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Early Recognition and Treatment of Acquired Pneumonia

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Walden University

College of Health Sciences

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Michael Lamorgese

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Walden University

2018

Abstract

Early Recognition and Treatment of Acquired Pneumonia

by

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MS, Dominican College, 2010

BS, Dominican College, 2008

Project Submitted in Partial Fulfillment
of the Requirements for the Degree of
Doctor of Nursing Practice

Walden University

September 2018

Abstract

Sepsis is a life-threatening organ dysfunction disease process that costs the healthcare system millions of dollars each year. By using existing assets, the number of patients admitted to the hospital suffering from sepsis secondary to community-acquired pneumonia can be reduced. The purpose of this project was to improve and expand the scope of practice of the registered nurse working in a private medical office to initiate treatment for suspected CAP using evidence-based practice. Data from the last quarter of 2017 and the first quarter of 2018 were compared. The purpose of comparing these data sets was to examine outcomes of patients who received empirical treatment for CAP using both the complaint-specific protocol (CSP) and algorithm to see if these patients had lower rates of hospitalization than those who received the standard treatment. None of the patients who were treated using the CSP and algorithm were admitted to the hospital. Two patients were diagnosed with CAP before the implementation of the CSP and algorithm in the last quarter of 2017. The implications for social change resulting from the project are expansion of the scope of practice of the RN to work collaboratively with the physician in empirically treating CAP in the patients at the clinic to prevent hospitalization for pneumonia.

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Dedication

Firstly, I would like to say thank you to my Maker, through Him all is possible. My wife Elizabeth (Beth), we have been together over 25 years I have been in school for over ten years of that time. This doctorate is our lakeside cottage with a front porch overlooking a lake. Somehow thank you just does not seem enough, but thank you. To our son Michael follow your dreams and they will come true.

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This document would not be possible without the support, guidance, and direction of Dr. Mary T. Verklan. Thanks to her I am no longer holding on to the edge by my fingertips. I am standing tall and proud, peering over the chasm which once was.

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Section 1: Early Recognition and Treatment of Community-Acquired Pneumonia

Introduction

Sepsis is defined as a life-threatening organ dysfunction caused by a disrupted and unregulated response to an infection in a host (Singer et al., 2016a). Care of the septic patient cost the American healthcare system over 20 billion dollars in 2011; sepsis was the most expensive reason for hospitalization in 2011 (Center for Disease Control (CDC), 2016a). Early recognition of the signs and symptoms of community-acquired pneumonia (CAP) will help reduce the annual numbers of deaths from CAP along with the number of patients admitted to a hospital with a sepsis diagnosis secondary to CAP. In 2015 there were over 55,000 reported deaths associated with CAP (CDC, 2016b). The goal of this project is to bring awareness of the gap in nursing practice in the early recognition and empirical treatment of CAP in the patient sixty years of age or older with no significant comorbidities in the setting of a private medical office along with developing a practice guideline to expand the scope-of-practice for nursing to empirically treat CAP. In Section 1, I discussed the introduction, background and context, problem and purpose statement, project objectives, the nature and framework of the project, the significance, assumptions, limitations, and delimitations of the problem.

Problem Statement

The gap in nursing practice is the early recognition and empirical treatment of CAP in the patient older than sixty years of age, who is otherwise in good health with no significant comorbidities. The registered nurse (RN) working in the private medical office do not have the education, nor are they trained in critical thinking pathways to

recognize early signs and symptoms of CAP. Nursing requires additional training and a broadened definition of their scope-of-practice to allow empirical treatment of CAP using complaint specific protocols (CSPs). Currently New York State nursing scope-of-practice does not allow a nurse to practice professionally using CSPs (New York State Education Department [NYSED], 2016). With increased education, training, and most importantly, enhanced assessment skills the RN will recognize early signs and symptoms of CAP and will be allowed to begin empirical treatment of the suspected CAP patient working under the supervision of the medical director using the CSP. Along with an increased level of education and training the RN must also complete annual competencies to continue using these skills.

Lifestyle and underlying medical conditions increase the susceptibility of the patient over sixty years of age who contracts CAP. Also men who suffer from chronic respiratory disease and those who are diagnosed with human immunodeficiency virus (HIV) are more susceptible to CAP (Torres, Peetermans, Viegi, & Blasi, 2013a). Quality-of-life can be severely impacted by a diagnosis of CAP in this population. Mangen, Huijts, Bonten, and de Wit, (2016) found that a patient who was radiologically diagnosed with CAP with significantly comorbidities died within one year of their diagnosis.

Community-acquired pneumonia is frequently associated with the elderly, sixty years of age or older with multiple comorbidities. The mean annual cost of CAP for this class of people taking into account healthcare costs, sick time, and short term disability costs the health care system over \$20,000 per incident of CAP (Broulette, Yu, Pyenson,

& Sato (2013). Patients that suffer from CAP that are hospitalized the cost per diagnosis of CAP rises to over \$39,000- \$113,000 depending on the severity of the CAP and the associated comorbidities (Broulette, Yu, Pyenson, Iwasaki, & Sato (2013).

Purpose

The purpose of the project was to improve and expand the scope of practice of the registered nurse working in a private medical office to initiate early empirical treatment for suspected CAP using evidence-based practice (EBP). To accomplish this goal a newly created algorithm and a complaint specific protocol were created which requires a strong collaborative effort between the physician, the nursing staff, and myself. Kredo et al. (2016) recognized that clinical practice guidelines (CPGs) are the preferred method of rendering high quality healthcare. An additional benefit of the development and implementation of the CAP practice algorithm is the increased autonomy of the registered nurse to provide the necessary care to more effectively treat the patient presenting with the symptoms of CAP (Shaw, McDuffie, & Hendrix, 2013). There is a need to increase the recognition and treatment of CAP to reduce the number of patients being admitted to a tertiary care facility with a diagnosis of sepsis, which is a direct sequela of CAP (Phua, et al., 2016). The target population for use of these newly designed instruments is patients over the age of sixty years of age with no significant health co-morbidities.

Nature of the Doctoral Project

Design of an algorithm using evidence-based practice for the empirical treatment of CAP was direct, certain, and contain the least amount of steps or variables for the RN

to follow. Furthermore Kredon et al. (2016) recognized that clinical practice guidelines (CPGs) are the preferred method of rendering high quality healthcare. Each phase of the CSP procedure that was developed was reviewed for simplicity and accuracy using EBP as guidance. A review process of the CSP will ensure ethical standards are upheld. Each step of the CSP was examined for accuracy and thoroughness requiring the attending physician approval prior to implementation of the CSP.

The registered nurse was given a simple seven-item questionnaire to understand her comfort, communication and assessment level. The questions were evaluated on a scale of one to five where 1- Novice, 2- Advanced beginner, 3- Competent, 4- Proficient, 5-Expert (Benner, 1984) (see Appendix C). A training session was then created using a PowerPoint presentation with a question and answer period. At the training session ample time was allotted for explanation of the CSP and algorithm. Furthermore, the registered nurse performed a lung assessment on the physician and myself. A focused pulmonary examination was stressed at this time. Finally the salient points of the CSP and the algorithm were stressed: if the patient did not meet the inclusion criteria the patient will be referred to the physician.

Before the implementation of the CSP, retrospective data that was collected included how many patients were treated for CAP and of those how many were admitted to the hospital with a diagnosis of CAP during the last quarter of 2017. Nursing staff also obtained information from the patient, surrogate, or guardian to ensure correct information for the patient's medical record at the time of appointment in the private

medical office. If the patient met the CAP guidelines criteria, the nurse implemented the algorithm to begin treatment.

Once the data has been entered in the electronic health record (EHR) by the registered nurse including temperature, blood pressure, heart and respiratory rate along with the current medical concern that the patient has. Using objective skills the nurse determined if the patient met the inclusion criteria for CSP. Should the criteria be met the RN implemented the CSP and algorithm. If the patient did not meet the inclusion criteria the physician will then see the patient in a timely manner.

I evaluated all patients' medical records that were treated using the CSP, CAP guidelines for the first quarter of 2018. To ensure the data collected by the front desk personnel at the time of check-in was correct the RN verified the information during the triage process and if indicated, during the treatment process. There was assurance that correct data is collected, entered in the EHR, and early empirical treatment of CAP can begin.

