CHF - The New Chronic Disease

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Objectives

Discuss the step-wise improvement in the long-term outcomes of heart failure patients.

Discuss latest advances in management of heart failure patients.

Discuss practice guidelines for management of patients with heart failure.

Discuss outpatient strategies and “team-concept” used to treat heart failure patients.
Definition of Heart Failure (HF)

• HF is a syndrome caused by cardiac dysfunction, generally resulting from myocardial muscle dysfunction or loss and characterized by LV dilation or hypertrophy.
• Whether the dysfunction is primarily systolic or diastolic or mixed, it leads to neurohormonal and circulatory abnormalities, usually resulting in characteristic symptoms…
Definition of Heart Failure (HF)

• HF is usually progressive.
• The severity of clinical symptoms may vary substantially during the course of the disease process and may not correlate with changes in underlying cardiac function.
• Although HF is progressive and often fatal, patients can be stabilized, and myocardial dysfunction and remodeling may improve, either spontaneously or as a consequence of therapy.
Risk Factor Management

QuickTime™ and a decompressor are needed to see this picture.
Pre-load and Afterload Reduction

- V-Heft Study published in the mid-1980’s was the proof of concept with improved survival with Hydralazine and nitrates.
- Ace-Inhibitors (ACEI) subsequently showed improved efficacy compared to Hydralazine and nitrates. First ACEI trial to show efficacy was CONSENSUS Trial in late 1980’s with Enalapril. Multiple trials subsequently have replicated this findings.
Neurohormonal Blockade

• ACEI are recommended for all patients with current or prior symptoms of HF and reduced LVEF, unless contraindicated. (Class I, Level of Evidence:A)

• Angiotensin II receptor blockers (ARB’s) are recommended in patients with current or prior symptoms of HF and reduced LVEF who are intolerant to ACEI. (Class I, Level of Evidence:A)
Neurohormonal Blockade

- Beta-Blockers (using 1 of 3 proven to reduce mortality, i.e., bisoprolol, carvedilol, and sustained release metoprolol succinate) are recommended for all stable patients with current or prior symptoms of HF and reduced LVEF, unless contraindicated (Class I, Level of Evidence:A).
Avoidance of certain drugs

- Drugs known to adversely affect the clinical status of patients with current or prior symptoms of HF and reduced LVEF:
  - NSAID’s
  - Most antiarrhythmic drugs
  - Most Calcium channel blocking drugs

(Class I, Level of Evidence:B)
Implantable cardioverter-defibrillator (ICD)

- ICD therapy is recommended for primary prevention of sudden cardiac death to reduce total mortality in:
  - Patients with non-ischemic dilated cardiomyopathy
  - Ischemic heart disease
    - LVEF \( \leq 35\% \) (at least 40 days post MI)
    - NYHA functional class II or III symptoms while receiving chronic optimal medical therapy
  - Who have reasonable expectation of survival with a good functional status for more than 1 year.

Class I, Level of Evidence A
Implantable cardioverter-defibrillator (ICD)

- An ICD is recommended for secondary prevention to prolong survival in patients with current or prior symptoms of HF and reduced LVEF:
  - History of cardiac arrest
  - Ventricular fibrillation
  - Hemodynamically destabilizing ventricular tachycardia.

Class I, Level of Evidence: A
Cardiac Resynchronization Therapy (CRT)

• CRT (with or without ICD) is indicated in:
  – Patients with LVEF ≤ 35%, sinus rhythm, and NYHA class II
  – Ambulatory, class IV symptoms despite recommended, optimal medical therapy and who have cardiac dyssynchrony (currently defined as a QRS duration ≥ 0.12 seconds)

Class I, Level of Evidence:A
Chronic Ventricular Pacing

• CRT is reasonable in patients with:
  – For patients with LVEF $\leq 35\%$ with NYHA class III or ambulatory class IV symptoms who are receiving optimal recommended medical therapy
    __________________________ and
  – Frequent dependence on ventricular pacing

Class IIa, Level of Evidence: C
Hydralazine and Nitrates in African-Americans

• The combination of hydralazine and nitrates is recommended:
  – Patients self-described as African-Americans, with moderate-severe symptoms on optimal therapy with ACEI, beta-blockers and diuretics.

