatient visits (2105)
SCC Pilot: HF Goals & Objectives

Specialty Care Coordinated vs. Non Care-coordinated Patients

Primary Goals:

1. Improve 7 day discharge follow up appointment completion
2. Improve 30 day discharge follow up appointment completion
3. Decrease 30 day all cause readmission rates

Objectives:  Keep the patient in the center of the plan!

1. Optimize outcomes of care coordination (CC) in a targeted HF population utilizing a multidisciplinary approach
2. Improve transitions across the continuum of care
3. Focus the efforts of CC by identifying vulnerable HF population
A Day In the Life of The HF SCC...

• Patient Identification
• Meet/explain role inpatient (day of d/c)
• Mini-cog screening
• Plan to follow 30 days post discharge
• Weekly phone calls
• Face to face visits: 7 day, 30 day, PRN
• Home care coordination
• Sign off to PCC or PCP
Outcomes

Specialty Care Coordinator (SCC) Metrics: March 1, 2015 – December 31, 2015

<table>
<thead>
<tr>
<th>Metric</th>
<th>Non-SCC Patients</th>
<th>SCC Patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>7 Day Follow up Appt. Completed</td>
<td>26% (N=818)</td>
<td>66% (N=155)</td>
</tr>
<tr>
<td>p value</td>
<td>&lt;0.0001</td>
<td></td>
</tr>
<tr>
<td>30 Day Follow up Appt. Completed</td>
<td>42% (N=818)</td>
<td>58% (N=155)</td>
</tr>
<tr>
<td>p value</td>
<td>=0.0001</td>
<td></td>
</tr>
<tr>
<td>30 Day Readmission</td>
<td>18% (N=818)</td>
<td>20% (N=155)</td>
</tr>
<tr>
<td>p value</td>
<td>=0.47</td>
<td></td>
</tr>
<tr>
<td>Home Care Readmission</td>
<td>20% (N=155)</td>
<td>20% (N=40)</td>
</tr>
<tr>
<td>p value</td>
<td>=0.69</td>
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</tbody>
</table>
HF Specialty Care Coordinator - Pilot Spin-off Projects

• Creation and implementation of an RCA tool to help with risk stratification

• Formation of a multidisciplinary team that meets monthly to discuss RCA’s and outcomes

• Pharmacists are going to be able to see patients in our HF outpatient clinic

• Pill splitter/pill box project – individualized pharmacy patient education

• TCM billing for SCC patients at their 7 and 30 day post-discharge follow up visits

• Home Care and the importance of coordination of care
Cost-Effective Management of a High-Risk Population Using Analytics: Care Processes That Make a Difference for Patients with Heart Failure in the Outpatient Setting

Francis R Colangelo MD, FACP

November 16, 2016
Conflicts of Interest

• I have none to report
Premier Medical Associates

- Formed 1993
- 100 providers
- 23 specialties
- 1:1 ratio PCP to specialists
- Part of Highmark Health
- Member of the Allegheny Health Network
Premier Medical Associates

• 2015 360,000 patient visits
• All adult and pediatric offices have level 3 PCMH certification
• AMGA Analytics For Improvement member
Outline/Interventions

• Population assessment
• Correct prescribing
• Risk stratification/Care coordination
• Role of palliative care
• Results to date
Population

- 1235 patients with HF
- 466 with ejection fraction below 40%
Correct Prescribing

- Clinical pharmacist led effort
- Outreach to docs to reconsider ACE/ARBs
- Education to docs that only metoprolol ER, carvedilol and bisoprolol have evidence of effectiveness for mortality reduction in HF
- Outreach to docs to reach optimal dosing
## Correct Prescribing

<table>
<thead>
<tr>
<th></th>
<th>12/31/15</th>
<th>9/30/16</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACE/ARB</td>
<td>75%</td>
<td>95.2%</td>
</tr>
<tr>
<td>Correct β-blocker</td>
<td>76%</td>
<td>97.7%</td>
</tr>
</tbody>
</table>
Risk Stratification/Care Coordination

CHF: Pts by Likelihood of CHF-related Hospitalization w/ in 6 months

Likelihood of CHF Related Hosp within 6 months Categorized [End of Data]  # of patients: 1,009
## Risk Stratification/Care Coordination

