Quality of Delivering Heart Failure Care

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President of the Saudi Heart Failure Group
Excellence

• More about attitude and behavior
• No absolute value for excellence
• Like Olympic records, standards keep on improving
• A word used as a parameter is “Quality”
• Higher the quality the nearer to excellence
Definition

• The Institute of Medicine's definition of quality has proved of enduring usefulness:

"Quality is the extent to which health services for individuals and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge"

(Institute of Medicine 1990)
• Overuse, Underuse, and Misuse

• The majority of these problems are not rare, unpredictable, or inevitable concomitants of the delivery of complex, modern health care

• They are frighteningly common, often predictable, and frequently preventable
**Pilot**

Experience/Recency
Takeoffs/landings: ___ in the last ___ days

Hours in make/model: ___ in the last ___ days

Instrument approaches: ___ in the last ___ days

Instrument flight hours: ___ in the last ___ days

Terrain and airspace: ___ familiar

Physical Condition
Sleep: ___ in the last 24 hours

Food and water: ___ in the last ___ hours

Alcohol: None in the last ___ hours

Drugs or medication: None in the last ___ hours

Stressful events: None in the last ___ days

Illnesses: None in the last ___ days

**Aircraft**

Fuel Reserves (Cross-Country)
VFR Day: ___ hours
Night: ___ hours
IFR Day: ___ hours
Night: ___ hours

Experience in Type
Takeoffs/landings: ___ in the last ___ days

Aircraft Performance
Establish that you have additional performance available over that required. Consider the following:
- Gross weight
- Load distribution
- Density altitude
- Performance charts

Aircraft Equipment
Avionics: familiar with equipment (including autopilot and GPS systems)
COM/NAV: equipment appropriate to flight
Charts: ___ current

Clothing: ___ suitable for pretight and flight
Survival gear: ___ appropriate for flight/terrain

**Environment**

Airport Conditions
Crosswind: ___ of max POH
Runway length: ___ more than POH

Weather
Reports and forecasts: ___ not more than ___ hours old
Icing conditions: ___ within aircraft/pilot capabilities

Weather for VFR
Ceiling: Day: ___ feet
Night: ___ feet
Visibility: Day: ___ miles
Night: ___ miles

Weather for IFR
Precision Approaches
Ceiling: ___ feet above min.
Visibility: ___ miles above min.
Non-Precision Approaches
Ceiling: ___ feet above min.
Visibility: ___ miles above min.
Missed Approaches
No more than ___ before diverting
Takeoff Minimum
Ceiling: ___ feet
Visibility: ___ miles
The Six Sigma Challenge

• Setting tolerance limits for defective products at fewer than 3.4 defects per million units

• Simply setting the goal does not guarantee that it will be achieved

• Works just as well in service industries as in manufacturing

• ?Healthcare
<table>
<thead>
<tr>
<th>Sigma level&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Defects per million opportunities</th>
<th>Selected health care examples&lt;sup&gt;b&lt;/sup&gt;</th>
<th>Selected industrial examples&lt;sup&gt;c&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>3.4</td>
<td></td>
<td>Allied–Signal: 3 model factories</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Publishing: one misspelled word in all the books in a small library</td>
</tr>
<tr>
<td>5.4</td>
<td>Deaths caused by anesthesia during surgery</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10–16</td>
<td></td>
<td></td>
<td>2 Siebe plants in Italy and United Kingdom, making temperature controls for refrigerators</td>
</tr>
<tr>
<td>5</td>
<td>230</td>
<td></td>
<td>Airline fatalities</td>
</tr>
<tr>
<td>4</td>
<td>6,210</td>
<td></td>
<td>Airline baggage handling Restaurant billing</td>
</tr>
<tr>
<td>10,000</td>
<td>1% of hospitalized patients injured by negligence</td>
<td></td>
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</tr>
<tr>
<td>3</td>
<td>66,800</td>
<td></td>
<td>Publishing: 7.6 misspelled words per page in a book</td>
</tr>
<tr>
<td>210,000</td>
<td>21% of ambulatory antibiotics for colds</td>
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<tr>
<td>2</td>
<td>308,000</td>
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<tr>
<td>580,000</td>
<td>58% of patients with depression not detected or treated adequately</td>
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<tr>
<td>1</td>
<td>690,000</td>
<td></td>
<td></td>
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<tr>
<td>790,000</td>
<td>79% of eligible heart attack survivors fail to receive beta blockers</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
An Intervention to Decrease Catheter-Related Bloodstream Infections in the ICU