Class I, Level of Evidence: B
Hydralazine and Nitrates in patients already on ACEI and BB

- Reasonable in patients with:
  - Reduced LVEF who are already taking an ACEI and beta-blocker for symptomatic HF and who have persistent symptoms. (Class IIa, Level of Evidence: B)
  - Current or prior symptoms of HF and reduced LVEF who cannot be given an ACEI or ARB because of drug intolerance, hypotension or renal insufficiency. (Class IIb, Level of Evidence: C)
Atrial Fibrillation

- It is reasonable to treat patients with atrial fibrillation and HF with a strategy to maintain sinus rhythm or with a strategy to control ventricular rate alone. (Class IIa, Level of Evidence: A).
ARB’s

- ARB’s are reasonable alternatives to ACEI as first-line therapy for patients with mild to moderate HF and reduced LVEF, especially for patients already taking ARB’s for other indications. (Class IIa, Level of Evidence: A)
- The addition of an ARB may be considered in persistently symptomatic patients with reduced LVEF who are already being treated with conventional therapy. (Class IIb, Level of Evidence: B)
Digitalis

- Digitalis can be beneficial in patients with current or prior symptoms of HF and reduced LVEF to decrease hospitalizations for HF. (Class IIa, Level of Evidence: B)
Aldosterone Antagonist

- Addition of an aldosterone antagonist (spironolactone or eplerenone) is recommended:
  - Selected patients with moderately severe to severe symptoms of HF and reduced LVEF
  - Who can be carefully monitored for preserved renal function and normal potassium concentration. Creatinine should be $\leq 2.5$ mg/dl in men or $\leq 2.0$ mg/dl in women and K $< 5.0$ mEq/l.

(Class I, Level of Evidence:B)
Anticoagulants and Antiplatelet agents

- Treatment with warfarin (goal INR=2.0-3.0) is recommended for all patients with HF and chronic or documented, paroxysmal a-fib unless contraindicated.

  Class I, Level of Evidence:A

- … or a history of systemic or pulmonary emboli, including stroke or TIA unless contraindicated.

  Class I, Level of Evidence:C
CLASS III Recommendations

• Routine combined use of an ACEI, ARB and aldosterone antagonist. (Level of Evidence: C)

• Calcium channel blocking drugs are not indicated routinely. (Level of Evidence: A)

• Nutritional supplements as treatment for HF. (Level of Evidence: C)

• Hormonal therapies other than to replete deficiencies. (Level of Evidence: C)
Infusion of Positive Inotropic Agents

• Long-term use of an infusion of a positive inotropic drug:
  – May be harmful and is not recommended for patients with current or prior symptoms of HF and reduced LVEF
  – May be used as palliation for patients with end-stage disease who cannot be stabilized with standard medical treatment.

Class III, Level of Evidence: C
Invasive hemodynamic monitoring should be performed to guide therapy in patients who are in respiratory distress or with clinical evidence of impaired perfusion in whom the adequacy or excess of intracardiac filling pressures cannot be determined from clinical assessment.
Transition to Outpatient Care

Discharge Instructions

Comprehensive written discharge instructions for all patients with a hospitalization for HF and their caregivers is strongly recommended, with special emphasis on the following 6 aspects of care:
Transition to Outpatient Care

1. Diet

2. Discharge medications, with a special focus on adherence, persistence, and uptitration to recommended doses of ACE inhibitor/ARB and beta-blocker medication

3. Activity level

4. Follow-up appointments within 5 to 7 days or discharge from the hospital

5. Weight monitoring

6. What to do if HF symptoms worsen
Education and Counseling

• The majority of the HF care is done at home by the patient and family or caregiver.

• Comprehensive education and counseling are the foundation for all HF management.

• The goals of education and counseling are to help patients, their families and caregivers acquire the knowledge, skills, strategies, and motivation necessary for adherence to the treatment plan and effective participation in self-care.
Education and Counseling

- Patients with HF and family members or caregivers should receive individualized education and counseling that emphasizes self-care.

- This education and counseling should be delivered by providers using a team-approach in which nurses with expertise in HF management provide the majority of education and counseling, supplemented by physician input and, when available and needed, input from dietitians, pharmacists and other health care providers.

