Thank you for joining the webinar! The presentation will begin shortly.

*Please make sure your computer is not on mute and your speaker volume is turned up.
Neal White, MD
Chairman, Heart Failure Committee
John Muir Health
Nathalie De Michelis, RN, BSN
Cardiovascular Program Manager
UC Irvine Health
Drew Baldwin, MD
Medical Director for Quality in the Heart Institute
Virginia Mason Medical Center

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Heart Failure Readmissions:
A New Paradigm For An Old Disease

Neal White MD, FACC
HF Medical Director John Muir Health
Cardiovascular Consultants Medical Group
Stanford Healthcare
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Walnut Creek and Concord, California
June 4, 2015
HEART FAILURE BY THE NUMBERS

OVER HALF OF THE HEART FAILURE COSTS ARE SPENT ON HOSPITALIZATION

5.1 MILLION PEOPLE IN THE U.S. SUFFER FROM HEART FAILURE⁴

10,000,000² OVER 1 MILLION HEART FAILURE Admissions EACH YEAR³

BY 2030, EVERY U.S. TAXPAYER COULD PAY $244 EACH YEAR FOR HEART FAILURE EXPENSES⁴

CURRENT APPROACHES

PHYSICIANS TYPICALLY MANAGE HEART FAILURE BY MONITORING SYMPTOMS SUCH AS BODY WEIGHT AND BLOOD PRESSURE USING A TELEHEALTH SCALE

EVEN WITH DAILY SELF-MONITORING⁹

25% OF HEART FAILURE PATIENTS ARE READMITTED TO THE HOSPITAL WITHIN 30 DAYS

50% OF HEART FAILURE PATIENTS ARE READMITTED TO THE HOSPITAL WITHIN 6 MONTHS

ESTIMATED U.S. HEART FAILURE COST⁴

$31 BILLION 2009

$70 BILLION 2030
Factors Associated with HF Readmissions

• **Sociodemographic Factors**
  – Age
  – Sex
  – Race
  – Living Status
  – Insurance
  – Income

• **Markers of HF Severity**
  – Heart Rate
  – Blood Pressure
  – QRS duration
  – LVEF
  – NYHA Functional Class
  – Previous HF hospitalization
  – Intolerance of Standard HF therapy

• **Comorbid Conditions**
  – Diabetes Mellitus
  – Hypertension
  – COPD
  – Coronary Artery Disease
  – Cerebrovascular Disease
  – Atrial Fibrillation
  – Chronic Kidney Disease

• **Serum Markers**
  – Blood Urea Nitrogen (BUN)
  – Creatinine/eGFR
  – Sodium
  – Hemoglobin/Hematocrit
  – B-type Natriuretic Peptide
  – Troponin

All Readmissions Are Not HF Related

• Approximately ½ due to Cardiovascular Reasons

<table>
<thead>
<tr>
<th></th>
<th>Cardiovascular</th>
<th>Non-Cardiovascular</th>
<th>Total Readmissions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Heart Failure</td>
<td>Other CV</td>
<td></td>
</tr>
<tr>
<td>N (%)</td>
<td>713 (16.5%)</td>
<td>936 (21.6%)</td>
<td>2679 (61.9%)</td>
</tr>
<tr>
<td></td>
<td>4328</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Data reflects 1077 incident HF cases 1987-2006 in Olmsted County, MN

Mortality After HF Hospitalization

1st hospitalization: 30-day mortality = 12%; 1-year mortality = 34%

National Risk-Adjusted 30 Day HF Readmission Rate

Average: 24.7%

Widespread variation in risk-adjusted rates suggests opportunity for improvement

Variation in Readmission Rates

- Disease Severity
- Patient Factors
- Physician Factors
- Hospital Factors
## Improving Post Hospitalization Transition

<table>
<thead>
<tr>
<th>PredischARGE Intervention</th>
<th>Postdischarge Intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient education</td>
<td>Timely follow-up</td>
</tr>
<tr>
<td>Discharge planning</td>
<td>Timely PCP communication</td>
</tr>
<tr>
<td>Medication reconciliation</td>
<td>Follow-up telephone call</td>
</tr>
<tr>
<td>Appointment scheduled before discharge</td>
<td>Patient hotline</td>
</tr>
<tr>
<td></td>
<td>Home visit</td>
</tr>
</tbody>
</table>

### Intervention Bridging the Transition

- Transition coach
- Patient-centered discharge instructions
- Provider continuity

---

Traditional Model for Out Patient HF Care

- **Home**
  - ADHF
    - ~ 10-20% (> ½ return)
- **Clinic**
- **Emergency Department**
  - 80-90%
- **Hospital**

The ED is an ineffective point of triage for HF patients.
Concerns about ambulatory follow up bias towards admission.
New Model For Out Patient HF Care

- Home
- HF Clinic
- Enhanced Ambulatory HF Treatment
- Home-Based Clinic Based ED-Based (OU)
- Emergency Department
- Hospital
HF Disease Management Programs