Peter Pronovost, M.D., Ph.D., Dale Needham, M.D., Ph.D., Sean Berenholtz, M.D., David Sinopoli, M.P.H., M.B.A., Haitao Chu, M.D., Ph.D., Sara Cosgrove, M.D., Bryan Sexton, Ph.D., Robert Hyzy, M.D., Robert Welsh, M.D., Gary Roth, M.D., Joseph Bander, M.D., John Kepros, M.D., and Christine Goeschel, R.N., M.P.A.
Catheter-related Blood Stream Infection
Care Team Checklist

Purpose: To work as a team to decrease patient harm from catheter-related blood stream infections
When: During all central venous or central arterial line insertions or re-wires
By whom: Bedside nurse

1. Today’s date: __________/_________/__________
   month   day    year

2. Procedure: □ New line  □ Rewire

3. Is the procedure: □ Elective  □ Emergent

4. Before the procedure, did the housestaff:
   Wash hands (chlorhexidine or soap) immediately prior □ □ □
   Sterilize procedure site □ □ □
   Drape entire patient in a sterile fashion □ □ □

   During the procedure, did the housestaff:
   Use sterile gloves □ □ □
   Use hat, mask and sterile gown □ □ □
   Maintain a sterile field □ □ □
   Did all personnel assisting with procedure follow
   the above precautions □ □ □

   After the procedure:
   Was a sterile dressing applied to the site □ □ □
### Incidence-Rate Ratios for Catheter-Related Bloodstream Infections

<table>
<thead>
<tr>
<th>Variable</th>
<th>Incidence-Rate Ratio (95% CI)</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Study period</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Baseline</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>During implementation</td>
<td>0.76 (0.57–1.01)</td>
<td>0.063</td>
</tr>
<tr>
<td>After implementation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0–3 mo</td>
<td>0.62 (0.47–0.81)</td>
<td>0.001</td>
</tr>
<tr>
<td>4–6 mo</td>
<td>0.56 (0.38–0.84)</td>
<td>0.005</td>
</tr>
<tr>
<td>7–9 mo</td>
<td>0.47 (0.34–0.65)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>10–12 mo</td>
<td>0.42 (0.28–0.63)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>13–15 mo</td>
<td>0.37 (0.20–0.68)</td>
<td>0.001</td>
</tr>
<tr>
<td>16–18 mo</td>
<td>0.34 (0.23–0.50)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Teaching hospital</td>
<td>1.34 (0.73–2.46)</td>
<td>0.35</td>
</tr>
<tr>
<td>Bed size (per 100 beds)</td>
<td>1.03 (0.97–1.09)</td>
<td>0.33</td>
</tr>
</tbody>
</table>
Achievement of β-blocker target dose in clinical practice

![Bar chart showing the percentage of patients with target dose in β-blocker trials and HF registries. The chart compares different trials and registries with varying percentages.](chart.png)
SHIFT Study
Chronic HF background treatment

Swedberg et al, Lancet 2010; 376: 875-885
Baseline treatment rates were significantly higher among all controls subgroups except the aldosterone subgroup

When we separately analyzed whether ACEI/ARB, β-blockers, CRT, and ICD would provide incremental benefit with each successive therapy if added to the model in the order in which they are generally applied, successive benefit was found for ACEI/ARB, ACEI/ARB+β-blocker & ACEI/ARB+βblocker+CRT+ICD
Methods: Study Design and Patient Disposition

34,810 patients enrolled • 167 total sites • 63,143 chart reviews

- Longitudinal cohort included the same patients reviewed at 3 time points.
- Single-time-point cohorts included separate patients from the same practices and unique from the longitudinal cohort, as well as from each other.

IMPROVE HF Practice Specific Education and Implementation Tools

Evidence Based Algorithms and Pocket Cards

Clinical Trials and Current Guidelines

Clinical Assessment and Management Forms

Patient Education Materials

Dissemination of best practices:
• Webcasts
• Online Education
• Newsletters
## Is quality improvement sustainable?

