Core Measures

**Background** – The Center for Medicare and Medicaid Services (CMS) and The Joint Commission (TJC) have developed process of care measures for Acute Myocardial Infarction (AMI), Congestive Heart Failure (CHF), Community Acquired Pneumonia (CAP), and Surgical Care Improvement (SCIP) termed “Core Measures”. The term “All Care Measure” refers to perfect care provided to a patient with a specific disease. It is the percent of patients who received all the needed core measures required for that disease state. The term “Composite” refers to the percent compliance of all possible opportunities (the total number of compliant opportunities for care divided by the total number of opportunities for care). The Composite score will always be higher than the All Care Measure Score. The measures differ slightly between CMS and TJC and are publicly reported on their respective websites (CMS) [www.hospitalcompare.hhs.gov](http://www.hospitalcompare.hhs.gov) and (TJC) [www.qualitycheck.org](http://www.qualitycheck.org). Reported results lag 3 to 6 months behind due to the complexity and requirements of external reporting.

Over the past several years, we have set an organization wide goal for the All Care Measure (ACM). We have also reported the Composite measure. Beginning in FY 2012, we are changing our organizational goal to a Value Based Purchasing (VBP) score, but will continue to report the ACM and Composite scores.

The Deficit Reduction Act of 2005 directed the Center for Medicare and Medicaid Services (CMS) to develop a Value Based Purchasing (VBP) incentive program to begin to align Medicare payments with hospital quality performance. The Patient Care and Affordable Care Act put in place the mechanism and requirement for CMS to withhold a percentage of Medicare reimbursement and require hospitals to meet performance thresholds to earn back the withheld percentage. The amount CMS will withhold in FY 2013 is 1.0% of a facility’s CMS baseline DRG payment. This withhold will increase by 0.25% annually to 2.0% in FY 2017. Based on a hospital’s total performance score, hospitals will have their DRG payments adjusted by a factor somewhere between a loss of the entire withhold to a gain of an amount equal to the withhold. Thus, in FY 2013, GHS will be paid a DRG rate somewhere between 1.0% less than, to 1.0% greater than, the national DRG rate. The VBP program is budget neutral resulting in many hospitals losing money and others gaining money. Hospitals must also continue to submit results to the Hospital Compare website.

The total performance score during the first year of the VBP program will combine both clinical core measures and patient experience (HCAHPS) measures. The clinical Core Measures domain consists of 12 core measures that are both clinically relevant and not optimally provided across the country, and will reflect 70% of the total VBP score in the first year. The patient experience domain consists of HCAHPS patient satisfaction measures and will reflect the other 30% of the total VBP score. First year payments or penalties will be assessed in FY 2013 based on a hospital’s performance score during the time frame...
beginning with July 2011 discharges and ending with March 2012 discharges. Hospitals will have two methods to gain points toward their total VBP score. For each measure, a hospital can either achieve a certain level of performance or they can obtain points for improving their scores as compared to their baseline data. CMS will count the greater of the two scores, achievement versus improvement. Because GHS has historically done very well on core measures, our opportunity for improvement is minimal and our clinical domain score will likely be determined primarily by our achievement score. CMS has established national benchmarks and thresholds for each VBP quality measure. The benchmarks represent the highest achievement levels whereas the thresholds represent the minimum achievement levels. Each of our four acute care facilities will receive their own VBP score and will each be susceptible to incentive payments or penalties.

**GHS Goal** – For FY 2012, the GHS quality goal is the new measure for Value Based Purchasing. Specifically, it is the composite compliance score for the 12 clinical core measures. Historically, our composite score for these measures has been around 98%, which is at the 75th percentile. Thus, the GHS goal is set at 98.0% to maintain performance at this level.

We will continue to report the ACM and Composite scores. Historically, the inpatient scores have been at 93.0% and 98.0% respectively, which approximate the national 75th percentile.

**GHS Results** –

**Value Based Purchasing** – The first year performance period includes the nine month time frame from July 2011 through March 2012. The first quarter of data is available which represents July 2011 – September 2011. The initial quarter results for all four acute care facilities exceed our target of 98.0%. The GHS VBP clinical score is 99.3%, Greenville Memorial’s score is 99.3%, Greer Memorial’s is 99.5%, Hillcrest Memorial’s score is 99.1%, and Patewod Memorial’s score is 99.2%. Domain scores for each hospital based on the achievement score exceed 80.0%. This suggests that if those scores are maintained, GHS will do very well financially in the VBP program.

**ACM / Composite Scores** – From October 2010 through September 2011, the GHS ACM compliance rate is 94.2% for inpatient measures, 98.0% for outpatient measures, and 94.9% combined. The inpatient composite compliance rate for this time period is 98.5%.

The Acute Myocardial Infarction ACM score for July - September 11 is 98.9%, while the composite compliance rate is 99.8% (794/796).

The Congestive Heart Failure ACM score for July - September 11 is 99.4%, while the composite compliance rate is 99.5% (402/404).

The Community Acquired Pneumonia ACM score for July - September 11 is 95.5%, while the composite compliance rate is 98.1% (473/482).
The Surgical Care ACM score for July - September 11 is 92.4%, while the composite compliance rate is 98.8% (3574/3619).

The Outpatient All Care Measure score for July - September 11 is 98.4% while the composite score is 99.1% (444/448).

**Specific Issues** – A few core measures that have been problematic in the past have improved while the measure for ‘removal of the post-operative urinary catheter’ still has room for improvement.

1. **Congestive Heart Failure / Discharge Instructions** – The requirement is for the patient to receive a complete list of medications at discharge. Historically, noncompliance is largely due to medication reconciliation. For July - September 11, GHS achieved 99.3% compliance with CHF Discharge Instructions compared to a national average of 89%.