<table>
<thead>
<tr>
<th>Intake Questions</th>
<th>Historical Clinical Information</th>
<th>Depression Screening</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>PHQ 9</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>What do you prefer to be called?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>What is the best way to reach you?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Who do you live with?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Does anyone else help care for you?</td>
<td>Medication list reviewed and reconciled</td>
<td></td>
</tr>
<tr>
<td>Is there anyone you would like to bring with you for your visits?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Do you see a Cardiologist for your heart care? Dr.</td>
<td></td>
<td>Smoking cessation discussed</td>
</tr>
<tr>
<td>Do you follow fluid restrictions?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Have you been hospitalized for HF?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Most recent hospitalization</td>
<td></td>
<td></td>
</tr>
<tr>
<td>How far can you walk before becoming SOB?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Y N Medication list reviewed and reconciled</td>
<td>Y N Medication adherence</td>
<td></td>
</tr>
<tr>
<td>Y N Do you take OTC meds or herbal supplements that may not be on the med list?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Y N Smoker/second hand smoke exposure</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Beta Blocker</td>
<td>Y N Smoking cessation discussed</td>
<td></td>
</tr>
<tr>
<td>Ace inhibitor or ARB</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### HF Follow up

| Y N Daily weights ± ___ lbs | Y N Most Recent Weight | Y N Currently taking diuretic |
| Y N Shortness Of Breath | | Y N Recently Hospitalized |
| Y N Difficulty Breathing At Rest | | Y N Medication Refills Needed |
| Y N Difficulty Breathing After Climbing ___ Steps Of Stairs | | Y N Cardiac Rehab Ordered |
| Y N Difficulty Breathing While Walking Inside | | Y N Smoking cessation discussed |
| Y N Difficulty Breathing While Walking On Level Ground | |                     |

**Done**
Risk Stratification/Care Coordination: Automated Telephonic Outreach

Phone Survey Questions

1. Sleep:
   - Press 1 if you are sleeping soundly.
   - Press 2 if you are having trouble sleeping because of shortness of breath.
   - Press 3 if you recently needed to sleep propped up or in a chair because of difficulty breathing.

2. Weight:
   - Press 1 if you are at your usual weight.
   - Press 2 if your weight has increased 2 pounds from your usual weight.
   - Press 3 if your weight has increased 3 to 4 pounds from your usual weight in the past week.
   - Press 4 if you DID NOT weigh yourself today.

3. Swelling:
   - Press 1 if you have had no noticeable swelling.
   - Press 2 if you have some swelling in your feet, ankles, or waist.
   - Press 3 if you have a lot of swelling in your feet, ankles, or waist.

4. Breathing:
   - Press 1 if you have no difficulty breathing today.
   - Press 2 if you have more shortness of breath than usual with minimal activity.
   - Press 3 if you are having a lot of trouble breathing at rest and it’s not normal for you.
## Risk Stratification/Care Coordination: Automated Telephonic Outreach

<table>
<thead>
<tr>
<th>Name</th>
<th>Q1-Sleep</th>
<th>Q2-Weight</th>
<th>Q3-Swelling</th>
<th>Q4-Breathing</th>
<th>Total</th>
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<tbody>
<tr>
<td>A</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>9</td>
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<tr>
<td>B</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>7</td>
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<tr>
<td>C</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>7</td>
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<td>D</td>
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<td>2</td>
<td>2</td>
<td>7</td>
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<td>1</td>
<td>2</td>
<td>6</td>
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<td>F</td>
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<td>3</td>
<td>1</td>
<td>1</td>
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<td>G</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>6</td>
</tr>
</tbody>
</table>

Score of 1-4: No immediate response necessary  
Score of 5-8: Call within 24 hours  
Score of 9-12: Call immediately
Palliative Care

• One large Medicare Advantage plan offers Advanced Illness services to beneficiaries

• 32 patients with this MA plan are in 80th percentile or above for risk of hospitalization and have agreed to services
**Results to Date**

