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Topic: Community Acquired Pneumonia (CAP)

Categories: Leadership/Planning/Human Resources; Patient and/or Community Focus; and Process Management/Organizational Performance Results

Focus on Community-Acquired (CAP) Pneumonia Care

Overview:

CAP was identified as an area for improvement after reviewing information from the Centers for Medicare Services regarding the variation in care for CAP Medicare patients as well as our organizational baseline data. One of the organization's strategic initiatives is to become a regional referral center with an emphasis on quality care for the services provided. Improving care for community-acquired pneumonia was an important step towards achieving this strategic goal. Core staff (stakeholders) included representatives from infection control, medical staff, quality, pharmacy, nursing, and case management. Key concepts learned included the importance of interdisciplinary input, continuous assessment, the need to build in processes to sustain gains, and keeping the focus of our efforts on the value for patients. Faith Regional Health Services uses the PDSA improvement cycle. The gains we have achieved took place over a four year period with additional areas of focus identified for future improvement efforts. Initial indicators included administering antibiotics within four hours of admission, blood cultures obtained before antibiotics were given, and measuring oxygenation. This application and appendices will show that improvement was attained not only in these three indicators but also in others that were added during the improvement initiative.

Criteria 1: Leadership, Planning, and Human Resources

Under the current leadership and staff, Faith Regional Health Services (FRHS) is evolving from two community hospitals to a regional healthcare system. As a mission-

based system, Faith Regional is organized to ensure that the primary focus of the organization remains at all times on the individuals who access the organization for services and the long-term health of the communities that are served by the organization. As a nonprofit organization, Faith Regional Health Services' first responsibility is to the individuals served through the healthcare services that are provided. All programs or services must first demonstrate that they will help Faith Regional fulfill its mission and support the core organizational values before they are considered for implementation.

The Board of Directors of Faith Regional has the responsibility for the ongoing operation and a single management team (Executive Team) assumes daily responsibilities and meets with the Board monthly. Faith Regional is divided into six separate areas of organizational focus (divisions) to provide for effective involvement of all staff members in the organization and each member of the Executive Team (vice-president) is responsible for one of the divisions. While each division is directly responsible for a specific role within the organization, each vice president is also responsible for facilitation of interdepartmental initiatives throughout the organization. Through these interdepartmental relationships, programs and initiatives are developed in an effort to achieve the organization's strategic objectives.

Faith Regional uses the "M.O.S.T" model for strategic planning to ensure that the strategic plan is based on the organization's mission and values. The acronym M.O.S.T. stands for a) Mission, b) Objectives, c) Strategies, and d) Tactics. Following development of strategic objectives by the FRHS Board of Directors, the administrative

team begins the process of identifying specific implementation steps and areas of responsibility for developing those strategies. This process occurs with input from market research and departments within the organization in an effort to ensure ongoing communication and appropriate resource allocation for each strategy. In recent years, Faith Regional has completed a self-assessment based on the Baldrige criteria that has also been used in the strategic planning process. At the same time, development of the fiscal year budget occurs. During the budget process, specific financial resources are designated for accomplishment of each strategic objective and implementation timelines are proposed. Following completion of the budget process and identification of objective-specific strategies, departments, work teams and/or individuals are identified and assigned the task of formulating tactics and processes to facilitate implementation of the strategic objectives. Strategic progress reports are prepared quarterly by the Executive Team for board review and an annual review of all progress toward the strategic objectives takes place prior to the next year's budget process. This review process ensures that the resources to achieve the objectives are adequate and that expectations for outcomes are well-defined.

One of Faith Regional Health Services' strategic planning objectives is to maintain a competitive advantage in the market. As external factors continue to play more of a role in the healthcare environment, a primary strategic objective of Faith Regional Health Services is to ensure that the organization maintains a competitive market advantage through the implementation of programs and systems to maintain state-of-the-art capabilities, whether from a clinical, financial or strategic perspective.