- Multidisciplinary Disease Management
  - Components
    - Pre-discharge Education to enhance self-care
    - Nurse-led coordination of care and post-discharge surveillance
    - Access to providers with specialty expertise in heart failure
  - Estimated Impact
    - 25% reduction in overall mortality
    - 26% reduction in HF (re)hospitalization
    - 19% reduction in overall hospitalization
  - Generally cost-saving or cost-neutral
  - Greatest Impact in the early post-discharge period
Not a clinic where pts are seen for a visit
We don’t bill pts
A different MD doesn’t see the pt – so no interference
An “RN Navigator” follows pt through transition of care
Pts can get access to Home health etc
“RN Navigator” interacts with pt + Primary Cardiologists
Visits to ER can be often aborted
We provide scales to patients
Rate of unplanned readmission for heart failure patients

Why is this important?

Hide Graph

Current CMS John Muir Readmissions for HF

U.S. national rate of unplanned readmission for heart failure patients = 23.0%
Current CMS John Muir Mortality for HF Readmissions

Death rate for heart failure patients

Why is this important?

Hide Graph

U.S. national death rate for heart failure patients = 11.7%
Conclusions

- Models for predicting readmission may have limited utility beyond triage in clinical practice
- Durable impact on preventing heart failure readmissions requires a focus beyond 30 days
- No single intervention is likely to be universally effective
- Different approaches may be necessary to manage different phases of illness
- Noncardiovascular comorbidities, adherence, and social/environmental factors must be addressed in tandem with heart failure management
- Alternatives to the ED for ambulatory triage and intervention are essential
UC Irvine Health
Readmissions Reduction Project
Heart Failure Program
June 4th, 2015
Nathalie De Michelis, RN BSN
Cardiovascular Program Manager
UC Irvine Health
Quality Initiatives

Cardiovascular & Readmission Task force Teams
• Both ➔ Multidisciplinary group meeting monthly

Multiple National & State Quality Initiatives
• American Heart Association (AHA) - HF Gold Plus achievement award-last 4yrs
• American College of Cardiology (ACC)
• The Joint Commission HF Disease Specific certification since 2008
• DSRIP Projects
  – Improvement of Primary Care in HF Disease management
  – Identification of HF High risk population
  – HF Coach Program (Phone & in person health coaches)

Community Education & Outreach
Research
UCI HF Readmission Related Cause only
≥18 y/o, all insurance type – TJC HF DSC measure
UCI HF Readmission All Cause only
≥18 y/o, all insurance type – CMS measure

Lost of NP
↓ of f/u phone call
Lost of community partner
Readmissions Reduction Project
Discharged on GDMT
Ensure GDMT
HF Inpatient measures-AHA-GWTG & TJC HF DSC

Evidence-Based Specific Beta Blockers*
Percent of HF patients who were prescribed evidence-based specific beta blockers (Bisoprolol, Carvedilol, Metoprolol succinate CR/XL) at discharge
Time Period: Mar 2013 - Feb 2015; Site: UCI Medical Center (37260)

75% Percentile
Target ≥ 85%

Percent of Patients

Time Period


My Hospital All Hospitals
Aldosterone Antagonist at discharge

Percent of heart failure patients with left ventricular ejection fraction \( \leq 35\% \) or a qualitative assessment of moderate/severe dysfunction with no contraindications or documented intolerance who were prescribed Aldosterone Antagonist at discharge.

Time Period: Mar 2013 – Feb 2015, Site: UCI Medical Center (37290)

75% Percentile
Target \( \geq 85\% \)

75th Percentile: 65.22%
Anticoagulation for Atrial Fibrillation or Atrial Flutter

Percent of patients with chronic or recurrent atrial fibrillation or atrial flutter at high risk for thromboembolism, according to CHADS2 risk stratification, prescribed anticoagulation at discharge.

Time Period: Mar 2013 - Feb 2015; Site: UCI Medical Center (37254)

Target ≥ 75%
# Discharge Note – Quality Measures

**Memory Aids** & Last chance to meet AMI & HF Quality Measures

<table>
<thead>
<tr>
<th>Question</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>Does the patient have Acute Decompensated Heart Failure, Chronic Stable Heart Failure, AMI and Heart Failure?</td>
<td>Yes, No, Neither</td>
</tr>
<tr>
<td>Was the patient given aspirin within first 24 hours?</td>
<td>Yes, No</td>
</tr>
<tr>
<td>Was the patient discharged with an ACEI or ARB?</td>
<td>Yes, No</td>
</tr>
<tr>
<td>Was the patient’s LVSD assessed within the last year?</td>
<td>Yes, No</td>
</tr>
<tr>
<td>Was the patient discharged with a Beta-Blocker?</td>
<td>Yes, No</td>
</tr>
<tr>
<td>Was the patient discharged with a lipid lowering agent?</td>
<td>Yes, No</td>
</tr>
<tr>
<td>Was the patient discharged with aspirin?</td>
<td>Yes, No</td>
</tr>
<tr>
<td>Was the patient referred to an outpatient cardiac rehabilitation program?</td>
<td>Yes, No</td>
</tr>
<tr>
<td>Was the patient newly diagnosed with diabetes mellitus?</td>
<td>Yes, No, Not Documented (ND)</td>
</tr>
<tr>
<td>Was the patient discharged with SARA (Aldosterone Antagonist)?</td>
<td>Yes, No</td>
</tr>
<tr>
<td>Is this a STEMI or New LBBB?</td>
<td>Yes, No, Other</td>
</tr>
<tr>
<td>Non-STEMI</td>
<td>Old LBB, NonSTEMI, Other</td>
</tr>
</tbody>
</table>
## Memory Aids

