From Wet to (mostly) Dry in 24 hours: Heart Failure in the CDU

Brian Hiestand MD, MPH
Wake Forest Health Sciences

Disclosures
• DSMB member for “Using Short Stay Units Instead of Routine Admission to Improve Patient Centered Health Outcomes for AHF Patients” - AHRQ 1R01 HS025411

Objectives
• Discuss:
  – Who makes a good candidate for observation?
  – What should you do with them when you have them?

Should you?
• Patient volumes and phenotypes
• Staff / physician buy in
• Diagnostic resources
• Consultant support vs. stonewall

Hospital Top Medical DRGs for Same- and 1-Day Stay Discharges, Most Recent Fiscal Year

<table>
<thead>
<tr>
<th>DRG Code</th>
<th>Description</th>
<th>Same and 1-Day Stay Count</th>
<th>Total Discharge Cost by DRG</th>
<th>Medicare Payment per DRG</th>
<th>Hospital Average Length of Stay</th>
<th>Top Medical DRGs - Medicare</th>
<th>Financial Impact for Low Volume DRGs</th>
<th>Proportion of Same and 1-Day Stay Discharges by DRG</th>
</tr>
</thead>
</table>
Should you?

- Patient volumes and phenotypes
- ED staff / physician buy in
- Diagnostic resources
- Consultant support vs. stonewall

Heart Failure

- Things we all (probably) know
  - Incidence and prevalence are increasing
  - Most expensive CMS diagnosis
  - Mortality worse than some metastatic cancers

Heart Failure – Punctuated disequilibrium

Disposition Reality

In the Hospital

- IV diuresis
- IV diuresis
- IV diuresis
- IV diuresis
- IV diuresis
- IV diuresis
- Sometimes critical care
Heart Failure Phenotypes

- Hot and wet – afterload reduction
  - Actually better mortality rates
  - Intensive measures not really suited for obs

- Cool and wet – diuretic intensive
  - How much to get off?
  - How did you get there?

Heart Failure Risk Stratification

- Most models predict mortality, ICU utilization

- WE ALREADY KNOW WHO IS AT THE FRONT OF THE LINE

- Artificial inflation of decision rule accuracy when the easy ones are included in the mix

Therapeutics
Risk Stratification

- **EHMRG** – 7 day mortality only
  - Circulation 2019. 7 and 30 day mortality. [https://www.ahajournals.org/doi/10.1161/CIRCULATIONAHA.118.035509](https://www.ahajournals.org/doi/10.1161/CIRCULATIONAHA.118.035509)

- **STRATIFY** – 30 day composite outcome, identified a <5% risk strata
  - Collins et al, 2015, [https://doi.org/10.1016/j.jchf.2015.05.007](https://doi.org/10.1016/j.jchf.2015.05.007)

- **Ottawa Heart Failure Risk Scale**
  - Able to increase rate of AE detection, but would result in increased admission rates from baseline
  - Stiell et al, [https://doi.org/10.1111/acem.13141](https://doi.org/10.1111/acem.13141)
  - Retooled in HEARTRISK6, external validation pending

<table>
<thead>
<tr>
<th>Decision scores to date</th>
</tr>
</thead>
<tbody>
<tr>
<td>(mean +/- SD) or median (IQR)</td>
</tr>
<tr>
<td>Age</td>
</tr>
<tr>
<td>BNP</td>
</tr>
<tr>
<td>Cr</td>
</tr>
<tr>
<td>EF</td>
</tr>
</tbody>
</table>

Discharged from OU: 239 (73.1%)
Admitted from OU: 88 (26.8%)

CHF discharge checklist (GDMT, HF education, follow up)

<table>
<thead>
<tr>
<th>Schraeger et al. AEM</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Schraeger et al. AEM 2013</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Total 30 day Inpatient time (days)</th>
<th>Discharged from OU</th>
<th>Admitted from OU</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.7 (0.0-5.1)</td>
<td>3.5 (2.3-5.8)</td>
<td>&lt;.0001</td>
<td></td>
</tr>
</tbody>
</table>

| Schraeger et al. AEM 2013 |

| Schraeger et al. AEM 2013 |

<table>
<thead>
<tr>
<th>Ross M et al. Critical Pathways in Cardiology, 2012</th>
</tr>
</thead>
</table>

NO OU AHF RCT

| Ross M et al. Critical Pathways in Cardiology, 2012 |

No OU AHF RCT

| Ross M et al. Critical Pathways in Cardiology, 2012 |

No OU AHF RCT
Using Short Stay Units (SSU) Instead of Routine Admission to Improve Patient Centered Health Outcomes for Acute Heart Failure (AHF) Patients 1 R01 HS025411

**SSU-AHF**

**Inclusion Criteria**

- ED physician clinical diagnosis of AHF;
- Planned admission for AHF
- Systolic blood pressure > 110mmHg*, heart rate < 115bpm, Oxygen saturation > 93% on room air^;
- Previous history of HF

- *Patients with atrial fibrillation but controlled HR are eligible
- ^patients who require oxygen at baseline and are at their baseline oxygen saturation and oxygen requirement remain eligible. Any oxygen saturation less than 90%, for any reason, regardless if baseline, is ineligible.

**Science!**

- If you need it, stand by, RCT proof should be coming soon.

**Key tasks in CDU**

- Restart home meds
- IV diuresis
- Reassess hemodynamics, renal function, urine output
- Barriers for successful life in the outside world
  - Education
  - Outpatient visit access
  - Medication access

**Cardiology consult?**

- Opinion statement: of most value with a compliant patient who is still in AHF
  - Rational titration of meds
  - Addition of new meds
- Do you need a cardiologist to get tight outpatient follow-up? System specific.
- Social work, pharmacy may be more value added

**Conclusions**

- Obs management of HF feasible
- Cost savings, bed savings
- Risk stratification – no magic key yet
- Proof of concept has been firmly established
- Cost effectiveness research still pending