The effectiveness of the CSP and algorithm was evidenced by a decrease in hospital admission by 25% for the patients who were diagnosed with CAP and treated by the RN using the algorithm. A key strategy to avoid CAP is prevention, including use of the influenza and pneumococcal vaccine (Broulette, Yu, Pyenson, Iwasaki, & Sato (2013). According to the CDC (2017) to purchase a 10 pack of the Pneumococcal vaccine (23Valent) is less than \$5.00 per dose; a private sector cost per dose such as in a private medical office is less than \$10.00 per dose.

Significance

Currently, it is outside the scope of practice for nurses working in a private medical office to diagnose a patient with community-acquired pneumonia or begin empirical treatment. With the proposed introduction of a specific protocol for the diagnosis and treatment of CAP working in an expanded scope of practice under the physician's license, nurses will be better prepared to meet the needs of the community. Working with the physician will enhance teamwork and communication that will lead to improved outcomes for patients, and decrease hospitalizations related to lack of recognition and/or treatment of CAP. The RN's increased scope of practice, training and knowledge base will facilitate professional development, as well as increasing her/his role within the professional community. Parbury and Liaschenko (2007) noted that a strong collaboration between registered nurses and a physician would lead to a positive outcome for the patient. With a strong collaboration in place prior to a medical emergency occurring there will be a mutual bond and open communication between both the physician and the registered nurse. Providing more comprehensive treatment to elderly patients with respiratory symptoms should decrease complication rates related to CAP and improve patient outcome.

Developing a strong collaborative environment between nursing and the medical staff for the treatment of CAP is a beginning for social change. Parbury and Liaschenko (2007) noted that the more complicated and stressful the environment is during a crisis before a collaborative agreement is in place, the greater chance of a patient having a negative outcome. A strong social bond between all facets of the medical profession will

ensure a positive outcome for the patient and a strong bond and trust will have been developed between nursing and the physician.

A strong social environment has always been present between nursing and medical staff. With the development of the CSP and algorithm a strong enhanced durable bond will be ensured between the nurse and physician. The collaborative agreement will be the foundation for adherence to the CSP and algorithm without question. Should the RN have questions about either the CSP or algorithm, with the collaborative agreement in place positive feedback and reinforcement will be assured.

Summary

The gap in nursing practice is the early recognition and early empirical treatment of community-acquired pneumonia by the registered nurse in a physician private medical office. With an expanded scope-of-practice using a developed complaint specific protocol and algorithm the nurse will be allowed to empirically treat a newly diagnosed community-acquired pneumonia patient with a broad-spectrum antibiotic while working under the physicians license in his private medical office. Development of the protocol used evidence-based practice and will only be implemented after the approval of the attending physician. The purpose for developing the protocol, algorithm and empirical treatment of community-acquired pneumonia is to stop the advancement of pneumonia to sepsis, as evidenced by the reduction of the admission rate to a tertiary care medical facility by 25%.

Section 2: Background and Context

Introduction

Community-acquired pneumonia will often present with multiple comorbidities such as chronic obstructive pulmonary disease (COPD), asthma, and influenza.

Community-acquired pneumonia is a treatable and preventable disease that is spread by airborne droplets of a gram-positive bacterium *Streptococcus pneumoniae*. For those patients that are included in the non-efficacious rate of the pneumococcal vaccines empirical treatment with a broad-spectrum cephalosporin and or beta-lactam antibiotic is the treatment of course (CDC, 2016c; Mills, Oehley & Arrol, 2005).

There are no state or federal guidelines during a well-check or sick visit to a primary care or pulmonary office to routinely examine for the symptomology of CAP in electronic health records. The presentation of CAP often mimics those of a viral syndrome including influenza particularly in elderly patients with serious medical comorbidities. Using evidence-based practice, I created and developed the CSP and algorithm in collaboration with the attending physician to facilitate empiric treatment of CAP by the registered nurse. Concepts, models and theories, background and context of the EBP, its relevance to the nursing practice; the role of the doctoral nursing practice (DNP) student, the role of the project team, and the definition of terms will also be discussed.

Concepts, Models and Theories

To systematically integrate the new approach to practice I incorporated Kotter's contemporary change theory (CCT) into this practice setting. Dr. John Kotter examined

ways to promote successful change into an organization. His theory used an eight-step approach that would ensure a change that was successfully implemented (Kotter, 2012). An organizational change that the CCT model uses is a linear, dynamic approach using Kotter's eight-step model for change (Campbell, 2008). Marshall (2014) notes that Kotter's model can be selected to guide and support the successful implementation of change in business as well as other organizations, one reason for choosing the CCT for use in a private medical office setting.



Figure 1. The eight-steps of Kotter's change model (Kotter, 2012).

The first of eight-steps recognizes that a sense of urgency has to be created in the environment where change will occur (Figure 1). Kotter (2012) noted that a coalition of the key stakeholders must create an influential and persuasive coalition with a clear vision for change must be created within the organization. Empowerment of the staff to act with purpose to meet short and long-term goals for change and allow the changes to become permanent is an additional reason why it was decided to use Kotter's model. A sense of urgency, the first step in the CCT model, will help the staff and other support personal understand that change is a requirement and support will be provided for the

change to occur. An open and convincing dialogue will convince the staff the importance of taking action. Open communication will help alleviate any threats and open a channel to discuss solutions (Kotter 2012, 1996a).

Each of Kotter's steps builds on each other; the model is organized and it makes sense in a business or medical discipline where it will be implemented. A key stakeholder, the patient will understand why the sense of urgency, empirical treatment of CAP is required for their benefit. Furthermore the attending physician will buy-in, realizing that the CCT is the model to use for change to occur in his medical office.

The second step, build-guiding team, will consist of the development of a project team. A team approach will facilitate cooperation within the medical office and encourage employees to take a constructive approach to the change. The team will consist of the nursing staff with the attending physician as the team leader. A coalition from different positions will allow a sounding board to be heard amongst the staff (Campbell & Balbach, 2009).

The third step, develop the vision, will help the staff understand why the change is needed and agree to a time frame. Goals were created to help the medical staff incorporate and see the change ahead. Employees seeing the vision and understanding the goals and strategies the change process will occur with buy-in from all with minimal anxiety and concerns (Kotter, 1995a).

The fourth step, communication for buy-in maybe the most important step of the 8 steps, the vision of change will be plain for all to see. Stage 4 allowed acceptance and support for change to occur. Concerns can be voiced in the fourth step and any concerns

or anxieties about the change will be relieved. A critical junction, the process of change should be fully accepted and adopted if not the change project may fail (Kotter 2012, 1996b).

At the fifth step, empower action; all obstacles have been removed from the plan. The nursing staff and the physician will accept the stated vision, and if there are any obstacles or objections, they are to be removed by open communication (Kotter & Cohen, 2002a). The change plans will incorporate any valid concerns or objections that the nursing staff has requested.

In the sixth step, short-term wins, will show created success and motivate the team (Kumar, Kumar, Deshmukh, & Adhish, 2015). Fine-tuning to the change process will occur with positive motivation and re-enforcement. Nursing staff that have undertaken an active role in the change process will be rewarded and it will be underscored that the change process will be here to stay (Kotter & Cohen, 2002b).

Although short-term goals are achieved, it is still possible for failure to occur in the seventh stage, don't let up (Kotter, 1995b). Improvements will be continually assessed and the long-term goals reevaluated at this time. Kotter (1995) argues that change is a slow process and the overall attitude towards change must be maintained. There is still an option for failure if the long-term goals visions are lost.

Make changes stick, stage eight, will become the core of the organization and the corporate culture will enforce the change (Kotter & Cohen, 2002c). An evaluation process of the changes, and open discussion and communication will help ensure that the changes will be solidified with the current staff and any new employees in the future.

With support, guidance, open communication, a strong collation, and most importantly strong leadership Kotter's eight steps of change for business was incorporated in a private medical office without failure.

Relevance to Nursing Practice

A diagnosis of community-acquired pneumonia diagnosis may be straightforward or can present as a multifaceted disease process that is difficult to diagnosis. The disease process must be treated with a high index of suspicion in the elderly population (Stupka, Mortensen, Anzueto, & Restrepo, 2009a). Early treatment of CAP would reduce the incidence, prevalence, economic burden and improve the quality of life in the individuals who develop CAP (Office of Disease Prevention and Health Promotion [ODPHP], 2016).

The registered nurse in a private pulmonary medical office will have a major change in autonomy at it relates to the treatment and diagnosis of community-acquired pneumonia. The scope-of-practice will be broadened along with additional responsibility and accountability. An increased independent role will also reinforce expanded critical thinking skills and values. An experienced registered nurse is an undervalued resource and asset that is readily available for an expanded role in the health care system. With a strong collaborative agreement with the nursing staff and the physician in a leadership role early empirical treatment for CAP will begin (Salmond & Echevarria, 2017a).