### Heart Failure Discharge Checklist

<table>
<thead>
<tr>
<th>Patient guide to HF Hospital Care</th>
<th>Given</th>
<th>Teach Back</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Available in English &amp; Spanish</td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>HF zone</th>
<th>Given</th>
<th>Teach Back</th>
<th>Comment</th>
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<tbody>
<tr>
<td>Available in English &amp; Spanish</td>
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</table>

<table>
<thead>
<tr>
<th>HF Caring for your heart Booklet</th>
<th>Given</th>
<th>Teach Back</th>
<th>Comment</th>
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</thead>
<tbody>
<tr>
<td>Available in English &amp; Spanish</td>
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</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CCTV Heart Failure Video</th>
<th>Given</th>
<th>Teach Back</th>
<th>Comment</th>
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<tbody>
<tr>
<td>Available in English &amp; Spanish</td>
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</table>

<table>
<thead>
<tr>
<th>Documented on the Teaching Plan</th>
<th>Yes</th>
<th>Teach Back</th>
<th>Comment</th>
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</thead>
</table>

<table>
<thead>
<tr>
<th>At Discharge</th>
<th>Given</th>
<th>N/A</th>
<th>Teach Back</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cardiac Discharge Education form</td>
<td>Signed and placed in chart</td>
<td>Available in English &amp; Spanish</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Discharge instruction document   | Signed and placed in chart | Available in English & Spanish |

<table>
<thead>
<tr>
<th>Written Discharge Instruction has</th>
<th>Yes</th>
<th>N/A</th>
<th>Teach Back</th>
<th>Comment</th>
</tr>
</thead>
</table>

| Diet Instruction (low salt)       |       |            |            |         |
|                                   |       |            |            |         |
| Activity instruction              |       |            |            |         |
| Daily weigh monitoring instruction|       |            |            |         |
| Symptom management                |       |            |            |         |
| Smoking cessation counseling      |       |            |            |         |
| Follow-up appointment with PCP    |       |            |            |         |
| Follow-up appointment with HF clinic|       |            |            |         |
| Remind patient to attend appointments|     |            |            |         |
| Medication on Discharge Instruction|       |            |            |         |

| AASI or ARB ordered at Discharge if EF <40% |       |            |            |         |
| Beta Blocker ordered at Discharge if EF <40% |       |            |            |         |
| Aldosterone Blocker at Discharge if EF <40% & modest symptoms of HF, HF post MI with monitoring of renal function & potassium |       |            |            |         |
| Anticoagulation for Atrial Fibrillation |       |            |            |         |
| Reinforce importance of medications, to take as prescribed and to make sure to not run out |       |            |            |         |

(This form is not part of the medical record)

**DO NOT COPY**

HF Program 06/26/2013 rev 08/01/12
Readmissions Reduction Project
Risk Stratification
Risk Stratification
Using Modified LACE Tool

• **Why was it chosen?**
  • Validated tool, predictive of readmissions with patient population, used administrative data allowing automation requiring less resources

<table>
<thead>
<tr>
<th>Comorbidity: (Comorbidity points are cumulative to maximum of 6 points)</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
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<tr>
<td>No prior history</td>
<td>0</td>
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<tr>
<td>DM no complications, Cerebrovascular disease, Hx of MI, PVD, PUD, MILD liver disease, DM with end organ damage, CHF, COPD, Cancer, Leukemia, lymphoma, any tumor, cancer, moderate to severe renal dz</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Dementia or connective tissue disease</td>
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<td></td>
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<td></td>
<td></td>
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<tr>
<td>Moderate or severe liver disease or HIV infection</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Metastatic cancer</td>
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<table>
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<tr>
<th>Length of Stay</th>
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<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
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<tr>
<td>Less than 1 day</td>
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<tr>
<td>1 day</td>
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<tr>
<td>2 days</td>
<td>2</td>
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<td>3 days</td>
<td>3</td>
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<tr>
<td>4-6 days</td>
<td>4</td>
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<tr>
<td>7-13 days</td>
<td>5</td>
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<tr>
<td>14 or more days</td>
<td>6</td>
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<table>
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<tr>
<th>Acute admission</th>
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<tr>
<td>Inpatient</td>
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<tr>
<td>Observation</td>
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<table>
<thead>
<tr>
<th>Emergency Room visits during previous 6 months</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
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<tbody>
<tr>
<td>0 visits</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
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</tr>
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<td>1 visits</td>
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<tr>
<td>2 visits</td>
<td>2</td>
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<tr>
<td>3 visits</td>
<td>3</td>
<td></td>
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<tr>
<td>4 or more visits</td>
<td>4</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