2. **Community Acquired Pneumonia / Screening for eligibility to receive the Pneumococcal Vaccine** – The requirement is to screen and offer a Pneumococcal Vaccine to all patients with pneumonia at least once in their life. Noncompliance is largely due to the lack of access to records in the ambulatory setting. A real-time process to alert nursing leadership of any patients with an incomplete vaccination has been implemented. For July - September 11, GHS achieved 98.2% compliance with CHF Discharge Instructions compared to a national average of 94%.

3. **SCIP (Surgical Care Improvement Project) / Removal of Urinary Catheter within 2 Days of Surgery** – Catheter Associated Urinary Tract Infections (CAUTI) can be decreased by removing indwelling urinary catheters as soon as possible from surgical patients. For July - September 11, GHS achieved 92.8% compliance with CHF Discharge Instructions compared to a national average of 92%. A workgroup began meeting in April 2011 to develop an action plan for improving the tools and processes that support the measure for removing a post op urinary catheter; however, opportunities for improvement continue to exist. Two major action steps taken to address the issue are: 1) to provide real-time feedback to those nursing units with the greatest opportunity for improvement and, 2) to implement the ‘Device Out’ protocol in the ICU’s.

**Mortality Rates**

**Background** – We assess mortality rates through four methods.

**CMS 30 Day, All Cause Mortality Rates for AMI / CHF / Pneumonia** – CMS calculates and reports 30 day, all-cause mortality rates for patients admitted with AMI, CHF, or pneumonia on their public website at www.hospitalcompare.hhs.gov. Because they have complete claims and eligibility data, they are able to identify patients who die after being admitted to any hospital in the country. CMS calculates this data once annually. The current measures are for July 2007 through June 2010.
Premier In-Hospital Mortality Rates – We assess system, facility, and DRG business line level data of all-cause, in-hospital mortality throughout GHS utilizing the Premier Clinical Advisor database. A mortality rate index is calculated that represents a risk-adjusted measure of the observed mortality rate divided by the expected mortality rate.

AHRQ Inpatient Quality Indicators (IQIs) – The Agency for Healthcare Research and Quality (AHRQ) has developed the Inpatient Quality Indicators (IQIs), which are a set of measures that provide perspective on hospital quality of care using hospital administrative (claims) data. The indicators are used to screen for opportunities in (1) inpatient mortality for certain procedures and medical conditions; (2) utilization of procedures for which there are questions of overuse, underuse, and misuse; and (3) volumes of procedures for which there is evidence that a higher volume of procedures is associated with lower mortality rates. In this section, we are presenting data for the IQIs that assess inpatient mortality rates only.

GHS Site-Specific, 5-Year Cancer Survival Rates – Annually, we review our 5 year cancer survival rates for several specific forms of cancer as part of our cancer care accreditation. The data is obtained from our cancer registry and compared to the National Cancer Database (NCDB) national benchmarks.

The January 2012 study performed by Dawn Blackhurst, DrPH assessed the 5 year survival of “analytic” cases diagnosed with cancer in 2003 and 2004. “Analytic” cancer cases are those who were diagnosed or received their first course of treatment at GHS. GHS survival rates were compared to rates from Teaching/Research Hospitals within the NCDB (n=244 hospitals). Rates were formally compared for statistical significance using 95% confidence intervals.

GHS Goal – Our goal is for our mortality index or rates to be statistically better than expected. For the IQIs, our goal is to have a rate lower than the comparative benchmark.

GHS Results

CMS 30-Day, All Cause Mortality Rates for AMI / CHF / Pneumonia – CMS updates the annual mortality rates for all 3 diseases at all 3 acute care hospitals. Our mortality rates for July 2007 through June 2010, reported in 2011 are statistically no different than the national average. Note that as the population becomes smaller around a specific disease, it is very difficult to show statistical significance.

Premier In-Hospital Mortality Rates – Our system wide in-hospital, all-cause mortality rate for July 2010 through June 2011 is 2.1% and our mortality rate index is 0.81. This is statistically better than expected for the GHS System as well as for GMH, Greer and Hillcrest. Patewood has a 0.09% mortality rate, but due to low numbers, this is not statistically significant. DRG level
mortality rate indices are presented for Greenville Hospital System as a whole with no major opportunities identified.

AHRQ Inpatient Quality Indicators (IQIs) – The data source for AHRQ IQI data is provided by CMS on an annual basis to all participating hospitals across the country and is based on the timeframe, October 2008 – June 2010. The benchmarks in the CMS annual report are derived from their national database. At this time CMS is scheduled to publicly report on their Hospital Compare website only two of the AHRQ IQI indicators, Hip Fracture Mortality Rate and AAA (Abdominal Aortic Aneurysm) Repair Mortality Rate. All four acute care facilities have risk-adjusted rates below the CMS national benchmark for the Hip Fracture Mortality measure. Although GMH’s AAA Repair Mortality rate of 5.82% is slightly above the CMS national average of 4.42% it is not statistically significantly higher. AAA Repair procedures are not performed at the satellite facilities.

GHS Site-Specific, 5-Year Cancer Survival Rates – Overall “combined-stage” GHS 5-year survival rates were comparable (i.e., not significantly different) to NCDB rates for 10 of the 11 cancer sites [See Figure 1]. For bladder cancer GHS had a significantly higher 5-year survival rate than did NCDB (75.6% vs. 62.7%, respectively); however, GHS had a greater proportion of Stage 0 cases (63% vs. 47%), which would explain the GHS survival advantage.

30 Day, All-Cause Readmission Rates

Background – We assess readmission rates through two sources.

CMS 30-Day, All Cause Readmission Rates for AMI / CHF / Pneumonia – CMS reports 30 day, all-cause readmission rates for patients admitted with AMI, CHF, or pneumonia. Because they have complete claims data, they are able to identify Medicare patients readmitted to any hospital in the country. CMS calculates this data once annually and reports it publicly at www.hospitalcompare.hhs.gov. Current measures are for July 2007 through June 2010.