The Quality and Safety Education for Nurses (QSEN) was designed to incorporate quality and safety competencies in the nursing education system (Dolansky

& Moore, 2013). Quality and safety education for nurses will allow the nurse to think past the individual patient and learn how to incorporate a social change in the health care system. Improvement in quality health care that is delivered will also have a direct effect on safety by improving optimal patient care. Collaboration and teamwork with other health care professionals will incorporate a continued patient centered approach to health care (Dolansky & Moore, 2013). The registered nurse with expanded leadership, autonomy, and diagnostic skills along with strong support from the practice medical staff will help support this initiative. Relevant to the professional nurse using the CSP and algorithm is to allow the nurse the autonomy for treatment of CAP with minimal intervention from the physician. Reinforcement of the initiative will be evidenced by the physician having more time to treat patients with other medical concerns while improving the value of the registered nurse (Salmond & Echevarria, 2017b).

An experienced registered nurse is an under valued resource and asset that is readily available for an expanded role in the health care system. A private medical practice is the beginning of a change process for the registered nurse. With a strong collaborative agreement with the nursing staff and the physician in a leadership role early empirical treatment for CAP has begun.

The registered nurse with expanded leadership, autonomy, and diagnostic skills along with strong support from the practice medical staff will help support this initiative. Relevant to the professional nurse using the CSP and algorithm is to allow the nurse the autonomy for treatment of CAP with minimal intervention from the physician. Reinforcement of the initiative will be evidenced by the physician having more time to

treat patients with other medical concerns while improving the value of the registered nurse.

Local Background and Context

The project site is a small private practice that specializes in pulmonary care as well as the primary care needs of the client population. A majority of the patient population has private healthcare insurance with co-pay that is due at the time of service. The patients who do not have private insurance rely on either Medicare or Medicaid to help with payments for healthcare that is rendered to them. The at-risk population for the pulmonary private medical office setting is patients who are over the age of 60 who are active smokers or who live with a smoker in their residence and who have not been hospitalized or in a medical facility for the past 2 months. The practice has approximately 1,500 patients that are evaluated and treated annually. A moderate amount of the patients that are evaluated monthly have significant comorbidities and are more likely to be diagnosed with CAP by the attending physician. The practice has a single physician with a registered nurse to assist the physician in treating and evaluating twenty-five patients during office hours. The practice is planning to expand and is hiring more staff to enable acceptance of new clientele in the near future. Expanding the role of the RN is to identify and treat CAP using the CSP and algorithm is a goal for the future of nursing (Stevens, 2013, Spetz, 2014).

Definition of Terms

The following are the definitions of relevant terms used in this paper:

Chronic obstructive pulmonary disease (COPD) is a lung disease that causes chronic obstruction of lung airflow that interferes with normal breathing and is not fully reversible. (World Health Organization (WHO), 2017).

Community-acquired pneumonia (CAP) is a respiratory infection process that affects a patient's lungs with *S. pneumoniae* bacterium (Mandell et al., 2007b).

Evidence-based practice (EBP) is integrating individual clinical expertise with the best available external clinical evidence from systematic research (Greenhalgh, Howick, & Maskrey, 2014).

Macrolide antibiotic is a class of drugs that directly affects context-specific inhibition of peptide bond formation. They impede the passage of newly synthesized polypeptides from exiting the cell and further infecting the host (Kannan et al., 2014)

Fluoroquinolone antibiotic is a class of drug that is synthetic in nature and is broad spectrum that eradicates bacteria interfering with their DNA replication (Mical, Yahav, & Leibovica, 2016).

Role of the DNP Student

I am a registered nurse with twenty years of practical experience, with eight of those years working as a certified family nurse practitioner. As a registered nurse with an advanced degree I am in a unique position to understand how nursing as well as how medical staff approaches a solvable problem. Walden University has supplied me with the tools as a doctor of nursing practice student as to recognize a deficiency and more importantly how to resolve a problem using evidence-based practice.

Using a complaint specific protocol and algorithm that I designed during my practicum experience that has final approval from the attending physician is the first step of expanding the RN's role in the private medical office. A strong collaborative agreement is required between the nursing staff and the physician for an undertaking such as the one that I designed and developed. Research by Moss, Seifert, & O'Sullivan (2016) noted the registered nurse full potential is limited by their scope-of-practice and an insufficient interprofessional collaborative agreement with other disciplines in the healthcare field. The use of evidence-based practice will overcome any doubts or barriers that stand in the evolving role of the registered nurse to expand their scope-of-practice (Moss, Seifert, & O'Sullivan, 2016).

As the project leader I planned and developed the complaint-specific protocol and algorithm to ensure the best possible outcome for patients who were treated using these newly designed tools of healthcare. The planning stage included writing the CSP and algorithm with final approval by the physician. The RN demonstrated competencies to confirm understanding of the algorithm, CSP and the community-acquired pneumonia disease process. After demonstrating the competency, the RN was able to work in an expanded scope of practice using these newly designed protocols to treat CAP. A checklist was available to ensure that each step of the algorithm is followed correctly to treat the patient.

The physician and myself evaluated the patient's chart for any deviation from the protocol and reviewed available results of the diagnostic testing. For the first quarter of 2018 after the implementation of the CSP and algorithm each chart was reviewed. Each

quarter following the initiation of the CSP and algorithm a random chart review will occur for accuracy until the physician is comfortable with the process. If the chart was found completed and thorough no further action will be required. When a chart is found with deviations from the protocol the RN will be questioned about the deviations and if required will have to complete the competency process again if indicated. A non-disciplinary approach will be used and a re-education process will be undertaken. The physician will contact the patient if he feels there is an indication to do so.

Summary

Community-acquired pneumonia is a treatable and preventable disease that can be associated with other significant comorbidities such as asthma, influenza, and chronic obstructive pulmonary disease (COPD). Kotter's contemporary change theory (CCT) is a change model that is used in business, but I was able to incorporate this theory in a small medical private practice. Although CAP can be difficult to diagnosis, with a strong collaborative agreement in place the attending physician ensured the registered nurse has the necessary knowledge and autonomy to effectively manage the patient with suspected CAP. The change was guided using a complaint-specific protocol and an algorithm with no deviations from either plan allowed. Nursing does have an expanded role in the healthcare system along with a change in their scope-of-practice to improve patient outcomes. The advanced role of the registered nurse will help the practice grow in the future and decrease the amount of time a patient must wait to see a medical professional for treatment of CAP. As a DNP student I am in a unique position to write both the CSP and algorithm and understand how important a strong collaborative agreement is for the

successful implementation of both new tools between the physician and the nurse.

Evidence-based practice is the foundation for growing the professionalism of the registered nurse.

Section 3: Collection and Analysis of Evidence

Introduction

Sepsis is defined as a life-threatening organ dysfunction caused by the disrupted and unregulated response to an infection in a host (Marino, 2014). Care of the septic patient cost the American healthcare system over 20 billion dollars in 2011 (O'Brien, CDC, 2015a) and sepsis was the most expensive reason for hospitalization in 2011 (O'Brien, CDC, 2015b). The purpose of this evidence-based practice change policy is for the registered nurse to empirically treat the patient with community-acquired pneumonia (CAP). The change in the registered nurse scope-of-practice did occur in a private medical office. Section three revealed sources of evidence used to show a relationship between early empirical treatment of CAP and how it would decrease the likelihood of advancement of CAP into a septic state. The practice-focused question helped generate evidence that was used for analysis and synthesis of this project.

Background and Context

The project site is a small private medical practice that specializes in pulmonary disorders, as well as the primary care needs of the client population. The at-risk population is patients who are over the age of sixty who are active smokers or who live with a smoker in their place of residence, and who have not been hospitalized or in a medical facility for the past two months. Over half of the patients who are evaluated have multiple comorbidities and are more likely to be diagnosed with CAP by the attending physician. The practice has a single physician with a RN to assist him in treating and evaluating the twenty-five patients typically seen during office hours.

Typically, the physician has fifteen minutes to evaluate, diagnosis and treat the patient. Should a patient require more than the allotted time the schedule for the day will be disrupted and patient appointments delayed. With the expanded role of the registered nurse the patient who is suffering from CAP will be treated more efficiently and will have an improved outcome.