**Take the sum of the points and enter the total**

• **Now calculated automatically in our EMR**
<table>
<thead>
<tr>
<th>LACE Score</th>
<th>Total</th>
<th>Readmit &lt; 30</th>
<th>No Readmit &lt; 30</th>
<th>% Readmit</th>
<th>% No Readmit</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>132</td>
<td>18</td>
<td>114</td>
<td>13.64%</td>
<td>86.36%</td>
</tr>
<tr>
<td>4</td>
<td>980</td>
<td>31</td>
<td>949</td>
<td>3.16%</td>
<td>96.84%</td>
</tr>
<tr>
<td>5</td>
<td>2799</td>
<td>61</td>
<td>2738</td>
<td>2.18%</td>
<td>97.82%</td>
</tr>
<tr>
<td>6</td>
<td>2401</td>
<td>100</td>
<td>2301</td>
<td>4.16%</td>
<td>95.84%</td>
</tr>
<tr>
<td>7</td>
<td>2361</td>
<td>150</td>
<td>2211</td>
<td>6.35%</td>
<td>93.65%</td>
</tr>
<tr>
<td>8</td>
<td>2356</td>
<td>215</td>
<td>2141</td>
<td>9.13%</td>
<td>90.87%</td>
</tr>
<tr>
<td>9</td>
<td>2340</td>
<td>248</td>
<td>2092</td>
<td>10.60%</td>
<td>89.40%</td>
</tr>
<tr>
<td>10</td>
<td>1799</td>
<td>218</td>
<td>1581</td>
<td>12.12%</td>
<td>87.88%</td>
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<tr>
<td>11</td>
<td>1646</td>
<td>313</td>
<td>1333</td>
<td>19.02%</td>
<td>80.98%</td>
</tr>
<tr>
<td>12</td>
<td>1122</td>
<td>268</td>
<td>854</td>
<td>23.89%</td>
<td>76.11%</td>
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<tr>
<td>13</td>
<td>899</td>
<td>251</td>
<td>648</td>
<td>27.92%</td>
<td>72.08%</td>
</tr>
<tr>
<td>14</td>
<td>716</td>
<td>213</td>
<td>503</td>
<td>29.75%</td>
<td>70.25%</td>
</tr>
<tr>
<td>15</td>
<td>447</td>
<td>130</td>
<td>317</td>
<td>29.08%</td>
<td>70.92%</td>
</tr>
<tr>
<td>16</td>
<td>264</td>
<td>85</td>
<td>179</td>
<td>32.20%</td>
<td>67.80%</td>
</tr>
<tr>
<td>17</td>
<td>300</td>
<td>121</td>
<td>179</td>
<td>40.33%</td>
<td>59.67%</td>
</tr>
<tr>
<td>18</td>
<td>211</td>
<td>82</td>
<td>129</td>
<td>38.86%</td>
<td>61.14%</td>
</tr>
<tr>
<td>19</td>
<td>64</td>
<td>25</td>
<td>39</td>
<td>39.06%</td>
<td>60.94%</td>
</tr>
<tr>
<td>Grand Total</td>
<td>20837</td>
<td>2529</td>
<td>18308</td>
<td>12.14%</td>
<td>87.86%</td>
</tr>
</tbody>
</table>

**LACE Validation**

- **LACE ≤ 8**
  - Readmit < 30: 575
  - Percentage: 5.50%

- **LACE 9-11**
  - Readmit < 30: 779
  - Percentage: 15.56%

- **LACE 12-15**
  - Readmit < 30: 862
  - Percentage: 37.12%

- **LACE ≥ 16**
  - Readmit < 30: 313
  - Percentage: 59.51%

**Readmit < 30**

- 0.00%
- 10.00%
- 20.00%
- 30.00%
- 40.00%
- 50.00%
- 60.00%
- 70.00%

- LACE ≤ 8
- LACE 9-11
- LACE 12-15
- LACE ≥ 16

**Grand Total**

- 20837
- 2529
- 18308
- 12.14%
- 87.86%
LACE score in Allscripts EMR
LACE & CM Notes

- LACE Score displayed in the CM’s note
- CM initiates recommendations

<table>
<thead>
<tr>
<th>LACE Score</th>
<th>12 H</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recent Hospitalizations (Within Last 5 Months)</td>
<td>□ yes</td>
</tr>
<tr>
<td>High Risk For Readmission</td>
<td>□ yes</td>
</tr>
</tbody>
</table>

**Indicators**
- □ over age 70
- □ multiple diagnoses and comorbidities
- □ greater than 5 complex medications
- □ impaired mobility
- □ impaired self-care skills
- □ poor cognitive status
- □ catastrophic injury or illness
- □ homelessness
- □ poor social support
- □ chronic illness
- □ anticipated long term health care needs (e.g. new diabetic, CHF, Stroke...)
- □ substance abuse
- □ history of multiple hospital admissions
- □ history of multiple emergent care use

**High Risk Actions**
If yes for high risk to readmit, patient should have a targeted comprehensive assessment completed and link to appropriate resources, Clinical Social Work, and/or clinics.