Premier 30-Day, All Cause Readmission Rates – We assess system, facility, and DRG business line level data for 30 day, all-cause readmissions to the same facility utilizing the Premier Clinical Advisor database. A readmission rate index is calculated that represents a risk-adjusted measure of the observed readmission rate divided by the expected readmission rate. A higher than expected readmission rate can be an indicator of poor quality care in the hospital, premature discharge from the hospital, or problems within the ambulatory care delivery system.

The collection and interpretation of this data is complex. Healthcare data is dynamic and a readmission rate can be one of the most variable measures in healthcare systems due to a variety of factors. In order to assess readmission rates, the medical record and coding of the care provided must be completed for both the first and second admission. Electronic data
queries will capture a readmission only after the patient has been discharged a second time. Thus if a patient has a long stay in the hospital during his second admission it could potentially be at least several months before the data query will capture and include that patient’s readmission in the data results. For this reason, the readmission rate for any given quarter may increase over time as more cases are identified. Thus, the readmission rate is continually updated as ‘new’ patients are captured in the data reports. Additionally, current methods do not allow the capture of patients readmitted to other facilities.

**GHS Goal** — Our goal is to have our readmission index be statistically better than expected.

**GHS Results**

CMS 30-Day, All Cause Readmission Rates for AMI / CHF / Pneumonia — CMS updates the annual risk-adjusted readmission rates for all 3 diseases at all 3 acute care hospitals. Current results on Hospital Compare reported in June 2011 are for July 2007 through June 2010. Our readmission rates for all 3 populations at Greenville Memorial Hospital (GMH) continue to improve slightly compared to results from the previous year. For the third consecutive year GMH has rated “better than the U.S. national average” in AMI and CHF. GMH was the only hospital in South Carolina to achieve this ranking for AMI and only one of two SC hospitals to achieve this “better than” ranking in Congestive Heart Failure. For Pneumonia GMH rated “no different from the U.S. national average. Hillcrest and Greer Memorial Hospitals are statistically no different from the national average for CHF, AMI and Pneumonia. Note that as the population becomes smaller around a specific disease, it is very difficult to show statistical significance. Additionally, as reported elsewhere, U.S. News and World Report has identified GMH as having the 5th lowest overall 30 day readmission rate for Congestive Heart Failure in the country.

Premier 30-Day, All Cause Readmission Rates — *Our system wide 30 day, all-cause readmission rate for July 2010 through June 2011 is 8.98% and our readmission rate index is 0.85 which is statistically significantly better than expected. Readmission rates for all 4 acute care hospitals are statistically significantly better than expected. DRG level readmission rate indices are presented for Greenville Hospital System as a whole with no major opportunities identified.*

**AHRQ Patient Safety Culture Survey**

**Background** — Key to Patient Safety is the development of an organization wide culture of safety. This is best measured using the AHRQ Patient Safety Culture Survey tool with standardized results and benchmarks. AHRQ publishes their benchmarks typically a year after they are obtained.

**GHS Goal** — For FY 2011, our GHS organization wide goal for the AHRQ Patient Safety Culture was to be in the top quartile using a rolled up measure of the entire survey tool by the fourth quarter of FY 2011. AHRQ reports their data a year after it is collected. Thus, the AHRQ benchmarks we used to set our goal
came from the 2009 AHRQ Report that included data collected in 2008 and 2009. We approximated the ~82\textsuperscript{nd} percentile as the half-way point between the 75\textsuperscript{th} and 90\textsuperscript{th} percentiles reported by AHRQ.

(1) < 50\textsuperscript{th} percentile < 61.00\% or lower
(2) 50\textsuperscript{th} to 74\textsuperscript{th} percentile 61.00\% to 66.99\%
(3) 75\textsuperscript{th} to ~82\textsuperscript{nd} percentile 67.00\% to 68.99\%
(4) ~82\textsuperscript{nd} to 90\textsuperscript{th} percentile 69.00\% to 70.99\%
(5) > 90\textsuperscript{th} percentile 71.00\% or higher

**GHS Results** – In December 2008, GHS took the survey for the first time. We surveyed only clinical staff and we had a response rate of 55.2\% with an overall score of 59.8\%.

In August / September 2010, GHS again took the survey, but this time did it electronically. We again surveyed only clinical staff and we had a response rate of 35.7\% (2,138 / 5,996) and an overall score of 62.4\%. This was a statistically significant improvement from baseline and approximated the 57\textsuperscript{th} percentile. For comparative purposes, the national mean was 62\%, median was 61\%, 75\textsuperscript{th} percentile was 67\%, and maximum was 85\%.

The FY 2011 survey was administered from August 15\textsuperscript{th} to September 5\textsuperscript{th}, 2011. This year, rather than surveying only clinical staff, we sent the survey electronically to all GHS employees, including physicians. This is how AHRQ usually does their surveys and typically results in lower response rates, but higher scores. Our response rate did decrease to 27.2\% (2,742 / 10,097). Unfortunately, while the overall score did increase to 62.8\%, it did not increase as much as we had anticipated and did not achieve our goal of 67\%.

The report provides a comparison to benchmarks derived from the 2009 AHRQ Report, which is our goal for FY 2011. We also have access now to the 2010 AHRQ Report and have provided those benchmarks for comparative purposes. AHRQ has noted a slight improvement in all benchmarks.

There are 12 domains.

- Previously, we had identified that we do particularly well in 3 areas: (1) teamwork within units; (2) the perception of management support for safety; and (3) supervisor and management expectations and actions. We continue to do well with teamwork within units and supervisor and management expectations and actions, but manager support for safety slightly decreased.
- Previously, we had identified 3 significant areas of opportunity: (1) the perception of a punitive culture; (2) handoffs and transitions; and (3) teamwork across units. These 3 areas continue to be a challenge although we did have a significant improvement in the perception of a punitive culture. This was our lowest performing domain in FY 2010 and we implemented a major program for “Just Culture” at our May Leadership Development Retreat followed by small group training for well over 200 managers over the past few months. A fourth opportunity now exists with a significant decrease in organizational learning and continuous improvement.
Individual hospital scores are provided across the 12 domains relative to the AHRQ mean. GMH worsened, especially within Marshall Pickens. Each of the satellite hospitals had improvements.