Practice-Focused Question

Registered nurses are an underutilized asset in our local healthcare system. With proper education and training the RN was taught to expand their scope-of-practice to treat CAP using a complaint-specific protocol (CSP) (see Appendix A) and algorithm (Appendix B) while working under the license of a physician. The gap-in-practice can be overcome using EBP to improve the outcome of patients suffering from CAP before the disease progresses to a septic state. Hence, the practice- focused question is what is the decrease in the number of hospitalizations for sepsis when the RN recognizes early signs and symptoms of CAP and begins empirical treatment using the CSP and algorithm when working under the supervision of the medical director?

Sources of Evidence

Early empirical treatment of an uncomplicated CAP patient by the RN using the CSP and the algorithm under the supervision of the physician stopped the advancement of the disease process from developing into a septic state and requiring hospitalization. Evidence-based practice is the foundation for both of these newly developed tools of healthcare. On the follow-up examination performed by the RN after the course of antibiotics were completed most of the symptomology was resolved. Both patients

were euthermic one patient had a resolving productive cough that did not require further treatment.

Literature Review

The literature review for the evidence-based practice project was conducted using several databases including Centers for Disease Control and Prevention (CDC), PubMed, CINAL, MEDLINE, National Institute of Health (NIH), and the Cochrane Library via Walden University. Key words that were utilized during the literature review were community-acquired pneumonia, complications of, risk factors, comorbidities, and the cost of treatment. The years searched were from 2006-2017 to acquire the most current and up-to-date evidence-based practice for the treatment of CAP using peer reviewed articles. The initial search of articles generated over 2 million articles for the treatment of community-acquired pneumonia. The search was tapered down to include the most current treatment guidelines for 2017. Furthermore, by using the words complaint-specific protocol and algorithm the search was narrowed down to 2 million articles. The cost effectiveness of both a CSP and algorithm in 2017 further narrowed the search to less than 2 million articles. Narrowing the search further using guidelines from the Centers for Disease Prevention algorithm for the most up-to-date treatment for community-acquired pneumonia and other disease processes revealed just over 600 articles of which 8 articles were used for the literature review process. The articles that were chosen for review pertained to a registered nurse using either an algorithm or a complaint-specific protocol or both to treat CAP and other disease processes.

Protocol/Algorithm Use

The use of a complaint-specific-protocol (CSP) and algorithm reduces the time to treatment and wait times, and improves patient outcomes. In a randomized controlled study Branche et al. (2016) examined the use of an algorithm to treat respiratory infections using current antibiotic treatment guidelines. It was found that using the algorithm reduced the amount of time that patients were on antibiotic therapy versus those who were treated without the use of the algorithm. The implication of the study is that use of an approved algorithm for the patient who suffers from a respiratory infection will have the appropriate treatment rendered along with the correct antibiotic therapy needed for a shorter amount of time.

In a randomized controlled study Black et al. (2014) used a specific protocol for registered nurses to teach prevention and intervention of heart failure patients to reduce their readmission rates to a hospital setting. 1,500 patients over the age of 50 years of age who were hospitalized for heart failure were educated using the “teach-back” method and the operation of telemonitoring equipment. A closed looped system method of teaching and feedback to prevent hospital readmissions had inconclusive results. Some patients were readmitted to the hospital within 30 days of discharge, while others were readmitted within 180 days. Although the results were inconclusive, the registered nurse using a specific protocol was able to educate and improve patient outcome to a limited degree. Registered nurses using an approved algorithm/protocol were able to support patients under their care to educate patients about heart failure and keep them from hospital readmission.

Pearse et al. (2014) investigated a therapy algorithm for intravenous fluid and inotrope infusion during, and six hours following abdominal surgery to reduce complications post operatively. Patients who were 65 years of age or older who recently had abdominal surgery that lasted more than 90 minutes were included in the Optimization of Cardiovascular Management to Improve Surgical Outcome (OPTIMISE) study. Use of the algorithm decreased the length of stay in the hospital along with decreased postoperative cardiac complications. Clinical staff, including registered nurses, were praised for their adherence to the algorithm during perioperative and postoperative cares of these complicated patients. Use of a written algorithm with simple inclusion and exclusion criteria decreased the length of stay in a hospital setting and improved patient outcomes supports the expanded role of the registered nurse using an approved algorithm.

Douma, Drake, O'Dochartaigh, and Smith (2016) evaluated six nurse-initiated protocols on patient outcomes in a busy inner-city emergency department (ED) to improve flow. Implementation of the six studies were initiated one at a time, the first being time to treatment. The protocols that were used decreased time to treatment; consultation, diagnostic tests, and length of stay in the ED. Nurses using well designed nurse initiated protocols improved patient flow and decongested the ED, which supports the use protocols used by nursing in my project.

Hatherley, Jennings and Cross (2015) evaluated a relationship between early pain intervention and improved patient outcomes by the registered nurse (RN) using an analgesia protocol. A best practice investigation for analgesia treatment for acute pain

showed a decrease in the patient's pain score. The patients scored less on their pain assessment scale with early pain management. Early intervention with a nurse-initiated analgesia protocol improved patient outcomes by decreasing their pain score by early pain management. Intervention by the registered nurse using a pain protocol decreased the patients' pain score confirms and supports this project.

Systematic Review Process

Ka-Ming Ho, Chau and Cheung (2016) hypothesized there was a decrease in the length of stay in the emergency department (ED) and the patient incurred a less costly charge when they initiated an inclusion/exclusion protocol for ankle injuries. A systematic review process of the guidelines for a possible ankle fractures assessed for inclusion criteria of the Ottawa Ankle Rules. Initiation by the registered nurse using the Ottawa Ankle Rules protocol decreased the length of stay and decongested the emergency department. An approved evidence-based protocol used by a registered nurse decreased the length of stay in the ED, and decreased the cost of the visit supports this project.

Medication

Single Versus Dual Therapy

Nie, Li and Xiu, (2016) hypothesized that dual antibiotic therapy for the empirical treatment of community-acquired pneumonia (CAP) is more effective than monotherapy. A systematic review using The Newcastle-Ottawa scale was used to evaluate the quality of the studies that compared single versus dual therapy for the treatment of CAP. Dual therapy reduced the mortality rate compared with single

treatment but randomized controlled trials are still required to show the usefulness of dual therapy. A registered nurse using dual antibiotic therapy for the treatment of CAP using the algorithm improved patient outcome and supports this project.

Antibiotic Prescription Therapy in Primary Care

Hemkens et al. (2016) hypothesized that antibiotic resistance is a serious health threat to the public. Primary care physicians who had a high prescription rate per patient load were included in this study. Evidenced-based guidelines were distributed to physicians for the use of antibiotic therapy. Results showed there was not a reduction in the administration of antibiotics despite the implementation of written guidelines. Furthermore, a decrease in antibiotic prescriptions is needed because a majority of respiratory complaints that enter a primary care office are viral in nature. Evidence-based practice guidelines that the registered nurse can use support the implementation of the algorithm and CSP for the empirical treatment of CAP by the registered nurse.

Evidence Generated for the Doctoral Project Participants

The target population for the project improvement initiative is the adult client with no significant comorbidities who are greater than 60 years of age. Exclusion criteria include hypertensive crisis and chronic obstructive pulmonary disease (COPD). The inclusion criteria (Appendix A) includes patients who have a temperature greater than 101.0°F (38°C), increased shortness of breath (SOB), dyspnea on exertion (DOE), and a moist productive or non-productive (dry) cough. The purpose of the complaint-specific protocol (CSP) and algorithm is to initiate empirical treatment of the patient

suspected of suffering from community-acquired pneumonia (CAP) before the disease advances to a septic state with complications that would require hospitalization.

Procedures

After approval was obtained from the Institutional Review Board (IRB) at Walden University this project proceeded to completion. Evidence-based practice was the foundation for development of the complaint-specific protocol (CSP) (Appendix A) for the treatment of community-acquired pneumonia. I created and developed the algorithm with final approval from the attending physician (Appendix B).

I retrieved retrospective data from the last quarter of 2017 from the electronic-health record (EHR) of the patients treated at the private physician's office. The data that I collected was how many patients were treated for community-acquired pneumonia (CAP) and how many of those patients were admitted to the hospital. All the information was de-identified, and each participant was assigned an identification number for purposes of identifying who was treated for pneumonia and who was then later hospitalized for CAP. The data was entered on (Appendix D) that collected was destroyed by shredding once the data was entered into the Excel spreadsheet. Two separate files were created on an Excel spreadsheet to store the retrospective data of how many patients were treated for CAP and how many patients were hospitalized for CAP. The data was kept on a password-protected computer located in a private office that only the physician and myself had access to. Should additional space be required to store data a flash drive storage device was incorporated. The portable device was password protected and kept in the physicians' locked desk.