Monitoring of evidence-based quality indicators and implementation of improvements are two of the keys to obtaining this objective. Equally important from a leadership perspective is recognition for achievements, sharing what we have learned with staff and other healthcare providers, and ensuring that we sustain our gains. Activities undertaken in this regard for community-acquired pneumonia include:

- Sharing quarterly hospital quality indicator measurement reports with patient care units, department directors, Medical Staff Quality Committee, and the Board Quality Committee
- Sending commendation letters and a "Faith Buck" to physicians who achieved 100% compliance with all quality indicators in the pneumonia care measure set
- Presentation of information at a booth at the annual mandatory Nursing Skills Days that includes quality measures and supporting evidence-based research information, our historical and current outcomes data, the improvement interventions that have been implemented to date, and an opportunity for questions and answers, and
- Presentation of information regarding the pneumonia care quality measures and importance of each, protocols, and our pneumococcal vaccination process at the New Nurses Orientation monthly sessions.
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Criteria 2: Patient and Community Focus

Faith Regional Health Services employs a variety of market and strategic research resources to obtain and respond to customer and market expectations. Information sources include patient outcome data, patient satisfaction information, patient migration patterns, market and consumer research, national quality outcomes data, feasibility studies, financial analysis data, community focus groups, telephone interviews, and contacts from the organization's web site.

The information received from the state and regional QIO organizations is an efficient and beneficial service to our organization. Faith Regional has taken the opportunity to participate in the patient care collaboratives in order to not only improve the care for

our patients but to also interact with other Nebraska hospitals to "share openly and steal shamelessly" best practices and successes. By partnering with the QIO and other hospitals, we are able to not only review our historical data for improvement opportunities but also to use comparative information in order to improve our services. For instance, in 2004 two staff members from Faith Regional gave a presentation of pneumonia care interventions implemented, protocols developed, and lessons learned at a CIMRO workshop for rural hospitals. Information obtained from the JCAHO website shows that the Nebraska JCAHO hospital average compliance rate for each pneumonia care quality indicator is higher than the national average rate. The average rate for the top 10% Nebraska JCAHO hospitals is higher in six out of the eight indicators than all JCAHO hospitals nationwide. This may be attributed to the willingness of the Nebraska hospitals to share their information in order to improve care across the state.

To focus on the patient and the community, the core members of the pneumonia care improvement team recognized the importance of implementing practices across the continuum of care that supported the evidence-based research for quality pneumonia care outcomes. Therefore, three specific recommendations were implemented:

- Primary care physicians receive a letter monthly informing them of the names of their patients (as identified by the patient) who were vaccinated for pneumonia during their hospitalization and the date of that vaccination
- The patient transfer sheet for patients transferring to a nursing home was revised to include the date that the pneumonia vaccination was given
- Patients receive an education sheet regarding the facts of pneumococcal vaccinations if they are a candidate for the vaccination during their hospitalization.

In 2004, FRHS added a feature to their patient satisfaction random sampling process so that patient information can be accessed by DRG. The baseline measurement is that patients are most satisfied with information received from physicians and nursing staff as well as how well the staff worked together to care for patients. Our admission and discharge processes have the most room for improvement. With this measurement, patient satisfaction will be incorporated into future focus efforts for pneumonia care.

Criteria 3: Process Management/Organizational Performance Results

Faith Regional formed its CAP improvement team in 2000 after reviewing initial (1999) data submitted to the QIO. Core team members involved staff from both the infection control and quality departments. The following factors were identified as key to the team's aim:

- Engaging the stakeholders
- Determining the priorities or phases
- Keeping the patient in sight (showing value)
- Being flexible, and
- Using evidence-based and accurate information for continued credibility.

A physician champion was not yet identified so the Adult Primary Care (APC) Medical Staff Committee was utilized as a "member" of the team.

The initial report from the QIO was shared with the Adult Primary Care medical staff committee. Our baseline data was as follows:

CAP Measures	Baseline Data
Antibiotics given within four hours of admission	55%
Blood cultures obtained before antibiotics given	45%
Oxygenation measured	82%

The hospital staff team members were directed by the APC Committee to draft a protocol that would be reviewed by the medical staff for implementation. After development of a protocol and sharing information regarding CAP with the members of the Infection Control Committee, this committee in conjunction with our infectious disease consultant ultimately functioned as our first medical staff champion to encourage use of the protocol and to ensure that the data was consistently reviewed.