**Readmission Comments**

**Recommendations To Physician**

**Recommendations**
## Our Intervention on a score >=11.

<table>
<thead>
<tr>
<th>Intervention</th>
<th>MD</th>
<th>CM</th>
<th>CSW</th>
<th>RN</th>
<th>Unit PharmD</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSW auto consultation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>complete</td>
</tr>
<tr>
<td>Home Health Referral (disease management, med rec and safety eval)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Follow up appt with PCP and/or HF clinic within 7 days prior to D/C</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>request</td>
</tr>
<tr>
<td>Obtain letter of medical necessity for unfunded &amp; funded patients</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>write</td>
</tr>
<tr>
<td>Referral to Med Safety Clinic for patients with greater than 10 scheduled medications</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>request</td>
</tr>
<tr>
<td>Make follow-up call to patient within 72 hours of discharge: check on meds, appt,</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>complete</td>
</tr>
<tr>
<td>Patient Education - disease specific</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>complete</td>
</tr>
<tr>
<td>Review Discharge meds</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>review</td>
</tr>
</tbody>
</table>

*Note: order, request, complete, process.*
UC Irvine Health Readmission Interventions
Current Interventions for all

- Observation status
- Discharge planning day of admission
- M-F daily discharge huddle
- Dietary Consult based on trigger
- HF NP for consultation & HF education
- Handoff to primary care provider
- 72 Hours follow-up call for HF, AMI & PNA patients
- Open access of Primary care and HF clinics
- IV Lasix available in the HF clinic
- HF-Palliative follow-up clinic for eligible patients
- Opening of a Cardiac Rehab
HF Inpatient measures
AHA-GWTG & TJC HF DSC

Post Discharge Appointment for Heart Failure Patients
Percent of eligible heart failure patients for whom a follow-up appointment was scheduled and documented including location, date, and time for follow up visits, or home health visit.

Time Period: Mar 2013 - Feb 2015; Site: UCI Medical Center (37260)

Target ≥ 85%
Follow-up Visit Within 7 Days or Less
Percent of eligible patients with a follow-up visit scheduled within 7 days or less from time of hospital discharge
Time Period: Mar 2013 - Feb 2015; Site: UCI Medical Center (37260)

Target ≥ 75%

75% Percentile

My Hospital  All Hospitals
Follow-Up Visit or Contact Within 72 Hours of Discharge Scheduled

Percent of heart failure patients who had a follow-up visit or phone call scheduled to take place within 72 hours of hospital discharge.

Time Period: Mar 2013 - Feb 2015; Site: UCI Medical Center (3/7260)

Target ≥ 75%
Difference between pre & 30 day post visit Phone-coach call

June 2014 - Feel Comfortable Calling...
- 84.71% Declined
- 5.88% Remained
- 8.24% Sometimes

June 2014 - Do you weigh yourself everyday?
- 10% Declined
- 53% Remained
- 26% Sometimes
- 10% Negative

May 2015 - Feel Comfortable Calling Doctor?
- 89.53% 6.98% Declined
- 6.98% Improved

May 2015 - Do you weigh yourself everyday?
- 51% Declined
- 21% 9% Improved
- 19% Remained
What is Coached Care?

- Work with patients
  - In person in the clinic
  - Over the telephone
  - Before and after the medical visit
- Make the most of the medical visit
  - Set & understand “targets”
  - Know their “status”
  - Identify & prioritize barriers
  - Bring “good” questions for the doctor into the medical visit
- Develop self-management skills for their chronic disease
  - Turn the answers to those questions into specific concrete goals
  - Follow through to accomplish those concrete goals
Readmissions Reduction Project
Heart Failure-Palliative Program
Heart Failure Palliative Care Program
Evaluation Process

Inpatient Evaluation
- Acute heart failure
- Attending opt out option
- Advance directive

Patient Needs
- Symptom management
- Evaluation for LVAD or transplant
- Psychosocial intervention
- Home care assessment

Outpatient Follow up
- Joint Palliative Care/Heart Failure Clinic
  - Palliative Medicine Physician
  - Heart Failure nurse practitioner
  - Social Worker
  - Pharmacist
HF Inpatient measures
AHA-GWTG & TJC HF DSC

Advance Directive Executed
Percent of patients who have documentation in the medical record that an advance directive was executed.
Time Period: Oct 2013 - Feb 2015; Site: UCI Medical Center (37260)

- My Hospital
- All Hospitals

HF-Palliative Care team
Readmissions Reduction Project
New tool-Heart Failure-ST2
As a biomarker of myocardial fibrosis, soluble ST2 is not only predictive of hospitalization and death in patients with HF but also additive to natriuretic peptide levels in their prognostic value. Strategies that combine multiple biomarkers may ultimately prove beneficial in guiding HF therapy in the future.
Biomarker: “ST2, Serum”

- Now available at UCI
  - Low risk ≤ 35 ng/ml
  - High risk > 35 ng/ml

- In order sets:
  - Stand-alone
  - ED Common
  - HF Admit
  - Afib Admit
  - AMI Admit
  - CCU Admit
How is it being implemented here?