**National Patient Safety Goals**

**Background** – The Joint Commission (TJC) has established a number of National Patient Safety Goals (NPSG), which are process steps that should be implemented to ensure optimal patient safety. NPSGs are not publicly reported and they represent a self-audit. Consequently, there is no national comparative data. In 2011 the GHS audit process for NPSGs changed when a new methodology for data collection was developed. Previously, compliance was evaluated by a unit self-audit. Data is now collected by the Quality Management Data Collector Nurses. In the first quarter of 2011, the tools and methodology for data collection were developed. In the second quarter the tools and methodology were tested and validated. In the third and fourth quarters, data collection continued.

Data collection for Patient Identification and Suicide Risk are done by direct observation by the Quality Monitoring RNs. Data collection for Critical Results, Time Out and Medication Reconciliation are done by chart audits conducted by the Quality Monitoring RNs.

The currently reported NPSGs include the following:

- **NPSG 1 – Patient Identification**, defined as: Use at least two patient identifiers when administering medications, blood, or blood components; when collecting blood samples and other specimens for clinical testing; and when providing treatments or procedures. The patient’s room number or physical location is not used as an identifier. Label containers used for blood and other specimens in the presence of the patient.

  Audit methodology selected: Staff are observed while performing procedures for compliance with the requirements for patient identification including the use of barcoding technology.

- **NPSG 2 – Reporting of Critical Result**, defined as: Develop written procedures for managing the critical results of tests and diagnostic procedures, implement the procedures for managing the critical results of tests and diagnostic procedures and evaluate the timeliness of reporting the critical results of tests and diagnostic procedures.

  Audit methodology selected: A list of critical results is obtained from the laboratory; then, a chart audit is done for the documentation and timeliness (one hour or less turn-around time) of reporting critical results.

- **NPSG 3.06 – Medication Reconciliation**, defined as: Obtain information on the medications the patient is currently taking when he or she is admitted to the hospital or is seen in an outpatient
setting and compare the medication information the patient brought to the hospital with the medications ordered for the patient by the hospital in order to identify and resolve discrepancies. Provide the patient (or family as needed) with written information on the medications the patient should be taking when he or she is discharged from the hospital or at the end of an outpatient encounter and explain the importance of managing medication information to the patient when he or she is discharged from the hospital or at the end of an outpatient encounter.

Audit methodology selected: Medical charts are audited for evidence of a completed medication list on admission; reconciliation of the medication list; medications to be listed along with completed education of the patient and family at discharge.

- **NPSG 15 – Suicide Risk Assessment and Safety**, defined as: Conduct a risk assessment that identifies specific patient characteristics and environmental features that may increase or decrease the risk for suicide, and address the patient’s immediate safety needs and most appropriate setting for treatment. When a patient at risk for suicide leaves the care of the hospital, provide suicide prevention information (such as a crisis hotline) to the patient and his or her family.

Audit methodology selected: On the day this NPSG is audited, a list of behavioral patients present in the emergency department is obtained. A review of those patients’ chart is conducted to determine if the initial suicide risk assessment was completed, as well as evidence of on-going risk assessment.

- **Universal Protocol - Bedside Time-out**, defined as: Implement a preprocedure process to verify the correct procedure, for the correct patient, at the correct site, mark the procedure site (if applicable), and perform a time-out before the procedure.

Audit methodology selected: GHS policy stipulates that a Time-out will be performed at the bedside with all providers who will participate in the procedure immediately prior to the procedure and that the elements of the Time-out are documented in the medical record. A chart audit is done for the presence of the completed bedside time-out form on the charts of patients who have had a bedside procedure.

**GHS Goal** – Specific organization wide goals for the NPSGs have not been set, but best practice encourages that they should be carried out 100% of the time. TJC typically expects 90.0% compliance.

**GHS Results** – Quarterly results are presented in a graph format in the attachments. Current quarter results range between 72% and 91% with an overall score of 79.7%. These results are significantly lower than those previously reported through unit self-audits and we believe are much more accurate. Data will be rolled out to the organization and specific action plans put in place.
Hospital Acquired Conditions (HACs)

**Background** – The Center for Medicare and Medicaid Services (CMS) recently adopted eight of the ten Hospital Acquired Condition measures as part of their Pay-for-Reporting requirements. This initial set of eight measures will be publicly reported on the CMS Hospital Compare site by June 2011 as a downloadable file. The selected measures were established in collaboration with the CDC and other external agencies to determine conditions or events which were considered serious and reasonably preventable through application of evidence-based guidelines. The conditions are identifiable through claims data for Medicare fee-for-service patients only. Identification of inpatients with a HAC is determined through the use of qualifying ICD diagnostic codes and qualifying Present on Admission (POA) codes. In addition CMS has proposed to include the eight HAC measures as part of its Value Based Purchasing Initiative in 2014 which could potentially also lead to a financial risk for the organization.

The eight Hospital Acquired Conditions that CMS will begin to publicly report are:
1. Retained Foreign Object after surgery
2. Air Embolism
3. Blood Incompatibility
4. Pressure Ulcer
5. Falls and Trauma
6. Vascular Catheter-Associated Infection
7. Catheter-Associated Urinary Tract Infection
8. Poor Glycemic (blood sugar) Control

There is significant concern regarding the accuracy of these measures. They are all developed exclusively from claims data which is subject to errors in documentation and coding. In many situations, the HAC data is not correlating with much more specific data that is obtained using detailed condition definitions and chart audits. Additionally, in some circumstances, there are medically justified reasons for a HAC to occur. They may not be 100% preventable.