**Rolling 30 day Re-admission Rates all HF patients**

<table>
<thead>
<tr>
<th>Date</th>
<th>Rate</th>
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<tbody>
<tr>
<td>11/30/2015</td>
<td>11.90%</td>
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<td>12/31/2015</td>
<td>13.0%</td>
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<td>1/31/2016</td>
<td>13.5%</td>
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<td>2/29/2016</td>
<td>12.7%</td>
</tr>
<tr>
<td>3/31/2016</td>
<td>11.4%</td>
</tr>
<tr>
<td>4/30/2016</td>
<td>10.3%</td>
</tr>
<tr>
<td>5/31/2016</td>
<td>11.1%</td>
</tr>
<tr>
<td>6/30/2016</td>
<td>9.4%</td>
</tr>
<tr>
<td>7/31/2016</td>
<td>8.5%</td>
</tr>
<tr>
<td>8/31/2016</td>
<td>9.0%</td>
</tr>
</tbody>
</table>
Cost-Effective Management of a High-Risk Population Using Analytics:

Care Processes That Make a Difference for Patients with Heart Failure

November 16, 2016
About Mercy

Headquartered in St. Louis with a multi-state footprint, Mercy is the 5th largest Catholic health system in the US.

Outreach ministries in Arkansas, Louisiana, Mississippi and Texas.

Opened the first of its kind virtual care center.

Serving millions each year.

1827 founded
43 hospitals
350 outpatient facilities
3,500 integrated providers
40,000 co-workers
>$5B revenue

Top 5 best performing large health system

1. Physicians & advanced practice clinicians
2. Truven Health 15 Top Health Systems 2016
East Community

Hospitals & Ambulatory Sites

4 acute care hospitals
1 managed/affiliated hospital
1 heart hospital
1 rehab hospital
1 children's hospital
1 virtual care center
283 physician practices
95 clinic locations
3 outpatient surgery centers
11 urgent care sites
3 convenient care centers
16,286 co-workers (incl. 707 physicians)
Mercy East Community Population

**Shared Savings & Risk Contracts**
- 30,000 MSSP ACO Members
- 27,000 Medicare Advantage Members
- 90,000 Commercial Members
- ~42% of clinic population

**Mercy St. Louis Hospital – Heart Failure**
953 admissions for HF annually
15.9% current HF Readmission rate

*12 month data through Aug 2016*
Ambulatory Care Management Teams

Medicare CM Team
- 1 Supervisor
- 2 intake staff
- 9 field nurses
- 2 social workers
- 2 NP’s for SNF

Heart Failure CM Team
- 4 field nurses

Carolyn Koenig, MD
Medical Director
Cathy Martin
RN, BSN, CCM
Dawn Brandenberg
RN, BSN, CCM
Carolyn Coffin
RN, BA, MHA
Dawn Neptune
RN, BSN
Toni DePriest
FNP-C
Jennifer Derner
MSW, LCSW
Social Worker
Michele Dvorak
BSN, MSW, LCSW
Field Nurse
Lori Grenko
RN
Field Nurse
Lindsay Klemm
LPN
Intake Coordinator
Lesa Mathews
RN, BSN, CCM
Field Nurse
Carol Murphy
MSW, LCSW
Social Worker
Sue Parker
RN, BSN
Field Nurse
Rhonda Pepmiller
ANP-BC, CWOCN
Nurse Practitioner
Kimberly Porter
RN, BSN, CCM
Transition/referral Coord
Margaret Stasiak
RN, BSN
Field Nurse
Lindsey Wilson
RN
Field Nurse
Jeanne Vocom
RN, BSN
Field Nurse
Dawn Dorsey, RN, BSN
Supportive Care Field Nurse
Laura Pastrana, RN, BSN
Supportive Care Field Nurse
Stacey Cooksey-RN, BSN
Supportive Care Field Nurse
Jean Young, RN, CCM
Supportive Care Field Nurse
Ambulatory HF Care Management Team

- RN Care Managers target high-risk HF patients discharged from St. Louis hospital
- Provide on-going Care Management
  - Provide in-home visits, monitor & manage HF, medication reconciliation, teaching & set-up meds, assure follow-up appointments & other ambulatory services
- Assist with transition from hospital to ambulatory setting.
- Social worker available to address complex social and/or financial needs

Interdisciplinary Team

- Meets weekly to conduct case reviews
- Identify causes of readmissions; investigate breakdowns in systems which led to readmissions
- Team includes:
  - ED physician, Internist, Cardiologist, Hospitalists, Dietician, Home Care, Palliative Care, Hospice, Cardiac Rehab, Inpatient & Ambulatory Care Management, Social Worker & Chaplain
### Telemonitoring

- Patients are using telemonitoring devices to transmit data (BP, HR, SPO2, daily weight, and symptoms of HF exacerbation) from their home.
- Software sorts the data, and the nurse is alerted if a patient’s data falls outside parameters.
- The nurses’ attention is immediately drawn to patients in trouble, and they are able to quickly contact the patient and physician to intervene.