A training session was created to educate a registered nurse on the use of the algorithm and CSP. A PowerPoint presentation was used, and there was ample time allowed for a question and answer period. During the training session the RN was given a seven-item questionnaire (Appendix C) and answered seven questions that I developed to understand the comfort level, communication skills, and lung assessment skills. The answers were evaluated on a scale of one to five, where 1- Novice, 2- Advanced beginner, 3- Competent, 4- Proficient, 5-Expert, the RN circled the answer that best fits her current comfort level. After the educational component, the RN performed a pulmonary assessment on myself and the physician including a focused pulmonary examination related to CAP, and was shown how to document the patients' findings in the EHR. The salient points of the CSP and the algorithm were again stressed, and also if the patient did not meet the inclusion criteria the patient will be referred to the physician. As the nurse examined the patient, documentation that the patient met the inclusion criteria for treatment for CAP was circled yes on (Appendix D) and also note if the patient was admitted to the hospital after being treated with the CSP and algorithm.

The prospective data was collected during the first quarter of 2018, included how many patients were treated with the CSP and algorithm, and how many patients were hospitalized for CAP after receiving the empirical treatment. Each patient will be assigned an identification number to determine if he/she had been treated for CAP, and then was later hospitalized. The data was entered on (Appendix E) and was destroyed by shredding once the data was entered into the Excel spreadsheet. Two separate files was

created on an Excel spreadsheet to store the prospective data of how many patients were treated for CAP and how many patients were subsequently hospitalized for CAP after receiving empirical treatment. The data was kept on a password protected computer located in a private office that only the physician and myself had access to. If additional space was required to store data a flash drive storage device will be incorporated into the system. The portable device will be password protected and kept in the physicians' locked desk

Protections

All the information was de-identified, and each participant was assigned an identification number for purposes of identifying who was treated for pneumonia and who was then later hospitalized for CAP. A double password system was used to access the electronic health records (EHR) by each health professional. Each medical professional has his or her own password, which will expire every ninety days and must be renewed to have access to the patients' chart. The data was kept on a password-protected computer that is kept in a locked private office.

Analysis and Synthesis

Analysis of data included comparison of the retrospective and prospective data. The purpose of examining both sets of information will be to see if the patients who received empirical treatment for CAP using both the CSP and algorithm had lower rates of hospitalization than those who received the standard treatment. Descriptive statistics will be used to compare the rates of patients diagnosed with CAP before and after the implementation of the CSP and algorithm, and to compare the rates of patients who were

hospitalized with a diagnosis of CAP before and after the implementation of the CSP and algorithm.

Using evidence-based practice (EBP) as the gold standard-of-care to ensure proper and current treatment for community-acquired pneumonia is the foundation of this project while expanding the scope-of-practice of the registered nurse. A complaint-specific protocol (CSP) and algorithm are the standards-of-care that were developed for the registered nurse to use for the empirical treatment of CAP. To effectively analysis both the CSP and algorithm a quarterly review process of each patients chart that were treated using both of these new tools.

Secondly the synthesis of a project such as the one that expands the scope-of-practice of nurses incorporates multiple facets of the healthcare team to treat patients who suffer from an avoidable disease such as community-acquired pneumonia. A strong collaborative agreement between nursing and medical staff along with expanding the role of a registered nurse is a beginning synthesis for change in the healthcare system. The core of healthcare is the registered nurse; their role is one that is ever evolving. With an expanded and revised scope-of-practice the nurse will ensure an improved patient outcome using a complaint-specific protocol and algorithm.

Summary

The purpose of this evidence-based practice change for the office-based registered nurse was to empirically treat and diagnosis a patient with community-acquired pneumonia (CAP) using an expanded scope-of-practice. Using the newly developed complaint-specific protocol and algorithm that I developed for treatment of

CAP. An extensive literature review was performed to validate and show reliability of both a complaint-specific protocol and algorithm that the registered nurse can use to improve patient outcome. Patient information was de-identified, and a number assigned to be able to determine who was treated for CAP and who was later hospitalized with a diagnosis of CAP. Retrospective and prospective data will be collected and descriptive statistics will be used to compare the rates of patients diagnosed with CAP before and after the implementation of the CSP and algorithm, and to compare the rates of patients who were hospitalized with a diagnosis of CAP before and after the implementation of the CSP and algorithm. It is anticipated that the increased efficacy of treatment for CAP provided by nurses working in an enhanced scope of practice will decrease severity of CAP and decrease related hospitalizations.

Section 4: Findings and Recommendations

Introduction

The purpose of this project initiative was to improve and expand the scope of practice of the registered nurses working in a private medical office to initiate early empirical treatment for suspected community-acquired pneumonia (CAP) using evidence-based practice (EBP). A newly created algorithm and a complaint specific protocol (CSP) were developed which required a strong collaborative agreement between the physician, the nursing staff, and myself. The practice-focused question was *what is the decrease in the number of hospitalizations for sepsis when the RN recognizes early signs and symptoms of CAP and begins empirical treatment using the CSP and algorithm when working under the supervision of the medical director?* To accomplish the project purpose, a newly created algorithm and a complaint-specific protocol was created. Section four will discuss the summary of findings, discussion of the findings in the context of literature, implications of the findings, analysis of self, and conclusions.

The practice-focused question was, what is the decrease in the number of hospitalizations for sepsis when the RN recognizes early signs and symptoms of CAP and begins empirical treatment using the CSP and algorithm when working under the supervision of the medical director?

Algorithm

Creation of the algorithm (see Appendix B) met final approval by the attending physician before implementation. I developed the algorithm to ensure consistency in the registers nurses' practice when empirically treating the patient for CAP. One of the

primary guidelines used to develop the algorithm were from the Center for Disease Control and Prevention (CDC, 2016). Research published by the CDC (2016) noted that CAP is a treatable, preventable respiratory disease process that when treated with the correct antibiotics can be resolved before the disease process advances further. The algorithm was designed and developed to be uncomplicated and simple to use. A literature review process was undertaken as the primary sources of evidence-based practice for the development of the algorithm.

The literature review for the evidence-based practice project was conducted using several databases including Centers for Disease Control and Prevention (CDC), PubMed, CINAL, MEDLINE, National Institute of Health (NIH), and the Cochrane Library via Walden University. Evidence-based practice is the foundation from which the algorithm was developed. Key words that were utilized during the literature review were community-acquired pneumonia, complications of, risk factors, comorbidities, and the cost of treatment. The years searched were from 2006-2017 to acquire the most current and up to date evidence-based practice for the treatment of CAP using peer reviewed articles. The initial search of articles generated over 2 million articles for the treatment of community-acquired pneumonia. The search was tapered down to include the most current treatment guidelines for 2017. Furthermore, by using the words complaint-specific protocol and algorithm the search was narrowed down to 2 million articles. Narrowing the search further using guidelines from the Centers for Disease Prevention algorithm for the most up to date treatment for community-acquired pneumonia and other disease processes revealed just over 600 articles of which 4

articles were used for the literature review process. The main body of evidence was taken from the CDC guideline while the other articles proved that the use of an algorithm that a registered nurse can use does in fact improve patient outcomes. The articles that were chosen for review pertained to a registered nurse using an algorithm to treat CAP and other disease processes using an approved algorithm prior to the registered nurse evaluating the patient.

A source for development of the algorithm was Pearse et al. (2014) who investigated a therapy algorithm that was developed for use by a RN, for patients who were postoperatively recovering from abdominal surgery. Using the algorithm the patient had an improved outcome as evidenced by a decrease in length-of-stay (LOS) in the hospital as well as decreased postoperative complications. A further source of information retrieved from the literature review process was from Ka-Ming Ho, Chau and Cheung (2016). They hypothesized that there would be a decrease in the LOS in the emergency department along with a decrease in the cost of care that a patient would endure while being treated for a suspected fractured ankle after an inclusion/exclusion criteria algorithm was initiated by the registered nurse.