**GHS Goal** – No goal has been set at this time for HACs. Ultimately our goal will be to minimize the number of HAC’s for all eight measures across the system.

**GHS Results** – CMS’s initial HAC report covers the time frame October 2008 – June 2010. All HAC measures for Greenville Memorial Hospital were lower than the national rates except for Air Embolism (1 occurrence) and Catheter-Associated Urinary Tract Infection (GMH rate is 0.566 compared to a national rate of 0.316). Greer Memorial Hospital had two events for the measure “Falls and Trauma” resulting in a rate of 0.84 compared to a national benchmark rate of 0.564. All other HAC measures for Greer showed zero events. Hillcrest Memorial Hospital and Patedge Memorial Hospital both had no identified HAC’s during this time frame.

As with the AHRQ indicators the first step in assessing any of these measures is to review the accuracy of clinical documentation and coding. In July 2010 a process was implemented to concurrently review all
HAC cases, excluding CAUTI and CLABSI, to verify and validate the accuracy of the coding. Now that we have begun to correct any coding opportunities we will move to identify areas for improvement in documentation and quality. A HAC Steering Committee will be instituted in the near future that will oversee opportunities and action plans. An initial GHS report was presented to the Revenue Cycle in February 2011.

**AHRQ Patient Safety Indicators (PSIs)**

**Background** – A method of assessing inpatient patient safety and complication events is to use the Agency for Healthcare Research and Quality (AHRQ) Patient Safety Indicators (PSIs). The PSIs are a set of measures that provide perspective on hospital quality of care using hospital administrative (claims) data. The indicators are used to screen for potential adverse events occurring during hospitalization following surgeries, procedures and childbirth. They are based on evidence based medicine and use complex algorithms that are risk adjusted. While the PSIs were intended for internal screening to identify potential areas of improvement opportunity, they are now frequently being used to rate the quality and safety of care delivered by hospitals.

**GHS Goal** – No goal has been set as these are screening tools. For each PSI, we would like the actual measure to be lower than the comparative benchmark.

**GHS Results** – The data source for AHRQ PSI data is provided by CMS on an annual basis to all participating hospitals across the country and is based on the timeframe, October 2008 – June 2010. The benchmarks in the CMS annual report are derived from their national database. At this time CMS is scheduled to publicly report on their Hospital Compare website the following six AHRQ PSI indicators:

- **Patient Safety Indicator**
  1. Iatrogenic Pneumothorax
  2. Post op PE or DVT
  3. Post op Wound Dehiscence
  4. Accidental Puncture or Laceration
  5. Death among Surgical Inpatients with Serious Treatable Conditions
  6. Post op Respiratory Failure

Although each facility has a one or two measures that are higher than the CMS National average only one of these was statistically significant. Greer Memorial’s risk-adjusted rate of 21.71% for the indicator ‘Post Op Wound Dehiscence’ is statistically significantly higher than the CMS national average and will require further investigation. A Six Sigma project has been launched to develop a methodology to improve patient safety indicators. The initial focus will target the Accidental Puncture or Laceration Indicator but will later include the measure Post Op Wound Dehiscence.
Event Reporting

**Background** – Critical to the ability to improve quality and prevent adverse events is the need to identify errors and near misses, analyze and understand opportunities for improvement and implement targeted improvement initiatives. This identification and measurement of actual and potential adverse events is critical to the development of a safety culture and a high reliability organization.

The search for opportunities for improvement comes from data across a spectrum that includes patient complaints, reported unsafe conditions, near misses and adverse events, the investigation of adverse events and malpractice litigation. Efforts to systematically identify potential opportunities from each component of data are underway. What is presented here is some very preliminary unsafe condition / near miss / adverse event reporting data.

Unsafe conditions represent issues that present the potential for patient safety issues if not corrected and include such things as environmental issues, equipment safety, infrastructure failure, and security issues. They are not patient specific. The ability to proactively identify and trend such issues via the event reporting system is new to GHS.

Near misses and adverse events both relate to the care of a specific patient. Near misses are potential events that were caught and prevented prior to the patient being involved. An adverse event occurs when the event or care did involve the patient. The adverse event may or may not have caused any patient harm.

GHS has used an on-line event reporting system since 2009. It is reported in the literature that typically only 5 to 10% of errors are actually reported in hospitals. This is also consistent with baseline data from other high risk industries. If this is true, assessment of errors is being done with 90-95% of the puzzle missing! Without this additional information, we lack the ability to accurately identify trends and to proactively isolate and solve problems and system issues. As part of our ongoing commitment to advancing health care quality and patient safety, GHS converted to University HealthSystem Consortium’s (UHC) Patient Safety Net (PSN) for event reporting in late December, 2010. This web-based tool provides a mechanism to identify, catalogue and analyze patient complaints, unsafe conditions, near misses and adverse events, which can then be systematically corrected to improve outcomes and prevent patient injury.

It probably will not surprise you to learn that of the 1.6 million event reports in the UHC Patient Safety Net, only 2% of these were entered by a physician or resident. Physicians are a critical member of the care team and as such, essential to the delivery of safe, high quality care yet, when it comes to utilizing an established mechanism for identifying unsafe conditions, near misses and actual incidents, physicians and residents seem to be late adopters. The low physician reporting level is a national phenomenon and one that GHS is working to change. *Registered Nurses continue to submit most event notification reports (84%). Medical Staff Reporter rate remains a low 3.1%.* Use of the PSN has contributed to a significant improvement in reporting and allows GHS to participate in the UHC Patient Safety Organization (PSO).
**GHS Goal** – The current goal is focused on increasing the number of reports received from front line staff. This is measured as a rate for inpatient settings (number of events reported per 1000 patient days) and as a rate for outpatient settings (number of events reported per 10,000 procedures). The current goal is set at the 75th percentile of Event Reporting compared to comparable size hospitals in the UHC database. Thus, the goal is for the inpatient Event Reporting Rate is to be at or above 40.18 reports per 1000 patient days for each of our facilities. No benchmark has been established for outpatient event rate as published comparison data is not available.