- For Acute HF admission:
  - ST2 on admission
  - and 48 hours after 1\textsuperscript{st} draw

- Management in the out-patient clinic
  - Baseline ST2
  - If <35 repeat with acute HF symptom
  - If <35 repeat within 6-12 months
  - If >= 35 Repeat 2-3 weeks after change in QDMT
ST2 Could Drive Resource Allocation

Serial Samples Taken During Hospital Admission 48 hours apart

- **Low Risk**
  - ST2 below 35 or change in hospital more than 40%
  - Routine Follow Up
  - Seen in clinic in less than 10 days

- **Moderate Risk**
  - ST2 change in hospital 20-40% and/or ST2 level between 35-75 at discharge
  - Phone call 1-3 days post-discharge
  - Seen in Clinic in less than 7 days. Continue to monitor ST2 levels and make changes to medication or frequency of visits

- **High Risk**
  - ST2 change in hospital less than 20% and/or greater than 75 at discharge
  - In home visit or seen in clinic within 1-3 days post-discharge. Make changes to medication or frequency of visits

**Low Resources**

**Moderate Resources**

**High Resources**

UC Irvine Health
PA Pressure monitoring (CardioMEMs)

UC Irvine Health first in Orange County to use remote heart failure monitoring system

 Implanted CardioMEMS sensor helps reduce heart failure-related hospital readmissions

February 10, 2015

UC Irvine Health is the first medical center in Orange County to offer heart failure patients a wireless system that allows cardiologists to remotely monitor their pulmonary artery pressure and heart rate measurements.

Real-time access to this data enables doctors to proactively manage a patient’s condition, helping to reduce the rate of hospital readmission related to heart failure, the leading cause of hospitalization among adults 65 and older in the U.S., according to the American College of Cardiologists.

Heart failure refers to the progressive weakening of the heart muscle until it no longer pumps enough blood to meet the body’s needs. Advances in treatment allow more patients to survive hospitalization for heart failure, but more than 50 percent of them experience a new onset of symptoms and end up being readmitted within six months. Cardiologists hope the CardioMEMS Heart Failure System will help break this cycle.

Dr. Pranav Patel, chief of the UC Irvine Health Division of Cardiology, implanted the sensor in an 84-year-old male patient on Feb. 6.

“This technology will help change the way we manage heart failure patients,” said Patel. “Once the patient returns home, they must pay careful attention to changes in weight, ankle or abdominal swelling and shortness of breath.

CardioMEMS monitors their heart rate and artery pressure daily, and transmits that information to a secure database so we can track the patient’s health and make necessary adjustments to medications.”
UC Irvine Health Readmission Interventions
Future Intervention

- Lacier LACE score with Dx algorithm and age
- Standardized approach (cross-training)
- Enhance PM discharge huddles
- Increase collaboration of multidisciplinary team
- Improve discharge instructions for social aspects
- Increase referrals to medication safety clinics
- Increase use of novel approach (PA pressure monitoring & ST2)
- Expand on ED Transitions of Care
  - CM and SW screening in ED

- **Creation of a inpatient transition of care team**
- **Opening of a transition of Care Clinic**
THANK YOU
Patient Story
Today’s Presentation Covers:

1. Measuring & Improving Processes
2. Focusing on One Metric
3. Patient Engagement Tools
Measuring & Improving Processes

Data, Tools, and Communication
Performance Metrics for Cardiovascular Care

**Myocardial infarction**
Inclusion criteria: All patients admitted with MI (ACS symptoms + abnormal troponin level)
Performance metrics:
- Aspirin prescribed at discharge
- Beta-blocker prescribed at discharge
- Statin prescribed at discharge
- ACE-I or ARB prescribed at discharge if LVEF < 40%
- Measurement of LVEF during the current hospitalization (echo, nuclear, or ventriculogram)
- Referral to cardiac rehabilitation before discharge
- Smoking cessation counseling for patients who have smoked in the previous year

**Heart failure**
Inclusion criteria: All patients with a diagnosis of heart failure during the current admission
Performance metrics:
- ACE-I or ARB prescribed at discharge if LVEF < 40%
- HF-specific beta blocker (carvedilol or metoprolol succinate) prescribed at discharge
- Measurement of LVEF before arrival, during hospitalization, or planned after discharge
- Follow-up appointment scheduled and documented (including location, date, and time for follow-up visit)

**ICD**
Inclusion criteria: All patients with a new ICD implanted during the current admission
Performance metrics:
- ACE-I or ARB prescribed at discharge if LVEF < 40%
- Beta-blocker prescribed at discharge if LVEF < 40%
- Beta-blocker prescribed if there is a history of myocardial infarction

**PCI**
Inclusion criteria: All patients undergoing PCI (coronary angioplasty or stent) during the current admission
Performance metrics:
- Aspirin prescribed at discharge
- P2Y12 inhibitor (clopidogrel, prasugrel, or ticagrelor) prescribed at discharge
- Statin prescribed at discharge

**Notes**
- A patient may fall into multiple categories (e.g., a patient may be included in PCI, MI, and HF registries).
- If a medication is contraindicated, the reason for the contraindication must be documented.