Pearse et al. (2014) investigated a therapy algorithm for intravenous fluid and inotrope infusion during, and six hours following abdominal surgery to reduce complications post operatively. Patients who were 65 years of age or older who recently had abdominal surgery that lasted more than 90 minutes were included in the Optimization of Cardiovascular Management to Improve Surgical Outcome (OPTIMISE) study. Use of the algorithm decreased the length of stay in the hospital

along with decreased postoperative cardiac complications. Clinical staff, including registered nurses, was praised for their adherence to the algorithm during perioperative and postoperative cares of these complicated patients. Use of a written algorithm with simple inclusion and exclusion criteria decreased the length of stay in a hospital setting and improved patient outcomes supports the expanded role of the registered nurse using an approved algorithm.

Nie, Li and Xiu, (2016) hypothesized that dual antibiotic therapy for the empirical treatment of community-acquired pneumonia (CAP) is more effective than monotherapy. A systematic review using The Newcastle-Ottawa scale was used to evaluate the quality of the studies that compared single versus dual therapy for the treatment of CAP. Dual therapy reduced the mortality rate compared with single treatment but randomized controlled trials are still required to show the usefulness of dual therapy. A RN using antibiotic therapy for the treatment of CAP following the algorithm improved the outcome of patients being treated for CAP.

The salient point of these evidence-based articles was used to create the algorithm (Appendix B). The algorithm has a minimal amount of steps for the RN to follow for ease of use. Deviation of the algorithm will not be allowed and if the RN has any questions about the algorithm he/she can contact the physician who will always be available. The algorithm has inclusion and exclusion criteria for the RN to follow for the empirical treatment of CAP. The inclusion criteria are the patient must be over the age of sixty, have no significant comorbidities, febrile with a temperature $> 101^{\circ}\text{F}$ (38°C) along with increased shortness of breath (SOB), dyspnea on exertion (DOE),

increased work of breathing (WOB) and either a moist or non-productive cough. The exclusion criteria are if the patient has chronic obstructive pulmonary disease (COPD), hypertensive crisis or emergency and end stage renal disease (ESRD). The only prescriptive choices that would be allowed using the new algorithm would be treatment with a Macrolide or Fluoroquinolone, depending if the patient has a documented allergy to either class of drug. If the patient did have an allergy to both classes of medications, then the patient would have to be evaluated and treated by the attending physician, as he/she would not be eligible for the registered nurse to empirically treat him/her. The algorithm received final approval from the attending physician before implementation.

The literature review process showed improved patient outcome with the use of an algorithm for the registered nurse to use as a guide. The review process also showed an algorithm that is in place would not only improve patient outcome by decreasing waiting time until initiation of treatment but would also save healthcare dollars in the process. The algorithm that I developed has both an inclusion and exclusion criteria for a registered nurse to follow for the empirical treatment of community-acquired pneumonia.

Education of the registered nurse was straightforward and to-the-point. Allotted time was allowed for the RN to review the algorithm ask questions about the algorithm and understand the role he/she would undertake as it pertained to the algorithm and the treatment of CAP. A minimal amount of time was spent on how to examine a patient because of the comfort level of the registered nurse and past experience with the patients

in the clinic. The physician was in the room during the process and no objections were noted.

The private practice is small and hours are limited to evaluate and treat patients. Implementation of the algorithm was not difficult however because many of the patient population seeking medical treatment did not meet the criteria of the algorithm for treatment of CAP. On presentation to the office most patients seen were evaluated for asthma, COPD exacerbation or other respiratory concerns of a non-acute nature. Others were evaluated for a host of other non-pulmonary concerns. Only two patients over the course of the first quarter of 2018 met the criteria for empirical treatment of CAP using the algorithm. The algorithm was followed and both patients were treated with a Macrolide antibiotic.

Complaint-Specific Protocol

The complaint-specific protocol (CSP) (Appendix A) was designed primarily using evidence-based practice retrieved from the CDC (2016) guidelines for the treatment of community-acquired pneumonia. I developed the CSP using the salient points and criteria laid down in the CDC (2016) guidelines. Assurance of consistency in the RNs' practice when empirically treating a patient for CAP was of the utmost importance to myself as well as the attending physician. Prior to implementation of the CSP the attending physician gave final approval before the complaint-specific protocol was initiated. The physician again stressed the point should the nurse have any doubts or questions about the CSP and or treatment plan the patient was to be referred to the physician for further evaluation and treatment.

The literature review for the evidence-based practice project was conducted using several databases including Centers for Disease Control and Prevention (CDC), PubMed, CINAL, MEDLINE, National Institute of Health (NIH), and the Cochrane Library via Walden University. The review process purpose was to focus on early empirical treatment of an uncomplicated patient suffering from community-acquired pneumonia. Evidence-based practice is the foundation from which the complaint-specific protocol was developed.

Key words that were utilized during the literature review were community-acquired pneumonia, complications of, risk factors, comorbidities, and the cost of treatment. The years searched were from 2006-2017 to acquire the most current and up to date evidence-based practice for the treatment of CAP using peer reviewed articles. The initial search of articles generated over 2 million articles for the treatment of community-acquired pneumonia. The search was tapered down to include the most current treatment guidelines for 2016. Furthermore, by using the words complaint-specific protocol the search was narrowed down to 2 million articles. Narrowing the search further using guidelines from the Centers for Disease Prevention protocol for the treatment of community-acquired pneumonia and other disease processes revealed just over 600 articles of which 4 articles were used for the literature review process. The articles that were chosen for review pertained to a registered nurse using a protocol to treat CAP and other disease processes using an approved protocol prior to the registered nurse evaluating the patient.

The principal points of the CDC (2016) guidelines were used to develop the CSP. The CDC guidelines recommend several different classes of antibiotic therapy along with dual or single use treatment of antibiotic therapy for the treatment of CAP. Many clinical hours allotted by the project change initiative were used to discuss the CDC protocol and incorporating that protocol into the CSP that I developed with the attending physician. I was to decide what two classes of antibiotics were to be prescribed and of that only single therapy were to be written into the CSP. A further fact that was discussed during the clinical hours was the misuse and over prescribing of antibiotics for none bacterial infections.

Development of the inclusion and exclusion criteria for the CSP was again taken from the CDC (2016) guidelines and the primary points incorporated into the newly developed CSP. Many clinical hours were spent on the inclusion/exclusion criteria between the attending physician and myself and with final approval from the attending physician the CSP was built and implemented. The CSP left no room for deviation by the RN and the salient point was again made, should the registered nurse have any questions, concerns or doubts the patient was to be referred to the physician for further evaluation and treatment.

Nie, Li and Xiu, (2016) hypothesized that dual antibiotic therapy for the empirical treatment of community-acquired pneumonia (CAP) is more effective than monotherapy. A systematic review using The Newcastle-Ottawa scale was used to evaluate the quality of the studies that compared single versus dual therapy for the treatment of CAP. Dual therapy reduced the mortality rate compared with single

treatment but randomized controlled trials are still required to show the usefulness of dual therapy for the treatment of CAP.

Hemkens et al. (2016) hypothesized that antibiotic resistance is a serious health threat to the public. Primary care physicians who had a high prescription rate per patient load were included in this study. Evidenced-based guidelines were distributed to physicians for the use of antibiotic therapy. It was found that there was no reduction in the administration of antibiotics despite the implementation of written guidelines. Furthermore, a decrease in antibiotic prescriptions is needed because a majority of respiratory complaints that enter a primary care office are viral in nature.

Douma, Drake, O'Dochartaigh, and Smith (2016) evaluated six nurse-initiated protocols on patient outcomes in a busy inner-city emergency department (ED) to improve patient flow. Implementation of the six studies were initiated one at a time, the first being time to treatment. The protocols that were used decreased time to treatment; consultation, diagnostic tests, and length of stay in the ED. Nurses using well-designed protocols improved patient flow, which decongested the ED and improved patient outcome using an approval protocol.

Pletz, Rohde, Welte, Kolditz and Ott (2016) noted that the treatment using community-acquired pneumonia guidelines is evidenced-based practice with improved patient outcomes but there is ever evolving and developing research such that the current treatment may change with the results of newest research. Furthermore, Pletz et al., (2016) discussed that those patients who have significant comorbidities such as chronic obstructive pulmonary disease (COPD) are more likely to develop CAP than those

patients with no significant comorbidities. Finally Pletz et al., (2016) recognized that routine laboratory tests should include a procalcitonin (PCT) level along with a C-reactive protein (CRP) to help confirm a diagnosis of CAP.