<table>
<thead>
<tr>
<th>Quality indicator</th>
<th>Pre-GAP cohort (n = 523) [11]</th>
<th>GAP cohort (n = 499) [11]</th>
<th>HARP cohort (n = 516)</th>
<th>P-value of cohort differences</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Discharge aspirin or plazix?</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>( \frac{n}{N} )</td>
<td>191/235</td>
<td>190/211</td>
<td>401/483</td>
<td>&lt;0.018</td>
</tr>
<tr>
<td>%</td>
<td>81.3</td>
<td>90.0</td>
<td>83.0</td>
<td></td>
</tr>
<tr>
<td>SE</td>
<td>2.6</td>
<td>2.1</td>
<td>1.7</td>
<td></td>
</tr>
<tr>
<td><strong>Discharge BBs</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>( \frac{n}{N} )</td>
<td>64/84</td>
<td>80/87</td>
<td>194/231</td>
<td>&lt;0.016</td>
</tr>
<tr>
<td>%</td>
<td>76.2</td>
<td>92.0</td>
<td>84.0</td>
<td></td>
</tr>
<tr>
<td>SE</td>
<td>4.7</td>
<td>2.9</td>
<td>2.4</td>
<td></td>
</tr>
<tr>
<td><strong>Discharge ACE inhibitors</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>( \frac{n}{N} )</td>
<td>63/90</td>
<td>52/63</td>
<td>58/88</td>
<td>&gt;0.063</td>
</tr>
<tr>
<td>%</td>
<td>70.0</td>
<td>82.5</td>
<td>65.9</td>
<td></td>
</tr>
<tr>
<td>SE</td>
<td>4.9</td>
<td>4.8</td>
<td>5.1</td>
<td></td>
</tr>
<tr>
<td><strong>Discharge treatment of elevated cholesterol (LDL &gt; 100)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>( \frac{n}{N} )</td>
<td>95/130</td>
<td>115/139</td>
<td>193/260</td>
<td>&gt;0.093</td>
</tr>
<tr>
<td>%</td>
<td>73.1</td>
<td>82.7</td>
<td>74.2</td>
<td></td>
</tr>
<tr>
<td>SE</td>
<td>3.9</td>
<td>3.2</td>
<td>2.7</td>
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</table>
The GAP implementation tool kit

- (i) AMI standing orders,
- (ii) clinical pathways,
- (iii) pocket guide/pocket card,
- (iv) patient information form,
- (v) patient discharge form,
- (vi) chart stickers
- (vii) hospital performance charts
HF Programs

• Meta-analyses confirmed the effectiveness of HF disease management programs that were often hospital-based, with care delivered at outpatient clinics, sometimes with outreach to patients’ homes by HF nurses

• More recent studies do not support these earlier conclusions

Heart 2005;91:899-906
Am Heart J 2005;149:722-9
Can J Card 30 (2014) 276e280
• Management of HF patients is far from optimal at this moment
• Although clear guidelines on diagnosis and treatment are available
• Patients are not always diagnosed in time and not all patients receive optimal medical treatment or non-pharmacological advice
• Major gains can still be made, especially with regard to symptom monitoring and increasing exercise
• Structured follow-up is needed along the disease trajectory and early intervention in case of deterioration is vital to prevent readmission or death
• The implementation of ‘guideline-based’ therapies in clinical practice is challenging because of the complexity of the recommendations for care

• Heart failure care is intensive, requiring close monitoring on the part of clinicians and patient self-management

• Often complicated further by competing comorbid diseases, polypharmacy, and reduced functional and/or cognitive status
Meeting the Challenge of Health Care (Quality Improvement)

• The challenges of quality improvement in health care are easy to identify but difficult to achieve

1. *always* provide effective care to those who could benefit

2. *always* avoid providing ineffective services

3. eliminate all preventable complications of health services
Fundamental changes

• Medical Education and Training

• Health Care Delivery System Change
# Basoor's Heart Failure Checklist

**Primary Cardiologist/ Attending:**

**Discharge Date:**

**Brief History:**

**Non Compliance to Medications:** No ☐ ; Yes ☐

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## MEDICATIONS prescribed?

<table>
<thead>
<tr>
<th>Medication</th>
<th>Yes</th>
<th>No</th>
<th>Dose Modified</th>
<th>Reason if not prescribed/ titrated up or COMMENTS</th>
<th>Initials</th>
</tr>
</thead>
<tbody>
<tr>
<td>β-Blocker</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACE Inhibitor (ACE I)</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td></td>
<td></td>
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<tr>
<td>ARB (if ACE I intolerant or in addition)</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td></td>
<td></td>
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<tr>
<td>Diuretics</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td></td>
<td></td>
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<tr>
<td>Digoxin (if Atrial Fibrillation or refractory symptom)</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td></td>
<td></td>
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<tr>
<td>Aldosterone Antagonist</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nitrates (as needed or indefinite or both)</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Warfarin ( if yes latest INR in comments)</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td></td>
<td></td>
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<tr>
<td>Aspirin</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td></td>
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<tr>
<td>Lipid lowering agents</td>
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<td>☐</td>
<td>☐</td>
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<td></td>
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<tr>
<td>Other</td>
<td>☐</td>
<td>☐</td>
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## INTERVENTIONS And COUNSELING measures addressed?

