Access to reliable and useful performance information is critical to developing cardiac surgical programs to their fullest potential, but also to develop clinicians professionally with a system that rewards quality. Hospital Clinical Services Group (HCSG) has created a comprehensive measurement strategy to focus attention on high-leverage areas in the conduct of perfusion that have the greatest potential to improve patient outcomes and systematically raise the bar of performance expectations. HCSG evaluates and selects perfusion related metrics on an annual basis that reflect current evidence-based practices and regulatory mandates. Engagement of clinicians is crucial for widespread adoption and use of performance measures, but the efforts are often met with resistance, leading to variability of interpretation, measurement, acquiescence and compliance to our quality indicator program. In 2008, we have identified five key performance indicators (KPIs) as they apply to the cardiac surgical patient and have developed a national, regional, and area benchmarking system to compare isolated coronary artery bypass graft patients at 150 cardiac surgical programs across the country where we provide perfusion services.
By using an on-line web seminar format, HCSG’s Medical Director and the Center for Education and Quality Improvement team host virtual meetings available to our geographically discrete clinicians, titled the Quarterly Quality Quorum (Q-Cubed).

Our aim is to: 1) Decrease the lag time for effective practices; 2) Provide the best care for every patient by reducing medical errors & adverse events; 2) Improve patient outcomes through the reduction of variation; 3) Increase adoption of best practices and practice guidelines; 4) Engage all clinicians; and 5) Create a culture to share clinical knowledge and experience by bring together perfusionists from all over the country in a common format.
Creating an environment of learning and collaboration as a means to provide unsurpassed patient care is a critical undertaking from which all clinicians can benefit.

The Northern New England Cardiovascular Disease Study Group effectively initiated change across all of the hospitals in their group by not only looking at a systems approach to process improvement, but by sharing their individual observations and achievements with fellow hospitals in the region by conference call on a monthly basis.

HCSG has adopted that idea to a larger scale by bringing best practices to all clinicians across the country in an open dialogue. All HCSG perfusionists share in the responsibility of creating a culture of excellence that includes learning, innovation, continual improvement, discipline of execution, accountability, collaboration and sharing.

To be effective, there can be no hidden agenda, there can only be clinicians talking about quality and ways to improve clinical practice.
The Broadcast Booth
### 2008-2009 CPB Quality Indicators

- **Patient Demographics**
- **Lowest on CPB ≥23%**
- **Intraop Blood Products? Yes or No**
  - Total Red Cell Units (intraop)
  - Total Red Cell Units on CPB
  - Fresh Frozen Plasma Units (intraop)
  - Cryoprecipitate Units
  - Platelet Units (intraop)
- **Highest Intraop Glucose Indicate ≤150mg/dl**
- **Highest on CPB arterial Temp ≤37.0°C**
2008-2009 CPB Quality Indicators (con’t)

- **Cerebral Oximetry? Yes/No**
  - Pre-Induction Baseline rSO2 – Left
  - Pre-Induction Baseline rSO2 – Right
  - Cumulative rSO2 Below Threshold – Left (AUC)
  - Cumulative rSO2 Below Threshold – Right (AUC)
  - Cerebral Oximeter Provided The First Indication?
  - Skin Closure rSO2 – Left
  - Skin Closure rSO2 – Right

- **Dynamic (Net) Priming Volume**

- **Red cell expiry**

- **EuroSCORE**
“Measurement for measurement’s sake is a waste of time.”
Key Performance Indicators

- Intraoperative red cell usage;
- Lowest sustained hematocrit on bypass;
- Maintenance of euglycemia;
- Highest sustained arterial blood temperature;
- Circuit priming volume
We at HCSG have a very difficult task of attempting to benchmark Quality Improvement Initiatives as they relate to Cardiopulmonary Bypass if we do not compare outcomes and risk adjusted patient populations.

Too much variability between hospitals and if measuring post-op first 24 hours ventilator time, ICU LOS, neurological complications, post-operative days to discharge, etc. Hospital A doesn't care that it's ICU LOS is longer than Hospital B. Teaching hospitals have different metrics than non-teaching.

One of the means to successfully accomplish benchmarking is to remove the high risk cases from the mix. Of course, you can use propensity matched patient sets to compare like patient populations, and Donny’s group does an exceptional job with the NNE. We chose to compare only isolated CABG patients on CPB as our benchmark and then on a local level extrapolate that to your larger normative sample that includes all Cardiac patients.
Benchmarking is a powerful quality improvement tool because it helps us overcome “Paradigm Blindness”, which is the thought process that we have all heard before. It sounds something like, “The way that we do it is the best because this is the way that we have always done it.” And “We have good outcomes”.

Benchmarking opens the door to new methods, new ideas and tools that help us improve our clinical effectiveness. It helps crack through the resistance to change by demonstrating other methods and solutions. Successful solutions that have a proven track record. Benchmarking also gives your team a jump start by not having to reinvent the wheel by taking the lessons learned from other institutions and implementing them locally.
1. Benchmarking can be applied to any process or function. Identify through focus groups, research, surveys, questionnaires, quality control variance reports. Always measure a baseline performance to provide a point against which to measure.

2. Example: when writing Primary Care giver relief WKI, we went to other areas that had proven means of improving communication and hand-offs.

3. Northern New England Cardiovascular Disease Study Group (Competitive Benchmarking) New Jersey Department of Health and Senior Services Cardiac Surgery Registry

4. Check out the hospital across town to see how they are doing it.

5. Visit best practices facilities to identify leading edge practices and exchange mutually beneficial information.

6. Take leading edge practices and develop implementation strategies and road maps.
HCSG’s interactive quality indicator dashboard that is based on the concept that providing on-line data in a more intuitive fashion, with meaningful information will lead to intelligent action and drive improvements. Tied together with Q-Cubed, the dashboard is a means of providing alignment, visibility and collaboration across all 150 open-heart hospitals by allowing users to define, monitor and analyze performance via the five KPIs. This dashboard provides a summary collection of relevant data on one screen and provides the BIG PICTURE overview and all of the details in a visually interactive presentation. The dashboard provides clinicians a quick overview that allows them to see how their hospital is performing with an At-A-Glance view of their QI reports.
The gauges at the bottom of the screen to show the user in a very simple manner how their team is doing, using universally understood color coding (green, yellow, red). For a more detailed view, the user can go to an embedded chronological run chart and drill down reports of each procedure is available for a more detailed analysis. Lastly, not only will the user be allowed to benchmark their hospital to their entire peer group from across the country, but also to their regional group and even to their local metropolitan area.
National Benchmarks

Highest Sustained Glucose Southeast Region Compared to Houston & Dallas/Fort Worth

Metro Area #1
- Denver
- Kansas
- Iowa / Wisconsin
- Minnesota/St. Paul
- Kentucky
- Gulf States
- Houston
- Florida
- Georgia / S Carolina
- Tennessee

Metro Area #2
- Denver
- Kansas
- Iowa / Wisconsin
- Minnesota/St. Paul
- Kentucky
- Gulf States
- Houston
- Florida
- Georgia / S Carolina
- Tennessee

Gluc  Temp  Prime  HCT  PRBC

- North Central Region
- South Central Region
- Southeast Region
- West Region
- Northeast Region
- National

# Months to Compare
1-2

October 2008
Through collaborative efforts, HCG clinicians have shown significant improvements in the delivery of patient care as is evidenced by the improvements of monitored process indicators. We will continue to embrace, share and educate the importance of process improvement and we will modify our indicators to reflect the best available evidence as it is published.