**GHS Results** – Current results are for the third quarter of CY 2011.

**Frequency** – Reporting rates continue to steadily increase. As a system, GHS continues to be below the UHC 75th percentile of 40.18 per 1000 patient days with a current rate in 3QTR11 of 31.9 (up from the baseline in 2010 of 11.9). Event Reporting for 3QTR11 increased 131% year-over-year. The significant increase system-wide can be attributed to a focus on education for medical and other staff about event reporting coupled with event reporting being included in LEM goals. Additionally, staff are reporting that the new PSN system is easier to use than the previous system. North Greenville, Hillcrest, Patewood, and Greer continue to exceed the UHC 75th percentile. There has been a significant increase (36%) in outpatient reporting rates this quarter attributable to continued education about event reporting in physician practices.

**Severity** – For the quarter reported, the rate of events with moderate to severe injury remained a small percent of the total reports and is in line with prior months. **Inpatient events with harm in 3QTR11 were 2.5%, up from 2.4% the prior quarter.**

**Type** – Event type allows reporting of patient and visitor events, as well as unsafe conditions (which do not pertain to a specific patient or visitor). In addition, the new event reporting system includes approximately 300 event types; the prior system had only 16 event types. The most common event types reported were:

1) **Care coordination and communication events** showed a statistically significant increase in both proportion of this event to total events and in rate per 1000 pt days. For 3QTR11, the proportion increased to 8.0% from 5.2% the prior quarter. Rate of care coordination and communication events per 1000 patient days was 2.94 this quarter, up from 1.70 in the prior quarter.

2) **Laboratory test** (23.5%—a decrease from 23.7% in the prior quarter)

3) **Falls** (13.7%, which is a decrease from 16.6% in the prior quarter). It appears that fall frequency remains fairly steady. Although this could be attributable to the increased focus on event notification, with this type of event easily recognized and reported. However, comparison to other organizations in the industry is unclear. In September, 2009, UHC did report on falls in CY2008, citing fall rates for all organizations of 2.98 (per 1000 patient days). The GHS fall rate of 4.2 for 1QTR 2011 and 4.3 for 2QTR and 3QTR
2011 appears to be statistically higher. It is not clear if the frequency of falls is really higher at GHS or the higher rates reflect underreporting at similar institutions. Visitor slip/trip/fall rates continue to rise slowly. The harm rate for fall event types reduced slightly this quarter.

4) Medication related events (down to 12% from 13.7% the prior quarter).
5) Skin integrity events (pressure ulcers and skin tears) (decreased to 7% from 10% in the prior quarter).

The top 3 events types remain unchanged from prior quarters. Many new event types were included in this quarter in lower volumes.

The unsafe conditions primarily consisted of events categorized as other and ranging from patient identification concerns to throughput and transfer concerns.

This information is going to require significant work to understand the opportunities for improvement. Of critical note is that the relative proportions of types of events may not be reliable. There is a significant bias on the part of staff relative to past training to report some types of events and not others. For example, staff are well trained that patient falls always need to be reported. This is in contrast to other types of events which might not be top of the mind for staff to report.

**Infection Prevention**

**Background** – GHS has a comprehensive Infection Prevention and Control Program which encompass prevention and control practices, targeted ongoing infection surveillance, and process improvement to minimize infection risk. Targeted healthcare associated infections are also publicly reported in South Carolina and are displayed on the SC DHEC web-site. For 2010 / 2011, top priorities continue to include, hand hygiene, central line associated bloodstream infection (CLABSI), ventilator-associated pneumonia (VAP), surgical site infections (SSI) and multi-drug resistant organisms (MDRO). Physician led, collaborative teams are established to reduce infection risk. This report does not reflect all of the surveillance and work of the Infection prevention program, but focuses on the top priorities. Newborn / Neonatal Intensive Care Unit (NBICU) data are not included in this report, but will be added in the future reports as this is developed. The next quality report for 2012 will introduce for the first time, catheter associated urinary tract infection (CAUTI) and Clostridium Difficile data as well as steps to address and improve these healthcare associated infections.

**GHS Goal** – Strive to eliminate infections. Infection rate targets are established annually to promote continuous improvement. The benchmark is typically obtained from the National Healthcare Safety Network (NHSN), a national surveillance program sponsored by the CDC, in which GHS participates. There are no national benchmarks for hand hygiene and multi-drug resistant organisms. Targets were established for these infections based on internal data.
Hand Hygiene

**Background** – Hand Hygiene remains the hallmark of infection prevention and has been an identified GHS organization wide goal beginning in FY 2010. Compliance rates around the country typically run around 30% to 70%. There are no national benchmarks, but the literature suggests a critical target of 90% compliance. Dr. Kevin Gilroy leads the hand hygiene improvement team.

**GHS Goal** – GHS is in the third and final year of this organizational goal. The target for FY 2012 is 90%.

**GHS Results** – The organization continues to dedicate two RNs to direct hand hygiene observations. During quarter 1 of FY 2012, hand hygiene compliance rates have been above 90%, ending with the monthly highest compliance rate thus far of 94.2%. The data indicates that healthcare providers clean hands most frequently after patient body fluid contact and less frequently before aseptic procedures and before touching the patient. The data indicates continued gradual improvement in the areas of opportunity. Nursing staff (nurses and technicians) and therapy staff are more likely to clean hands than other healthcare provider groups. We are preparing to transition to an electronic form of monitoring in the near future which will utilize a hand hygiene index to monitor hand hygiene behavior. The index is based on the number of dispenser activations (hand hygiene activity) divided by the expected hand hygiene opportunity.