<table>
<thead>
<tr>
<th>Intervention</th>
<th>Yes</th>
<th>No</th>
<th>COMMENTS</th>
<th>Initials</th>
</tr>
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<tbody>
<tr>
<td>General risk modification education</td>
<td>☐</td>
<td>☐</td>
<td></td>
<td></td>
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<tr>
<td>Treatment and adherence education</td>
<td>☐</td>
<td>☐</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heart Failure Monitoring (including low salt diet fluid restriction if needed, daily/weekly weight, activity)</td>
<td>☐</td>
<td>☐</td>
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<tr>
<td>Blood pressure control</td>
<td>☐</td>
<td>☐</td>
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<tr>
<td>Smoking Cessation Counseling</td>
<td>☐</td>
<td>☐</td>
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<tr>
<td>Dyslipidemia control</td>
<td>☐</td>
<td>☐</td>
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<tr>
<td>Diabetes control</td>
<td>☐</td>
<td>☐</td>
<td></td>
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<tr>
<td>Dietitian/nutritionist interview</td>
<td>☐</td>
<td>☐</td>
<td></td>
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<tr>
<td>Cardiac rehabilitation interview and enrollment</td>
<td>☐</td>
<td>☐</td>
<td></td>
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## FOLLOW-UP services scheduled?

<table>
<thead>
<tr>
<th>Service</th>
<th>Yes</th>
<th>No</th>
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<th>Initials</th>
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<tbody>
<tr>
<td>Cardiologist follow-up</td>
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<td>☐</td>
<td></td>
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<tr>
<td>Primary care follow-up</td>
<td>☐</td>
<td>☐</td>
<td></td>
<td></td>
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<tr>
<td>Cardiac rehabilitation</td>
<td>☐</td>
<td>☐</td>
<td></td>
<td></td>
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<tr>
<td>Anticoagulation service follow-up</td>
<td>☐</td>
<td>☐</td>
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<tr>
<td>Visiting Nurse/Home Care if needed</td>
<td>☐</td>
<td>☐</td>
<td></td>
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<tr>
<td>Patient record release form signed if needed</td>
<td>☐</td>
<td>☐</td>
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</tr>
<tr>
<td>Other (eg. Electro-Physiology follow up)</td>
<td>☐</td>
<td>☐</td>
<td></td>
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</tr>
</tbody>
</table>
Required Quality Measures for all Heart Failure patients

☐ Use TDS HF Order set located in the “Custom order set” under Cardiology (Follows latest guidelines).

“A” ......... ☐ ACEI or ARB must be prescribed by the time of D/C
☐ Document Contraindication if not ordered
☐ Aldosterone blockers should be prescribed in the appropriate HF patients.

“B” ......... ☐ Beta-blocker must be prescribed by the time of D/C
☐ Document Contraindication if not ordered

“C” ......... ☐ Coumadin = “Hi-risk” medication if needed
☐ F/U INR and Coumadin clinic/physician appt required

“D” ......... ☐ Discharge instructions (“DAWM’S^2 f/u”)

All 6 items listed below are mandatory for HF Patients and must be in DIS
☐ “D” Diet as appropriate
☐ “A” Activity instructions
☐ “W” Weigh self daily
☐ “M” Medications (prescription and non-prescription meds)
  • List name, dose, frequency, all new and discontinued meds
☐ “S^2” Symptom management & Smoking cessation
☐ “F/U” f/u appt with HF mgmt (x6699) or PCP within a week of discharge provided in DIS

☐ Also, consider: Diuretics & Digoxin

“E” ......... ☐ Ejection fraction must be documented in chart with date (repeat if > 1y/o)

“F” ......... ☐ Don’t Forget to document CLEARLY in the chart:
☐ If HF is or is no longer the differential diagnosis for SOB/Volume Overload
☐ Type of HF:
  ▪ Acute-new-onset, Acute on Chronic, Chronic-Stable
  ▪ Systolic/Diastolic/Combine

“G” ......... ☐ Give immunization if not up-to-date (Pneumococcal and Influenza)

☐ Please notify one of the HF team of all Acute Heart Failure admissions:
  • Cardiology consult fellow (consults)
  • Nathalie De Michielis (CV Program mgr) p9088
  • Dawn Lombardo (HF Cardiologist)
• On April 4, 2012

• St. Joseph Mercy Oakland Hospital and presented at the American College of Cardiology’s 61st Annual Scientific Session

• Showed that use of a 27-question, heart failure discharge checklist reduced the 30-day readmission rate of a cardiac event from 20 percent to only 2 percent
It is what we think we know already that often prevents us from learning

Claude Bernard
THANK YOU