Please contact drew.baldwin@virginiamason.org with any questions about the cardiovascular care performance metrics.
Process for Giving Direct Feedback to Hospitalists

Information is captured from our electronic medical record (EMR) and is sent to our data warehouse.

Information is abstracted and manually entered into our data warehouse.

Data analyst reviews and confirms data.

Email is automatically generated and sent to the Quality Team.

If there is a missed performance metric, an email is sent to the hospitalist, resident, and consulting physician.

Quality Team reviews the information.
### GWTG Heart Failure

<table>
<thead>
<tr>
<th>MRN</th>
<th>Last Name</th>
<th>First Name</th>
<th>Admit Date</th>
<th>Discharge Date</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>4/21/2015</td>
<td>4/26/2015</td>
</tr>
</tbody>
</table>

**Discharge Status:** Home

**Discharge MD**

**Consulting Cardiologist**

**Performance Metrics:**

- LVF assessed: Yes
- ACE/ARB @ Disc: Yes
- BB @ Disc: Yes
- Follow Up Scheduled: Yes

**Quality Metrics:**

- Aldosterone @ Disc: No
- Anticoag Therapy @ Disc: Yes
- Hydralazine @ Disc: N/A
- DVT Prophylaxis: Yes
- Instructions @ Disc: Yes
- Flu Vaccine: Given prior to admit, current flu, not this stay
- Pneumococcal Vaccine: Pneumococcal vaccine received prior to admit
Trends are shared at monthly meetings in the Heart Institute.

<table>
<thead>
<tr>
<th>Heart failure metrics</th>
<th>Feb 2015</th>
<th>YTD 2015</th>
<th>90th percentile</th>
</tr>
</thead>
<tbody>
<tr>
<td># Total cases</td>
<td>37</td>
<td>80</td>
<td>N/a</td>
</tr>
<tr>
<td><strong>PROCESS METRICS</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACE-I/ARB at discharge for LVEF &lt; 40%</td>
<td>100.0%</td>
<td>100.0%</td>
<td>100.0%</td>
</tr>
<tr>
<td>HF-specific beta-blocker at discharge for LVEF &lt; 40%</td>
<td>100.0%</td>
<td>100.0%</td>
<td>100.0%</td>
</tr>
<tr>
<td>LVEF measurement or documented as planned</td>
<td>100.0%</td>
<td>100.0%</td>
<td>100.0%</td>
</tr>
<tr>
<td><strong>Follow-up appointment scheduled (date, time, location documented)</strong></td>
<td>68.2%</td>
<td>63.8%</td>
<td>100.0%</td>
</tr>
<tr>
<td>Discharge instructions provided</td>
<td>100.0%</td>
<td>100.0%</td>
<td>100.0%</td>
</tr>
<tr>
<td><strong>OUTCOME METRICS</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30-day mortality</td>
<td>8.1%</td>
<td>10.0%</td>
<td>N/a</td>
</tr>
<tr>
<td>30-day readmissions</td>
<td>13.5%</td>
<td>16.3%</td>
<td>N/a</td>
</tr>
</tbody>
</table>
Focusing on One Metric:

Scheduling the Follow-Up Clinic Visit Before Discharge
Percentage of eligible heart failure patients for whom a follow-up appointment was scheduled and documented including location, date, and time for follow-up visits or location and date for home health visit.
## Heart Failure Tracking

![Heart Failure Tracking Image](image-url)

<table>
<thead>
<tr>
<th>Case</th>
<th>NAME</th>
<th>CHF</th>
<th>CHF Problems</th>
<th>CHF Rx</th>
<th>CHF TPN Rx</th>
<th>Staff</th>
<th>Med Stat</th>
<th>OBP</th>
<th>LOS Days</th>
<th>INR</th>
<th>Date</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>756-01</td>
<td>YES</td>
<td>YES</td>
<td>Outside Doctors</td>
<td>2333</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>756-01</td>
<td>NO</td>
<td>YES</td>
<td>Hospitalist</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>756-01</td>
<td>YES</td>
<td>NO</td>
<td>Outside Doctors</td>
<td>616</td>
<td>1</td>
<td></td>
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<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>756-02</td>
<td>NO</td>
<td>YES</td>
<td>Hospitalist</td>
<td>1560</td>
<td>2</td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>863-01</td>
<td>YES</td>
<td>NO</td>
<td>Hospitalist</td>
<td>1172</td>
<td>5</td>
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<tr>
<td>968-01</td>
<td>NO</td>
<td>NO</td>
<td>Outside Doctors</td>
<td>248</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>869-01</td>
<td>NO</td>
<td>NO</td>
<td>Hospitalist</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>870-01</td>
<td>NO</td>
<td>NO</td>
<td>Hospitalist</td>
<td>2239</td>
<td>8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>874-01</td>
<td>YES</td>
<td>NO</td>
<td>Hospitalist</td>
<td>722</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>876-01</td>
<td>YES</td>
<td>NO</td>
<td>Cardiac Surgery</td>
<td>2312</td>
<td>20</td>
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<td></td>
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<td>NO</td>
<td>Outside Doctors</td>
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<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>968-01</td>
<td>NO</td>
<td>NO</td>
<td>Hospitalist</td>
<td>3</td>
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</tr>
<tr>
<td>972-02</td>
<td>NO</td>
<td>NO</td>
<td>Outside Doctors</td>
<td>4</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>876-01</td>
<td>YES</td>
<td>NO</td>
<td>Hospitalist</td>
<td>2320</td>
<td>4</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>877-01</td>
<td>YES</td>
<td>NO</td>
<td>Outside Doctors</td>
<td>218</td>
<td>3</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>878-02</td>
<td>NO</td>
<td>NO</td>
<td>Hospitalist</td>
<td>59</td>
<td>24</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>873-02</td>
<td>YES</td>
<td>NO</td>
<td>Hospitalist</td>
<td>6850</td>
<td>13</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>878-01</td>
<td>NO</td>
<td>NO</td>
<td>Hospitalist</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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66
Open Access Scheduling