**Specific Issues** – Currently, GHS is conducting a hand hygiene validation study to validate statistical models to project hand hygiene opportunities which were based on research conduct by GHS (published during February 2011 in the American Journal of Infection Control and Epidemiology [AJIC]). See comments on measurement methodology below. The organization has implemented a campaign to encourage open communication about hand hygiene behavior which can be accomplished by calling the person’s name to get their attention and then using a high five signal or by stating “Join the Battle”. The use of communication cards by direct observers to give feedback to healthcare providers about their hand hygiene practice is now being used on all GHS campuses as well. During 2012, live, interactive training of front line staff to address hand hygiene compliance opportunities will be conducted.

**Comment on measurement methodology**: There are several potential ways to measure hand hygiene compliance. The classic method is to use “secret shoppers” unknown to the healthcare workers. Because these observers cannot necessarily observe care in the patient’s room, they usually are limited to measuring hand hygiene only when the healthcare worker enters and leaves the room. This is the methodology used by Novant when it was able to achieve a 90% compliance rate over 3 years. It also is the methodology we used to identify the baseline of 53.8% compliance in June to September 2009.

A second method is to have the observer introduce themselves to the healthcare worker and follow them into the room. We are currently using this method, but applying it to the World Health Organization’s more stringent criteria around the “5 moments of hand hygiene”. We believe the 5 moments are more scientifically based and important as we have documented the known transmission of infection to patients from bacteria present in their environment in their room. Washing hands only
on entry and exit from the room will not prevent these episodes of infection. The down side to this method is its complexity and the introduction of the Hawthorne Effect, i.e. compliance increases when the healthcare worker knows they are being observed. Thus, the two methods are both valid, but likely will deliver different compliance rates. A critical factor is to measure consistently.

At GHS, we are engaged in a significant research study around hand hygiene compliance. We have identified the Hawthorne Effect, but have also identified that it is not complete. That is, even with this method, we still have a 10% noncompliance rate. Nationally, there is a trend towards the second method of observation, although the 5 moments of hand hygiene are often not rigorously used.

The research being performed here centers around an electronic method to identify the number of times a healthcare worker uses hand gel or soap during a patient encounter. We have developed statistical models to identify the average number of opportunities a healthcare worker should clean their hands based on the WHO 5 moments of hand hygiene during a patient encounter. Thus, the combination of use of hand cleansing agent (numerator) divided by the expected opportunities for hand cleansing (denominator) provides us with an index to measure hand hygiene in real time and across many different units every shift. We are in the process of doing validation studies to see how the various methods correlate mathematically.

The key take away is that none of the methods is capable of determining the actual compliance rate across the organization. Thus, the absolute compliance rate is not as important as the trend towards increased compliance and the consistency and validity of the measurement methodology.

Surgical Site Infections (SSIs)

Background – We track a number of surgical site infection rates which are required by South Carolina law to be publicly reported on the DHEC website. The data in this report is presented in terms of the Standardized Infection Ratio (SIR), which is a statistical ratio of the observed infection rate divided by the expected infection rate. The confidence intervals of each SIR must cross 1.0. SIRs above 1.0 demonstrate a worse than targeted infection rate, while those below 1.0 are better than targeted.

NHSN has recently changed the methodology for risk adjustment of SSIs to include all procedure-level data collected on each patient (i.e., patient age, gender, duration of surgery, diabetes, trauma, etc.). The prior risk-adjustment method was based solely on the ASA (American Society of Anesthesiologists) physical status classification system (i.e., 1=normal healthy patient, ..., 4=severely ill patient). This new methodology represents a significant improvement in risk-adjustment. NHSN used the data from 2006-2008 to derive the new risk adjustment models and then applied them to data from 2009 forward. Four surgical procedures are presented with the new method for determining expected numbers of infections -- coronary bypass, abdominal hysterectomy, hip replacement and knee replacement. All other procedures have not yet been updated to the new methodology and use only the ASA classification.
**GHS Goal** – We want to have a Standardized Infection Ratio (SIR) no different or less than 1.0 for each surgical procedure we monitor. This is indicated by the confidence interval crossing 1.0 (no different than expected) or lying completely below 1.0 (statistically better than expected).

**GHS Results** – Data is reported for January 2009-June 2011.

During January – June, 2011, one surgery type, C-Section, had a SIR that was statistically less than 1 (fewer infections than expected). Eight of 9 surgery types have SIRS that were not statistically different from 1 (no different than expected number of infections). These surgery types were coronary bypass grafting (CABG), bariatric surgery, small bowel surgery, abdominal hysterectomy, ventral hernia repair, knee replacements and colon resections and hip replacement. Of note hip replacement surgery had a SIR statistically higher than 1 (higher number of infections than expected) during 2010 which has seen improvement during 2011.

**Specific Issues:** The GMH campus evidenced a reduction in hip SSIs from the previous year. On the GrMH campus, an increased number of hip and knee joint replacement SSIs occurred during the first 6 months of 2011. Even so, the SIR for both hips and knees were not statistically different from 1. An investigation was conducted and did not reveal a common source for all infections, but opportunities for improvement were identified and a plan of action implemented. The focus of follow-up involved the surgical skin preparation process, environmental cleaning and disinfection/sterilization of instruments. Infections have reduced since that time, and continue to be closely monitored.

**Central Line-Associated Bloodstream Infections (CLABSI)**

**Background** – Historically, CLABSI rates at GMH and NG LTACH have been significantly higher than the NHSN mean on many units. During the past three years, the CLABSI Elimination team under the leadership of Dr. Bill Curran has focused on the implementation of evidence-based interventions including a central line insertion check-list and more recently a maintenance bundle.

**GHS Goal** – We have historically set our goals at the NHSN mean, but as this target is reached, we will be increasing our goal to the 75th percentile and then higher as we improve. Ultimately, the goal is to eliminate all CLABSI infections. The NHSN mean for the Adult CLABSI is 1.66 / 1000 central line days. PICU pooled mean is 2.2 / 1000 central line days.