Complaint-Specific Protocol Inclusion Criteria

A registered nurse will make the primary diagnosis of community-acquired pneumonia using the inclusion criteria of a moist or dry cough, febrile, temperature greater than 101.0°F (38°C), no allergies to a Macrolide or Fluoroquinolone class of medications and must be at least sixty years of age with no significant comorbidities (Appendix B). The RN has become familiar with and comfortable with the definitions of community-acquired pneumonia, chronic obstructive pulmonary disease (COPD), asthma and hypertension. If the patient does not meet the inclusion criteria the patient will be referred to the physician.

A RN will call the patient into the examination room, obtain his/her vital signs, including temperature, heart rate, blood pressure, and respiratory rate. The vital signs and all other inclusion criteria will be recorded in the patient's electronic-medical record (EMR). The RN will begin empirical treatment for CAP using the Macrolide class of drug as the primary treatment. After treatment has been initiated, the RN will then send the patient to the laboratory facility of the patient's choice to obtain blood work and a chest radiograph. The physician will follow-up the results of the chest radiograph and the laboratory results.

Practice Change

Allotted time was allowed for a RN to review the CSP and a question and answered period was permitted during this timeframe. A minimal amount of time was spent on how to examine a patient because of the comfort level and past experience of the RN. The physician was in the room during the presentation and no objections were noted. The inclusion/exclusion criteria were discussed and again the salient point was made should any questions arise, doubts or concerns during the patient interview process the patient would then be referred to the physician for further evaluation and treatment.

Review Process

The review process will include the physician randomly choosing a patient's chart to review for accuracy and deviation from the algorithm and CSP. Should any concerns arise the registered nurse will be asked about the deviation or concern and a non-punitive approach will be undertaken. The review process will occur as long as the physician feels as though it is necessary.

The private practice where the project initiative was undertaken is small, hours are limited to evaluate and treat patients. Implementation of the complaint-specific protocol was difficult because many of the patient population seeking medical treatment did not meet the inclusion criteria for community-acquired pneumonia. Two patients over the course of the first quarter of 2018 were evaluated and treated for CAP.

Collection of Data

Retrospective data from the last quarter of 2017 was retrieved from the electronic medical records (EMR) for those patients who were treated for community-acquired pneumonia by the physician. The information retrieved was de-identified and each

participant was assigned to a unique identifier number. De-identified data was stored on an Excel spread sheet on a computer that only the physician and myself had access to. The number of patients who were treated for CAP in the last quarter of 2017 was 2. Of that number no patients were admitted to the hospital with a diagnosis of CAP.

After implementation of the protocol prospective data was retrieved from the first quarter of 2018. The data was retrieved from the EMR of those patients who were treated for CAP. Patients were again de-identified and they were also assigned a unique identifier number for tracking purposes. The patient data was entered and stored on an Excel spread sheet that the physician and myself had access to. The number of patients who were treated after implementation of the protocol was also 2. Of that number no patients were admitted to the hospital with a diagnosis of CAP.

The purpose of the quality improvement initiative was to change the scope-of-practice to permit the RN's who work under a specific protocol approved by the physician before the advancement of the illness to a septic state. The private medical practice where the quality initiative project was undertaken is a small medical practice that treats both primary care and pulmonary concerns of the clientele. The patients seen in the practice are over the age of sixty years of age. The physician on average treats approximately twenty to twenty-five patients per day. The office hours are limited and patient appointments are not scheduled every day of the week. The physician has plans to expand the practice and is currently evaluating the need for additional staff as the practice develops.

A training session was developed for the RN to express any concerns that she had about the CSP and algorithm. The salient points of the CSP and algorithm were again stressed at this time, if the patient does not meet the inclusion criteria the patient will be referred to the physician. During the interview process the nurse will complete (Appendix D) by circling yes on this form to show that the patient did meet the inclusion criteria and the findings of the examination documented in the EMR.

A minimal amount of time was spent on the seven questions asks to ascertain the comfort level of the RN. She proved herself an expert on all seven questions asked. There was some initial confusion on the different classes of drugs, but that was resolved by an education period on the different classes of drugs that will be used. Both the attending physician and myself were involved in the education process.

Findings and Implications

Demographic data collected from the EMR included the participants' ages and if they had significant comorbidities. Participants were de-identified and assigned a number for identification purposes. Two of the four participants diagnosed with CAP were from the last quarter of 2017 and the other two were from the first quarter of 2018. All four were above the age of sixty and three were active smokers. No significant comorbidities were identified during the interview process. All had a degree of shortness of breath (SOB) as well as dyspnea on exertion (DOE) and increased work of breathing (WOB). One participant had a moist productive cough while the other three had a dry cough that did not produce any expectorant. The four participants were treated with a macrolide class of antibiotics, single antibiotic therapy. No errors occurred using either

the CSP or algorithm by the RN, and none of the participants were admitted to the hospital with a diagnosis of sepsis.

Table 1

Patients Treated for Community-Acquired Pneumonia

<u>Age</u>	<u>Temperature</u>	<u>Increased SOB</u>	<u>Dyspnea on Exertion</u>	<u>Moist Productive Cough</u>	<u>Dry Non-Productive Cough</u>
62	> 101°F	Yes	Yes	Yes	
63	> 101°F	Yes	Yes	Yes	
65	> 101°F	Yes	Yes		No
65	> 101°F	Yes	Yes	Yes	
Total (N=4)					

The sample size is too small for statistical analysis; however, changing the scope-of-practice for the RN in a small medical practice using newly developed tools for treatment can have greater implications. With a change in the scope-of-practice the professional registered nurse can develop a strong collaborative agreement with a physician. The literature review showed that using different tools of evidenced-based practice such as an algorithm and complaint-specific protocols can have positive improved outcomes for the patient who is in pain, who suffers from shortness of breath, or who has to wait in a busy emergency waiting room with a potential fractured limb, in pain, before seeing the physician for treatment. The RN who is baccalaureate educated, along with proper training using strict guidelines and has the strong support of a physician will improve patient outcomes who suffer from CAP and other potential life-threatening diseases.

Implications for Change

The potential implication for change is enormous for the individual registered nurse as a medical professional. Nursing is an ever evolving, changing facet of medicine. With evidence-based practice as a gold standard for the foundation for change, newly developed tools such as the complaint-specific protocol and algorithm for CAP is the only the beginning of change for the individual registered nurse at the private clinic. The potential to expand the RN's scope-of-practice to improve patient outcomes and decrease healthcare costs. The individual professional registered nurse will gain increased autonomy along with an increased responsibility (Flinter, Hsu, Crompt, Ladden, & Wagner, 2017)

Communities

The patient population who is sixty years or older will potentially benefit the most from the project initiative to empirically treat CAP before the disease advances to a septic state. Torres, Blasi, Dartois, & Akova (2015) discussed that the sixty-year or older population is at an increased risk of pneumococcal disease secondary to their comorbidities, such as chronic obstructive pulmonary disease (COPD), asthma and coronary heart disease (CAD). The patient population from the private clinic will benefit from early intervention using the CSP and algorithm before CAP will advance to a septic state.

Institutions

An institution such as a small private medical practice that has a limited number of medical professionals on staff and who have a finite time to evaluate and treat patients before they see a medical professional by allowing the registered nurse to treat

CAP empirically using the CSP and algorithm. The patient will be the benefactor of the project initiative by allowing more time with a medical professional. Decreased time in the waiting room will allow more time for the RN to educate the patient on the disease process of CAP (Xie & Or, 2017).

Systems

The potential monetary savings for the healthcare system by the RN treating empirically CAP could be substantial. The registered nurse, communities, institutions and most importantly the patient will potentially benefit from the change in nursing practice using a complaint-specific protocol and algorithm to treat CAP by decreasing the amount of time before treatment, decrease the waiting time in a waiting room, less congestion in waiting rooms and the potential cost savings for systems at large are just some of the potential benefits for a system using a project initiative such the one that was under taken. Registered nurses are the leading force for change in the healthcare system. Salmond and Echevarria (2017a) noted that the use of a RN in an expanded role will help decrease healthcare costs by enhancing their knowledge set, skill base and overall quality improvement of patient care. Registered nurse according to Thomas, Seifert & Joyner (2016a) researcher noted that RN's are the driving force for developing new healthcare policies, improving quality healthcare that is rendered along with advancing the profession of the RN and achieving innovative change and achieving those goals.