Class I, Level of Evidence: B
Education and Counseling

- Patients’ literacy, cognitive status, psychological state, culture and access to social and financial resources should be taken into account for optimal education and counseling.
- Cognitive impairment and depression are common in HF and can seriously interfere with learning, patients should be screened for these.
- Appropriate interventions, such as supportive counseling and pharmacotherapy, are recommended for those patients found to be depressed.
- Patients found to be cognitively impaired need additional support to manage their HF.

Class I, Level of Evidence: C
Education and Counseling

- Frequency and intensity of patient education and counseling vary according to the stage of illness.
- Patients in advanced HF or with persistent difficulty adhering to the recommended regimen require the most education and counseling.
- Repeated exposure to material is essential because a single session is never sufficient.

Class I, Level of Evidence: B
Education and Counseling

• During the care process patients should be asked to:
  1. Demonstrate knowledge of the name, dose and purpose of each medication.
  2. Sort foods into high- and low-sodium categories.
  3. Demonstrate their preferred method for tracking medication dosing.
  4. Show provider daily weight log.
  5. Reiterate symptoms of worsening HF
  6. Reiterate when to call the provider because of specific symptoms or weight changes.

Class I, Level of Evidence: B
Education and Counseling

• During acute care hospitalization, only essential education is recommended, with the goal of assisting patients to understand HF, the goals of its treatment, and post-hospitalization medication and follow-up regimen.

• The above education should be supplemented and reinforced within 1-2 weeks after discharge and continued for 3-6 months and reassessed periodically.

Class I, Level of Evidence: B
Patients recently hospitalized for HF and other patients at high risk should be considered for referral to a comprehensive HF disease management program that delivers individualized care.

Class IIa, Level of Evidence: A
Disease Management Program

High risk patients include patients with:

1. Renal insufficiency
2. Low cardiac output state
3. Diabetes
4. Chronic Obstructive Pulmonary Disease
5. Persistent NYHA Class III or IV symptoms
6. Frequent hospitalizations for any cause
7. Multiple active comorbidities
8. History of depression or cognitive impairment
9. Persistent nonadherence to therapeutic regimens

Class IIa, Level of Evidence: A
Components of a HF Disease Management Program should include:

1. Comprehensive education and counseling individualized to patient needs.
2. Promotion of self-care, including self-adjustment of diuretic therapy in appropriate patients.
3. Emphasis on behavioral strategies to increase adherence.
4. Vigilant follow-up after hospital discharge or after periods of instability.
5. Optimization of medical therapy.
6. Increased access to providers.
7. Early attention to signs and symptoms of fluid overload.
8. Assistance with social and financial concerns.

(Class I, Level of Evidence: B).
Heart Failure Disease Management program should include integration and coordination of care between the primary care physician, HF care specialists and with other agencies, such as home health, cardiac rehabilitation, etc.

Class I, Level of Evidence: C
Advance Directives and End-of-Life Care

• It is mandatory that discussions about advance directives occur and end-of-life care occur after full and appropriate application of evidence-based pharmacologic and nonpharmacologic treatments.

• Moreover, clinicians must recognize that use of end-of-life care does not mandate abandonment of HF therapies, which may effectively ease symptoms and continue to improve quality of life.
Advance Directives and End-of-Life Care

- Patient’s status should be optimized medically and psychologically before discussing the possibility that end-of-life care is indicated.
- The decision to declare a patient as an appropriate candidate for end-of-life care should be made by physicians experienced in the care of patients with HF.
- End-of-life management should be coordinated with the patient’s primary care physician.
- As often as possible, discussions regarding end-of-life care should be initiated while the patient is still capable of participating in decision making.