### ZOE®

- ZOE® is an non-invasive external impedance monitor that detects changes in fluid status.
- These monitors detect “early warning signs” of dehydration or fluid overload – oftentimes before the patient knows that there is a problem.
- A baseline reading is obtained before discharge, and the nurses analyze subsequent readings after the patient goes home.

### Epharmix™

- With Epharmix™, patients receive a text message or automated phone call, daily or as needed, and are asked two questions related to HF such as “What is your weight today? Please enter the response in pounds (ex. 175)” and “In the past two days, has your leg swelling been better=1, worse=2, or same=3?”
- This tool has been instrumental in reaching a large quantity of patients in a short period of time, and quickly alerting nurses if a patient is developing s/s of exacerbation.
CardioMEMS™ HF System

Implantable PA sensor wirelessly transmits data to cardiology office
In-home assessment of HF status

Fluid Status Monitor Pilot

Non-invasive, battery powered impedance monitor designed as an early warning monitor for determining changes in fluid status
Digital Technology:

• Secure texting/telephonic system. Automated system set up to either call or send secure text messages to patients to ask about vital signs and symptoms.

• Nurses are alerted if there is a significant weight change, BP, Heart rate or patient reported symptoms of HF exacerbation.
Home IV Lasix Pilot

- Protocol worked well
- Needed a process for patients who require ongoing IV Lasix several times/week
- Developing process for Home Infusion Team & Infusion Center to provide this service
Mercy Hospital St. Louis
30-Day Unplanned HF Readmission Rate

The Ambulatory Heart Failure Care Management Team started Oct 2015
To-date, they follow 289 high-risk HF patients.

The Ambulatory Heart Failure Care Management Team started Oct 2015
To-date, they follow 289 high-risk HF patients.
Celebrating Accomplishments

- Patients managed by HF team had lower readmissions
- Stronger relationship with cardiology, inpatient care management, home health and hospice teams
- Improved Discharge Coordination - strong interdisciplinary team working to improve handoffs & new systems of care within organization
- New technology helping expand team capacity & ability to identify early heart failure
- More knowledgeable about complexity of this population and ready to redesign to utilize more virtual technology
Challenges

• Assuring continued awareness of HF Team in large, complex health system
• Identifying highest risk patients & timely transition to team
• Avoiding duplication of services with Home Health team
• Collaborating with independent providers
• Following patients in assisted living, nursing homes and skilled facilities
• Turnover of RN Care Managers impacts team performance
• Small team & large geographic territory limits capacity
HF Care Management Program

Lessons Learned

• Multidisciplinary team that meets weekly to review complex patients is a key to success.
• Important to have a high-level administrative steering team who monitors results.
• Nurses need to have a background in home-based care.
• Innovative ideas are hard to implement quickly - especially in a big/complex organization.

Next Steps

• Refine patient identification and referral process
• Further utilize technology to expand capacity of team
• Improve post acute coordination of care with preferred skilled nursing facilities
• Opportunity to blend ambulatory HF Care Management team into virtual care concept
Mercy Virtual

Transformation across the Continuum

Engagement @ Home

Manage critically and chronically ill ambulatory patients with intensive virtual physician-led clinical team, utilizing home monitoring.
Next Steps: Engagement @ Home

Opportunity to partner with Mercy Virtual Care

Naomi Coulter, 87, holds the iPad she uses to check in with her physician every morning. She credits Mercy’s virtual home health program with helping her stay out of the hospital.
For More Information

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Executive Director Quality
Mercy Clinic East Communities
615 S. New Ballas Road
St. Louis, MO 63141
Office: 314-251-1518
Mary.laubinger@mercy.net