Overview:

Pneumonia is the ninth leading cause of death in the United States (CDC, 2009). The Joint Commission National Hospital Quality Goals identify a variety of core measures that are recommended best practices for Community Acquired Pneumonia (CAP) patient care. A set of these measures focuses on improving CAP patient outcomes through the use of proven antibiotic regimens based on the patient’s needs and medical status. These regimens are based on guidelines agreed upon by Center for Disease Control (CDC), The Infectious Disease Society of America (IDSA), The Canadian Infectious Disease Society/Canadian Thoracic Society (CIDS/CTS), and the American Thoracic Society (ATS). The objective purpose of this project was to improve our success in achieving these national hospital quality goals.

The work was completed across emergency services, surgical and medicine inpatient units and in collaboration with pharmacy services. The team included emergency services, medicine and surgical inpatient unit physicians, frontline nurses, nurse managers, pharmacists, information technology experts, and a performance improvement clinical data abstractor and project manager. The work done within this group was in alignment with organizational goals of a Patient-Centered Care System, Quality, and Stewardship.

The 2010 Pneumonia team implemented an order set in the emergency services area which contributed to the achievement of core measure PN 6b: Administration of appropriate initial antibiotic for CAP immunocompetent Non-ICU patients at a success rate of 100% of all sampled cases achieving the right antibiotic in alignment with guidelines every time. The 2011 Pneumonia team was expanded to include members from inpatient units to review and consider a single hospital wide Pneumonia Antibiotic order set to improve PN 6a: Administration of appropriate initial antibiotic for CAP immunocompetent ICU patients while maintaining the gains in PN 6b, to improve the overall PN6 measure which incorporates both ICU and Non-ICU patients.
Aim Statement (max points 150):

The goal of this project is to improve patient care practices related to Community Acquired Pneumonia as indicated by adherence to best practice guidelines for administration of appropriate antibiotics to patients based on their condition and needs and achievement of a success rate of 97% or higher for the Pneumonia Core Measures 6, 6a, and 6b by September 30, 2011.

Measures of Success:

The percentage of audited charts compliant with each standard achieves success rate of 97% or higher.

Use of Quality Tools (max points 250):

- Brainstorming

  Order sets are too complicated.

  Current order sets are not being used.

  Azithromycin could be added to formulary as standard.

  Has to go through the P&T committee

  Easier Access Needed

  PN 6(a&b): Lack of adherence to Initial ABX selection for CAP from CM Guidelines

- Current State assessment Pneumonia Order Sets
- Chart review
- Control Charts (see results section)
Interventions (max points 150 includes points for innovation):

Building on the success with the 2010 Pneumonia Team of change in the medication formulary and initiation of the ED Pneumonia Order set, the 2011 Pneumonia Team, worked to streamline and standardize a house-wide Pneumonia Antibiotic Order Set that all physicians would use across the emergency room and in-patient units. This expanded team included emergency services, medicine and surgical inpatient unit physicians, frontline nurses, nurse managers, pharmacists, information technology experts, and a performance improvement project manager.

The order set was built based on recommended guidelines including sections for a preferred regimen selection, alternate regimen for beta-lactam allergies, and suspected MRSA sections for CAP: General Ward Admission, CAP: ICU Admissions and Psuedomonas NOT suspected, CAP ICU Admissions and Psuedomonos Suspected, and HCAP. Each area provides a brief explanation as appropriate and a link to RISK Factors for Drug Resistant Strep Pneumoniae and MRSA to help identify which section to use. It also allows the physician the option of entering other Ad-hoc orders without leaving the order set.

The order set changes were reviewed by the physician representatives of each service line, the nursing representatives on the Pneumonia team, by the Pharmacy & Therapeutic committee of the hospital, and was vetted through the Information Technology user groups.

The 2010 Pneumonia Team who achieved the initial results on the core measure began in April 2010 through January 2011. The updated 2011 Pneumonia Team began this process in January of 2011 and began discussions for the order set revision in May 2011 with implementation the new Pneumonia Antibiotic order-set in October 2011.
**Results (max points 250):**

**PN 6:** Administration of appropriate initial antibiotic for CAP immunocompetent ICU and Non-ICU patients moved from a mean success rate of 84% to 98% as of August 2010 with initial ED CAP antibiotic order set. Then with discussion and implementation of the house wide PN antibiotic order set the mean success rate of 100% was achieved by July 2011 and is currently sustained through March 2012.
**PN 6a:** Administration of appropriate initial antibiotic for CAP immunocompetent ICU patients moved from a mean success rate of 22% to 79% as of August 2010 with implementation of initial ED CAP antibiotic order set. Then with discussion and implementation of the house wide PN antibiotic order set the mean success rate of 100% was achieved by July 2011 and is currently sustained through March 2012.
PN 6b: Administration of appropriate initial antibiotic for CAP immunocompetent Non-ICU patients moved from a mean success rate of 95% to 100% as of May 2010 with discussion, education, and the implementation of the initial ED CAP antibiotic order set and is success is currently sustained through March 2012.

Revenue Enhancement /Cost Avoidance / Generalizability (max points 200):

Beginning in FY2013, hospitals not meeting clinical and patient satisfaction national benchmarks may see Medicare revenue decline as much as $1-5 million under the Value Based Purchasing (VBP) program. This VBP scoring system is based on a two approach scoring system based on either the hospitals achievement of the Target rate or the amount of improvement from the previous measured period. Details associated with the scoring system are still in discussion. However, it is safe to say the improvement from the baseline data of 84% success rate to 100%, with current data on the PN 6 core measure, would positively impact the overall VBP score for the Hospital improving the likelihood of less reduction of revenue.

Conclusions and Next Steps:

Education of physicians and implementation of the revised Pneumonia Order sets, initially in the Emergency Department and then Hospital Wide appears to have
assisted in achieving the desired goal of greater than 97% of all audited charts for these core measures being in compliance with the use of the guidelines for initial antibiotic administration for community acquired pneumonia patients. Currently, the hospital has achieved 100% for 11 months of the currently available data.

Lessons Learned
- If you can minimize the amount of the process that must rely on human memory/manual change then you will increase chance for improvement.
- Buy-in from outside of team is essential – without full buy-in results will not be sustained.
- Having the right people involved is critical.