Class I, Level of Evidence: C
Get With The Guidelines--
Heart Failure

• “It’s more than a title or even a statement; it’s a call to action.”
GWTG-HF

**ACHIEVEMENT MEASURES**
- ACEI/ARB at discharge
- BB at discharge
- DC instructions
- Measure LVEF
- Smoking Cessation

**QUALITY MEASURES**
- Aldosterone Antagonist at DC
- Anticoag for Afib
- CRT place or prescribed
- DVT prophylaxis
- Evidence-based BB at DC
- Hydralazine at DC
- ICD placed or prescribed
- Flu and pneumonia vaccines

**REPORTING MEASURES**
- BP control at DC
- Diabetes Treatment
- Diabetes Teaching
- Follow-up visit in 7 days or less
- Lipid Lower Meds at DC
- Omega-3 Fatty acid supplement at DC
Transition to Outpatient Care - Discharge Instructions

1. Diet

2. Discharge medications, with a special focus on adherence, persistence, and uptitration to recommended doses of ACE inhibitor/ARB and beta-blocker medication

3. Activity level

4. Follow-up appointments within 5 to 7 days or discharge from the hospital

5. Weight monitoring

6. What to do if HF symptoms worsen
Get With The Guidelines--
Heart Failure

- Discharge instructions include all of the measures on the previous slide.
- All of the measures have to be achieved to receive credit for appropriate “discharge instructions.”
Death Rate for Heart Failure Patients

Lower Percentages Are Better

5% 10% 15% 20% 25% 30% 35%

U.S. National 30-Day Death Rate for Heart Failure Patients = 11.2%

Number of Medicare Patients Admitted for Heart Failure

Based on 448 patients

PROVIDENCE REGIONAL MEDICAL CENTER EVERETT

11.5
No Different than U.S. National Rate

Range of uncertainty around estimated death rate
("interval estimate")

Legend

x% ← Estimated death rate (risk-adjusted)

Data Source: Medicare Hospital Compare (2009 CMS data)

http://www.hospitalcompare.hhs.gov/Graphs/Hospital-OOCGraph.aspx?hid=500014&stype=MEDICAL&mCode=GRP_2&MTorAM=READM
Providence Health System - CMS Hospital Compare:
30-day Risk Standardized Readmission Rate
and 95% Interval Estimate for CHF

* Significantly Lower than National Rate

2009 Data
Rate of Readmission for Heart Failure Patients

Lower Percentages Are Better

10% 15% 20% 25% 30% 35% 40%

U.S. National 30-Day Rate of Readmission for Heart Failure Patients = 24.7%

Number of Medicare Patients Admitted for Heart Failure

PROVIDENCE REGIONAL MEDICAL CENTER EVERETT

20.0
Better than U.S. National Rate

Based on 589 patients

Range of uncertainty around estimated death rate
("interval estimate")

x% Estimated death rate (risk-adjusted)

Legend

Data Source: Medicare Hospital Compare (2009 CMS data)

http://www.hospitalcompare.hhs.gov/Graphs/Hospital-OOCGraph.aspx?hid=500014&stype=MEDICAL&mCode=GRP_2&MTorAM=READM
Heart Failure 30 day Unadjusted All Cause Readmission Rate Monthly Trend January through August 2010 = 14.9%
Multidisciplinary Team includes
- Primary physician clinics
- Home health services
- Skilled nursing facilities
- Hospital staff which include
  - Cardiologists
  - Hospitalists
  - Pharmacy
  - Nutrition services
  - Nursing leaders
  - Care management
  - ED staff
  - Clinical data analyst

Community Education targeted at
- senior centers,
- libraries,
- skilled nursing facilities

Innovations
- Transition coach to assist high risk patients in their transition to home
- Medication management clinic to discuss and reconcile medications
Reducing Readmissions - Project Aims