**GHS Results** – The data in this report is presented as quarterly CLABSI rates for GHS wide adult care and PICU areas. The collaborative efforts of the ICU and Non-ICU CLABSI Elimination teams led to a continued reduction in the GHS Adult CLABSI rate to 1.37 / 1000 central line days for FY 2011. This rate is less than the NHSN pooled mean of 1.66 / 1000 central line days, but higher than the top quartile rate of 0.26 / 1000 central line days. FY 2011 data indicate that 98 adult CLABSI has been prevented since July
2008. This represents an estimated 10 to 20 lives saved and an estimated cost savings of approximately 3.92 million dollars.

The 2010 Pediatric Intensive Care Unit (PICU) CLABSI rate was 2.8 / 1000 central line days (2 infections / 710 line days) which is at the NHSN pooled mean. During January – December of 2011, the CLABSI rate was 1.9 / 1000 central line days (1 infection in 519 line days), which is less than the NHSN pooled mean of 2.2.

**Ventilator-Associated Pneumonia (VAP)**

**Background** – Significant effort has been underway to eliminate ventilator associated pneumonias. The VAP Process Improvement Team led by Dr. Armin Meyer, modified the oral hygiene procedure to include the use of Chlorhexidine Gluconate (CHG). The expanded use of the CASS tube (continuous aspiration of subglottic secretions), head of bed elevation focus and extensive education has led to significant VAP rate improvement. The data presented is in terms of actual infections per 1000 ventilator days.

**GHS Goal** – The goal for 2011 is the NHSN mean for the Adult ICU which is 2.49 / 1000 ventilator days. The Pediatric ICU the goal is 1.8 / 1000 ventilator days. LTACH 2011 VAP goal is 0.65 / 1000 ventilator days.

**GHS Results** – The GHS wide adult VAP rate is presented by calendar year beginning in 2007. Data is presented in quarterly rates for adult GMH and NG Adult VAP and pediatric ICU VAP.

GHS-wide, the adult VAP rate for 2011 is 2.07 / 1000 ventilator days. Since 2007, GHS has prevented 79 VAPs, saving an estimated 16-24 lives and 3.16 million dollars.

The 2011 GMH ICU VAP rate is 2.14, which is lower than the NHSN pooled mean and slightly higher (but not statistically significant) than the 2010 GMH VAP rate of1.98 / 1000 ventilator days. During the 4th quarter of 2010 and the 1st quarter of 2011, an increase in VAP was noted. An in-depth review of cases did not identify a common source of infection. When looking at VAP process bundle components, it was identified that there was a reduction in compliance with head of bed elevation (92%) and oral care documentation (90%) only during March 2011. The VAP PI Team discussed other opportunities that could explain the increase which resulted in the identification of sedation vacation compliance. The VAP rate for FY 2011 quarter 4 was 0.78/1000 ventilator days which indicates significant improvement following the rate increase.

The 2010 Pediatric ICU VAP rate was 0 / 1000 ventilator days and is 0 / 1000 ventilator days for 2011. The PICU has gone 1,000 days without a VAP (from May 5, 2009 to December 30, 2011).

Greer Memorial, Hillcrest Memorial and Patewood Memorial have a VAP rate of 0.
North Greenville Long term Acute Care VAP rate has steadily declined over the past several years, from 3.96 / 1000 ventilator days during 2008 to 1.32 / 1000 ventilator days during 2011. This reduction is a result of a focus on the VAP bundle which includes head of bed elevation and oral hygiene.

Multi-Drug Resistant Organisms

**Background** — Multi-drug resistant organisms are bacteria that have mutated over time to become resistant to most antibiotics. They primarily include Methicillin Resistant Staphylococcus Aureus (MRSA), Vancomycin Resistant Enterococcus (VRE), and Clostridium Difficile. Individuals can be colonized with the bacteria, meaning that the bacteria are present, but not causing an infection. The bacteria can also cause very serious, life-threatening infections. We are seeing more individuals come into the hospital already colonized with the bacteria. Generally, it is very difficult to get rid of this colonization. No national benchmarks for incidence of new infections are available.

Throughout 2009, MRSA PCR (polymerase chain reaction) testing was implemented on the GMH campus, which allows us to rapidly determine patients who are colonized with the bacteria. All chronically ill adult patients admitted to GMH and NGH are currently being tested for MRSA. This screening facilitates the placement of patients with MRSA colonization into contact precautions to prevent transmission to other patients. Patients with a history of MRSA whose PCR screening was negative are taken out of precautions.

**GHS Goal** — Goals have been established based on GHS historical data for each facility as there are no national benchmarks. This report focuses on the GMH healthcare associated (HA) MRSA infection rate whose goal is to maintain a stable rate. Future reports will include data from other GHS locations.

**Results** — GMH MRSA healthcare associated infection (HAI) rate data is reported in quarterly rates for 2011.

The quarterly GMH MRSA HAI rate during 2010 remained stable during 2010. During the first quarter of 2011, a cluster of MRSA bloodstream infections was identified on one nursing unit, which resulted in an investigation and focus on control measures. Molecular typing of the MRSA isolates revealed that 3 of the infections were from a common source. Healthcare worker culturing was conducted and those found nasally positive for MRSA were treated with nasal Bactroban. Since that time, there have been no further HA MRSA infections in this location. The follow-up actions resulted in a decline. During the 2nd quarter of 2011 the rate of MRSA HAI infection declined to 0.35 / 1000 patient days from the previous quarter of 0.42 / 1000. The 2001 MRSA HAI rate was 0.39 / 1000 patient days which is higher that 2010 (0.33), but not statistically significant. Approximately 11% of adult patients cultured for MRSA PCR on admission were positive (1980 / 17241). Patients colonized or infected with MRSA continue to be placed in contact precautions as a control measure.