The initial focus of the team was advice regarding the flu/pneumonia vaccine, oxygenation measurement, and antibiotic timing. The first order set (protocol) included the following:

1. Documentation that patient had received the influenza and/or pneumonia vaccine
2. Oxygenation measured and/or ABGs
3. Blood culture prior to administration of antibiotics
4. Antibiotics started in ER or if direct admit, within 2 hours of admission
5. At dismissal, instructing the patient to follow-up with their primary care physician for the influenza/pneumonia vaccine

Since we found that the majority of patients were admitted for community-acquired pneumonia through the Emergency Department, initial interventions after implementing the protocol and analysis of the data were to add an oxygen assessment to the Emergency Department admission form and to begin sharing the data with nursing staff at unit meetings. The latter was important for one of the key factors, keeping the patient in sight, and to provide feedback regarding our pneumonia care. The new measurements for the initial three indicators were:

CAP Measures	**2001**	**Baseline Data**
Antibiotics given within four hours of admission	83%	55%

Blood cultures obtained before antibiotics given	67%	45%
Oxygenation measured	90%	82%

The next priority identified by the team was to begin improvement efforts to address antibiotic selection and severity of illness. Resources such as the Infectious Disease Society of America were used in order to follow one of the key factors, using evidence-based medicine. The protocol was revised and split into two: one for severe pneumonia and one for non-severe pneumonia. With this revision, the care process continued to show a reduction in variation for the first three measures as shown in the following table:

CAP Measure	2002	2001	Baseline Data
Antibiotics given within four hours of admission	92%	83%	55%
Blood cultures obtained before antibiotics given	78%	67%	45%
Oxygenation measured	89%	90%	82%
Recommended antibiotics given – Severe	55%	No data	No data
Recommended antibiotics given – Non-severe	87%	No data	No data

In keeping with the focus on the patients, outcomes were measured according to whether the new protocols were used for pneumonia care. The results proved to be an important part of our assessment (study phase) as we continued to use our PDSA improvement cycle. The information revealed that if protocols were used, the average length of stay was decreased by one day, the average cost to the patient was decreased by $2,000, and the readmission rate was less. These objective results showed the value of using the protocol utilizing evidence-based research in improving care to our patients. In addition, the chair of the Infection Control Committee stepped

forward as the physician champion to work toward continued improvement and implementation of interventions.

In 2002, Faith Regional was asked to participate in an Intervention Collaborative for Pneumococcal Immunizations as a pilot hospital in conjunction with the Iowa Foundation for Medical Care, the Sunderbruch Corporation-Nebraska, and the Illinois Foundation for Quality Health Care. The goal was to increase the number of Medicare beneficiaries immunized for pneumococcal disease with an objective of increasing the number of hospitals with standing orders for the administration of pneumococcal immunizations. These QIOs used the information regarding processes developed and interventions implemented by the pilot hospitals to provide education to hospitals in their region.

Since then, the following interventions have been implemented at Faith Regional:

- Protocols are revised when core measures were published and each time new research becomes available
- Pediatric CAP orders were developed
- The pneumococcal vaccination protocol was developed and implemented in October of 2003
- Smoking cessation was added to all protocols in 2004
- Pharmacy also became a key component in the protocol revisions

To ensure that the cycle remains intact, the following activities continue to take place:

- Continuous data abstraction for assessment and evaluation by staff and physicians
- A core team made up of personnel from the following departments remains in place: infection control, nursing, case management, pharmacy, and quality

- The Infection Control Committee Chair (the physician champion) actively participates in reviewing the protocols for both CAP and the pneumonia vaccination as well as providing new information as it becomes known to the medical staff
- A feedback report regarding the hospital quality indicators for pneumonia care was initiated in the fourth quarter of 2004 and is sent to each physician along with his/her percentage of protocol usage and patient satisfaction information
- Quality staff members review with nursing staff at quarterly unit meetings the indicators as well as the missed opportunities to sustain the gains and solicit input for continued improvement
- Deficiency forms were developed and implemented as a feedback loop in 2005 for unit managers to identify causes of missed opportunities as well as to implement appropriate interventions developed by the team

The focus on community-acquired pneumonia care has had several iterations using our PDSA cycle. Future areas of focus include improving smoking cessation advice and patient satisfaction as well as reviewing readmissions and mortalities. Faith Regional in participating in the IHI program of Saving 100,000 Lives to reduce mortality so this will dovetail with our team efforts for CAP. A summary of results follows:

DRG	Average Charge per Discharge		Average Pharmacy Charges		Average Cost	
	FRHS	**NE Average**	**FRHS**	**NE Average**	**FRHS**	**NE Average**
079 Respiratory Infection w/ CC N= 24	$17,852	$26,142	$4,152	$6,912	$9,862	$10,537
089 Simple Pneumonia w/ CC N = 100	$10,078	$12,634	$2,478	$3,254	$5,703	$6,408