- Hospitalist consultation on patients in the ED
- Screening of patients for palliative care needs
- Stratification of patients into 4 “risk” categories
- Early/immediate involvement of transition coaches for patients at high risk for readmission
- Coordination of post-discharge follow up phone calls for all patients
- Creation of an outpatient Medication Management Clinic in conjunction with the Anti-Coag Clinic??
<table>
<thead>
<tr>
<th>Measure Metric</th>
<th>Total Admissions(^1)</th>
<th>Care Opportunities</th>
<th>Adherence Score(^2)</th>
<th>Hospital Rank (of 186)</th>
<th>Distribution of Site QI Scores</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACEI/ARB at Discharge</td>
<td>316</td>
<td>85</td>
<td>96.5%</td>
<td>93</td>
<td><img src="image1" alt="Hospital distribution" /></td>
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<tr>
<td>Beta Blocker at Discharge</td>
<td>316</td>
<td>96</td>
<td>100.0%</td>
<td>1</td>
<td><img src="image2" alt="Hospital distribution" /></td>
</tr>
<tr>
<td>Discharge Instructions</td>
<td>316</td>
<td>211</td>
<td>88.2%</td>
<td>144</td>
<td><img src="image3" alt="Hospital distribution" /></td>
</tr>
<tr>
<td>Measure LV Function</td>
<td>316</td>
<td>254</td>
<td>99.2%</td>
<td>118</td>
<td><img src="image4" alt="Hospital distribution" /></td>
</tr>
<tr>
<td>Smoking Cessation</td>
<td>316</td>
<td>46</td>
<td>95.7%</td>
<td>166</td>
<td><img src="image5" alt="Hospital distribution" /></td>
</tr>
</tbody>
</table>

\(^1\)Total Admissions from current and prior quarters

\(^2\)Number of times care matches guideline recommendations / Number of guideline opportunities
<table>
<thead>
<tr>
<th>Measure Metric</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Aldosterone Antagonist at Discharge</td>
<td>316</td>
<td>107</td>
<td>22.4%</td>
<td>75</td>
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<tr>
<td>Anticoagulation for Atrial Fibrillation</td>
<td>316</td>
<td>101</td>
<td>87.1%</td>
<td>28</td>
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<tr>
<td>CRT Placed or Prescribed at Discharge</td>
<td>316</td>
<td>51</td>
<td>52.9%</td>
<td>10</td>
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<tr>
<td>DVT Prophylaxis</td>
<td>316</td>
<td>61</td>
<td>62.3%</td>
<td>65</td>
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<tr>
<td>Evidence Based Beta Blockers Prescribed</td>
<td>316</td>
<td>106</td>
<td>79.2%</td>
<td>65</td>
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</tbody>
</table>

1Total Admissions from current and prior quarters
2Number of times care matches guideline recommendations / Number of guideline opportunities
## Quality Measure Adherence
### Site 21004

GWGT-HF Report: Q2/10
* Confidential Information *

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<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>Hydralazine Nitrate at Discharge</td>
<td>316</td>
<td>6</td>
<td>0.0%</td>
<td>48</td>
<td><img src="graph1" alt="Distribution Graph" /></td>
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<tr>
<td>ICD Placed or Prescribed at Discharge</td>
<td>316</td>
<td>90</td>
<td>25.6%</td>
<td>60</td>
<td><img src="graph2" alt="Distribution Graph" /></td>
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<tr>
<td>Influenza Vaccination During Flu Season</td>
<td>316</td>
<td>117</td>
<td>100.0%</td>
<td>1</td>
<td><img src="graph3" alt="Distribution Graph" /></td>
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<tr>
<td>Pneumococcal Vaccination</td>
<td>316</td>
<td>228</td>
<td>99.6%</td>
<td>46</td>
<td><img src="graph4" alt="Distribution Graph" /></td>
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</tr>
</thead>
<tbody>
<tr>
<td>Blood Pressure Control at Discharge</td>
<td>316</td>
<td>284</td>
<td>75.0%</td>
<td>80</td>
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<tr>
<td>Diabetes Treatment</td>
<td>316</td>
<td>132</td>
<td>78.8%</td>
<td>52</td>
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<tr>
<td>Diabetes Teaching</td>
<td>316</td>
<td>132</td>
<td>34.1%</td>
<td>21</td>
</tr>
<tr>
<td>Follow-up Visit Within 7 Days or Less</td>
<td>316</td>
<td>237</td>
<td>75.5%</td>
<td>42</td>
</tr>
<tr>
<td>Lipid Lowering Medications at Discharge</td>
<td>316</td>
<td>211</td>
<td>75.8%</td>
<td>26</td>
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<tr>
<td>Omega-3 Fatty Acid Supp Use at Discharge</td>
<td>316</td>
<td>205</td>
<td>6.8%</td>
<td>19</td>
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</tbody>
</table>

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![Distribution of Site QI Scores](image-url)
THANKS!!!