Key features:

- Goal of open schedules is to allow for maximum flexibility
- No holds blocking the schedule
- Duration of appointment types standardized, across providers
- Simplified scheduling process allowing the software to easily
Educating and Getting Physicians Involved

PART 1
Follow Up Appointment Documented

The date, time, and location of the scheduled appointment must be documented in the chart before the patient is discharged.

Follow-up appointment documented:
- [ ] Follow-up appointment documented
- [ ] Follow-up appointment not documented

Reason follow-up appointment not documented:
- [ ] Appointment for home health visit documented instead
- [ ] Medical reason for no follow-up scheduled
- [ ] Transfer to another hospital
- [ ] Patient refused to seek follow-up
- [ ] Discharged to skilled nursing facility
- [ ] Patient refused medication
- [ ] Discharged to inpatient rehab facility
- [ ] Discharged to hospice
- [ ] Patient Left Against Medical Advice
- [ ] Other:
Patient Engagement Tools
The Heart Failure Patient Education Packet was recently revised because we needed:

- More focused language on individual patient needs
- Simple and informative visuals
- Tools that guide conversation and provide teach-back opportunities
- Packets that could be used in the inpatient and outpatient settings
Concentrated teaching on making sure the patient:

- Weighs him or herself
- Understands a low sodium diet
- Continues medications, even if he or she is feeling better
Plan-Do-Study-Act
PDSA Process Improvement

Testing documentation for the medical chart, with nurses, social workers, and other team members.

Key Learning: **We need nurse-led rounding** to identify heart failure patients before discharge, and to help schedule follow-up appointments.
**Improving What We Know About the Patient**

![Ambulatory Summary MPage](image)

<table>
<thead>
<tr>
<th>Patient Information</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chief Complaint:</td>
<td>No results found</td>
</tr>
<tr>
<td>Reason For Visit:</td>
<td>No results found</td>
</tr>
<tr>
<td>Primary Physician:</td>
<td>No results found</td>
</tr>
<tr>
<td>Attending Physician:</td>
<td>Aaronson MD, Barry A</td>
</tr>
<tr>
<td>Referring Physician:</td>
<td>No results found</td>
</tr>
<tr>
<td>Service:</td>
<td>Hospitalist</td>
</tr>
<tr>
<td>Admit Date:</td>
<td>03/25/15</td>
</tr>
<tr>
<td>Advance Directives:</td>
<td>Yes</td>
</tr>
<tr>
<td>Last Visit:</td>
<td>No results found</td>
</tr>
<tr>
<td>Do have a preferred name that we should use:</td>
<td>Jeff</td>
</tr>
<tr>
<td>What type of living situation are you currently in:</td>
<td>I live at home</td>
</tr>
<tr>
<td>Who is your primary caregiver:</td>
<td>My wife</td>
</tr>
<tr>
<td>Best way to reach me:</td>
<td>Home phone number</td>
</tr>
<tr>
<td>Are there any barriers to receiving care:</td>
<td>My wife and I do not drive</td>
</tr>
<tr>
<td>&quot;Know Me&quot; Notes</td>
<td>9/18/2014 12:41 AM (Verified)</td>
</tr>
</tbody>
</table>
Virginia Mason

Questions?

• We will only be taking text questions.
• Click the green “Q&A” icon on the lower left-hand corner of your screen, select “Ask,” type your question in the open area and click “Ask” again to submit.
More Questions about Get With The Guidelines?

- Trainings and technical questions will be handled by Quintiles Real-World & Late Phase Research Help Desk
  - Contact Quintiles
    - Call 888-526-6700
    - Email InfosarioOutcomeSupport@quintiles.com

- Contact Quintiles or visit heart.org/QualityHF to find your local Get With The Guidelines representative.