Source: Data Advantage

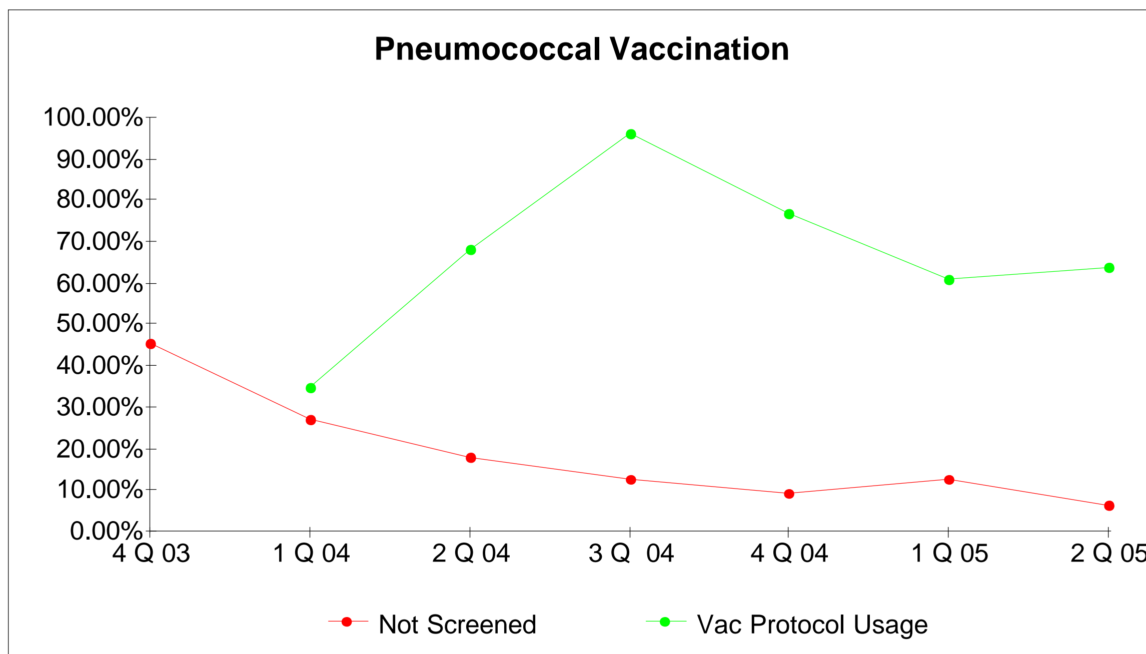
DRG	Average Length of Stay	Average Length of ICU Stay

	FRHS	NE Average	FRHS	NE Average
079 Respiratory Infection w/ CC N= 24	6.6 days	8.2 days	0.7 days	1.8 days
089 Simple Pneumonia w/ CC N = 100	4.2 days	5.1 days	0.3 days	0.7 days

Source: Data Advantage

DRG	Mortality Rate		Average Severity		% Severity 0	
	FRHS	**NE Average**	**FRHS**	**NE Average**	**FRHS**	**NE Average**
079 Respiratory Infection w/ CC N= 24	29.2%	11.3%	1.2	1.2	0%	5.5%
089 Simple Pneumonia w/ CC N = 100	6%	3.1%	1.0	1.0	14.0%	12.0%

Source: Data Advantage



FRHS National Hospital Quality Measure Results

Quality Measures	Second Quarter 2005	First Quarter 2005	Fourth Quarter 2004	Third Quarter 2004	Second Quarter 2004	First Quarter 2004
Smoking Cessation Counseling	73%	71%	100%	75%	40%	27%
Blood Cultures	92%	95%	94%	96%	88%	89%
Initial antibiotic within 4 hours	100%	83%	96%	95%	No data	No data
Initial antibiotic within 8 hours	100%	98%	100%	100%	No data	No data
Antibiotic selection/ICU patient	No patients	100%	100%	100%	No data	No data
Antibiotic selection/non-ICU pt	95%	93%	96%	100%	No data	No data
Oxygenation Assessment	100%	100%	100%	100%	100%	100%
Pneumococcal Vaccination	100%	90%	91%	100%	83%	71%

Color Key: Year Ending 2004 (Nebraska Only)	
(green)	Top 10% JCAHO Hospitals
(yellow)	Average JCAHO Hospitals