- Heart Failure Quality Team at PRMC-E
- Julie McDonald
  PRMC-E, Decision Support
QUESTIONS?
Hospital scores reported for quarters with 10+ eligible admissions for particular performance measure
Region scores reported for quarters with 25+ eligible admissions for particular performance measure
• Team 'P' referral
• D/C instructions
• Develop palliative care plan
• Team 'P' monitors hand-offs to PCP

• D/C instructions
• Smooth handoffs
• Community outreach programs to support SNF staff
• SNF-ist program?

• D/C Instructions
• Return to Med Mgmt Clinic 3-7 days post-D/C
• TCRN Phone follow-up to ensure MMC contact and PCP appt made and kept.

• D/C planner / MSW
• TCRN f/u to ensure smooth handoffs
• HH Liaison
• D/C instructions
• HH RN visit within 48hrs

High Risk Homebound

High Risk Non-Homebound

SNF-Bound

Palliative Care
<table>
<thead>
<tr>
<th>Color</th>
<th>Blue: In/Out Patients</th>
<th>Green: Likely transfer to another facility</th>
<th>Yellow: Complex Patient Discharge to Home</th>
<th>Red: Needs Palliative Care Plan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Criteria</td>
<td>No significant discharge needs</td>
<td>SNF Inpt Rehab Long-term hospital</td>
<td>Chronic disease (HF, COPD, dementia, progressive CA, etc.) Patient admitted two times or more in past year Polypharmacy (&gt;4 meds) or substantial changes to medications Provider/staff/family concerns for patient/family ability to manage care or meds at home Inability for patient/family to perform teachback</td>
<td>Score &gt;3 on Palliative Care Screen “Would you be surprised if this patient were to die in the next year or two?” Patient/family show evidence of wanting to discuss goals of care or end-of-life care</td>
</tr>
<tr>
<td>Actions Needed</td>
<td>Initiate discharge plan at admission</td>
<td>Four Pillars repetition Post-discharge phone call w/ 24 hr Five-day PCP follow-up visit Home Health/Transition Coach</td>
<td>Complete POLST Family meeting or refer to palliative care or hospice</td>
<td></td>
</tr>
</tbody>
</table>
Progress to Date

• Instituted Hospitalist Consultation in ED
• Risk Screening underway – admitting orders
• Transition RN – in the process of hiring and developing protocols and procedures
• 5 day Follow-up - good commitment from TEC, PPG, GHC, Molina, Access clinic, and Tulalip
• Medication Management & Reconciliation – Clinic ready for patients on October 18\textsuperscript{th}
• Home Health - Goal is to see patients within 48\text{hrs of discharge}
Current and Planned Measure of Success

- Overall readmission rate within 30 days
- Process measures to be developed over course of project:
  - Percent of patients in the ‘yellow’ category
  - Use of risk stratification tool
  - Readmissions from SNF
  - Trend of readmission rates stratified by category
  - Trends of readmission rates by nursing unit
  - Trends of readmission rates by physician specialty/section
  - Volume of MHT consults performed in the ED
SNF Readmission Rate & Case Volumes
Jan.- June 2010

IP Cases | 30 Day Readmission Rate
--- | ---
153 | 24.2%
150 | 31.3%
150 | 38.7%
100 | 32.0%
76 | 28.9%
37 | 21.6%
34 | 15.6%
32 | 8.8%
20 | 5%
5 | 1%
1 | 0%

Overall SNF Readmission Rate 28.4%
Get With The Guidelines--
Heart Failure

• **Achievement Measures:**
  1. Measure/Document LV Function
  2. Discharge Instructions
  3. ACEI/ARB at Discharge
  4. Beta-Blocker at Discharge
  5. Smoking Cessation Teaching
Get With The Guidelines--
Heart Failure

- **Quality Measures:**
  1. Aldosterone Antagonist at Discharge
  2. Anticoagulation for Atrial Fibrillation
  3. CRT Placed or Prescribed at Discharge
  4. DVT Prophylaxis
  5. Evidence-Based Specific Beta-Blockers
  6. Hydralazine/Nitrate at Discharge in the appropriate patient
  7. ICD Placed or Prescribed at Discharge
  8. Influenza Vaccination During Flu Season
  9. Pneumococcal Vaccination