Social Change

A strong collaborative agreement was developed and in place prior to any emergency that will occur. The RN gained the trust of the physician by increasing her understanding of the disease process of community-acquired pneumonia and effectively initiating empirical therapy. Bauer and Bodenheimer (2017) noted that the RN would have an expanded role in the future of healthcare especially in a primary care setting. Furthermore, the RN's advanced role will allow improved patient outcomes and improve the quality of healthcare that is rendered along with adding to the workforce that manages patients in a private clinic or practice. These expanded roles and responsibilities will be made possible due to the supply of adequately and proficiently trained and educated RN's.

A registered nurse is an ever evolving and changing role in today's current healthcare system. Registered nurses are in the unique position of being trusted by other healthcare professionals along with the patient clientele seeking out healthcare needs. Salmond and Echevarria (2017b) found that RN's are positioned to lead and transform change in the healthcare system. The healthcare system is changing from a provider-based approach to a team-based patient centered approach with RN's becoming an integral part of the healthcare team (Salmond and Echevarria, 2017c).

Fabrellas et al. (2013) discussed that algorithm guided nursing care would unburden the primary care physician in certain medical situations. Furthermore the authors noted that RN's using algorithms as a plan-of-care to treat patients that those patients will have the same or an improved outcome of their healthcare concerns. RN's

are the changing face of a broke healthcare system that needs improvement, correction and repair.

Recommendations

Expanding the scope-of-practice in a small private office setting is the beginning of change for the RN treating a curable and avoidable disease process such as CAP. With a strong collaborative agreement in place along with specific protocols and algorithms RN's can manage acute pain, ensure correct usage of antibiotics and according to some literature can improve patient outcomes better than a primary care physician. The literature review process has also proven that the registered nurse using both a complaint-specific protocol and algorithm will decrease the pain level of patients waiting in a waiting room pending treatment for their medical concern. By use of an inclusion/exclusion criteria there will be a decrease in erroneously prescribed antibiotics for a disease process such as a viral one in nature that does not require the use of antibiotic therapy.

Lucatorto, Thomas, and Siek, (2016) discussed that the individual RN influences the healthcare of patients engaged in the healthcare system. When the RN is involved in a collaborative agreement environment they can work to their fullest potential and have increased responsibility and accountability. Furthermore, the RN using their standard cares of practice along with an expanded scope of practice must show a level of competence in their skill level and show answerability to their actions.

Sturesson, Falk, Ulfvarson, and Lindstrom (2017) noted that the more experienced the RN is the more effective a pain protocol. The RN while working within

the parameters of the protocol can adjust frequency and dose of pain medication depending on the wait period of an emergency department (ED). Furthermore, the experience level of the RN should be taken into account when a schedule and assignments are made to ensure further patient satisfaction using a pain specific protocol.

Rogers Van Katwyk, Grimshaw, Mendelson, Taljaard, and Hoffman (2017) support that antimicrobial resistance is a threat to public health. With the use of an inclusion/exclusion criteria there will be less antibiotic usage and a perceptible decrease in resistant bacteria in communities. Rogers Van Katwyk et al. (2017) further noted that with government intervention demanding an inclusion/exclusion criterion for prescribing antibiotics there would be a decrease in the usage of antibiotics for human consumption along with a decrease in community based resistant bacteria.

Strengths and Limitations of the Project

Strengths

Evidence-based practice (EBP) enforced the approach of developing both a complaint-specific protocol and algorithm for the treatment of CAP by the RN working in a private practice. Development of inclusion and exclusion criteria using EBP as the foundation of both ensured that patients who were diagnosed with CAP by the RN were treated within the guidelines developed by myself with final approval by the physician. Development of a collaborative state was the sequela of creating both the CSP and algorithm.

Accomplishing the goal of change in a small practice was assured by using Kotter's eight-step model for change (CCT). Use of the CCT model allowed for change to occur while being flexible during the change process, ensuring and enforcing that change will occur (Wheeler & Holmes, 2017). A model such as the CCT is designed for business but it was incorporated into a small medical practice with support of the physician.

Finally, the biggest strength of the change initiative is for the future of the nursing profession. Change is mandated for the healthcare system and a key stakeholder of the system is the RN. The RN is an under utilized asset whose role is evolving and changing and this initiative is just the genesis for further change to occur. The literature review process has proved the efficacy and efficiency of the RN using a protocol and algorithm to enhance patient outcome all the while staying within his or hers scope-of-practice (Rouleau, Gagnon, & Cote, 2017). Furthermore, the more comfortable the RN is in his/her role while working within the confines of a protocol or algorithm, the patients' curable preventable disease such as CAP, will not advance to a septic state and require admission to a tertiary care facility. The use of the theoretical framework to conceptualize and guide this project is supported by the Essentials of the Doctoral Education for Advocacy Nursing Practice, which notes that the DNP program prepares the graduate to use science-based theories to develop new approaches for treatment based on theories from nursing as well as other disciplines (Zaccagnini & White, 2011a).

Limitations

A significant limitation of the change initiative was the size of the private medical practice and the clientele that it serves. A majority of the patients who sought medical attention during the practice hours did not meet the inclusion criteria for treatment of CAP. Limited office hours were a significant limitation of this change initiative. While it is not feasible to build all possible contingencies into an algorithm or protocol the RN must work within the confines of both plans of care (Jablonski, Dupen and Ersek, 2011).

Recommendations for Future Projects

A larger practice is needed with a bigger clientele base would be a minimal requirement to support that a change initiative such as the one that was undertaken can prove its worth. Murdoch, Mitra, Lambert, and Erbas (2014) noted the peak season for the occurrence of CAP to occur is the springtime, thus the change initiative should be extended over a one-year period. Cilloniz et al. (2017) noted that CAP is not dependent on a season, as the disease process occurs throughout the year. The change initiative should begin in the autumn and carried through all four seasons over several years to develop a longitudinal project initiative to understand CAP in the practice's clientele base.

A public service message to the clientele base would also be recommended to ensure that they understand that change will occur in the treatment of their healthcare needs. Along with informing the patient population that is associated with a given practice new clientele could be sought out and inform them about the changing role of the RN. They should be aware that the RN using a protocol and algorithm will have the

potential to enhance their outcome, decrease their waiting time and most importantly decrease the possible evolution of their disease process to a more significant one.

Thomas, Seifert, and Joyner (2016b) noted that RN's are innovators and agents of change for individuals the community and nursing practice. RN's improve quality of care along with a better healthcare experience and outcome for the individual and the community.

Summary

The purpose of this project initiative is to expand the scope-of-practice of a RN working in a private medical practice to empirically treat CAP using a CSP and algorithm. The practice-focused question is what is the decrease in the number of hospitalizations for sepsis when the RN recognizes early signs and symptoms of CAP and begins empirical treatment using the CSP and algorithm when working under the supervision of the medical director? I created and designed the algorithm and the CSP using evidenced-based practice from the Center for Disease Control and Prevention (CDC, 2016). Both the CSP and algorithm required final approval from the physician before either tool was implemented. The literature review process revealed that a RN using a preapproved algorithm and protocol could decrease the amount of time a patient waits in the emergency room, is better able to control the patients pain level, decrease the amount of time before diagnostic test were ordered, and most importantly improve patient outcome.

The change in practice allowed the RN to use the CSP and algorithm to treat CAP, stressing the salient point should any question arise about the patient's care the

patient was to be referred to the physician. The RN treated a total of two patients for CAP in the first quarter of 2018, of those none were admitted to the hospital for sepsis. During the last quarter of 2017 the physician treated two patients for CAP, of those none were admitted to the hospital for sepsis. The RN aroused no concerns using the CSP and algorithm. Information was collected and table 1 created to show the participants age, temperature, and symptoms.

The sample size was too small for statistical analysis the implications for changing the scope-of-practice for the RN was undeniable. The RN gained increased responsibilities along with autonomy while improving patient outcome. Better utilization of the RN will have the potential of decreasing monies spent in the healthcare system for preventable disease process such as CAP. Use of inclusion/exclusion criteria by the RN would decrease the amount of antibiotics erroneously prescribed for disease processes such as viral syndromes.

Future change initiative projects would require a bigger clientele base along with a longitudinal study to understand CAP in the practice's clientele base. A public service announcement would be one way to inform the public and the clientele that the role of the RN is changing. Nurses are innovators and agents for change; they will improve the patients' healthcare experience for the better.

Section 5. Dissemination of Plan

Dissemination

The quality improvement project is completed and it is time for reflection of the journey and to disseminate the findings of the project. Manyazewal, Oosthuizen and Matlakala (2016) noted that some of the most important predictors that influenced change in the healthcare system are a collaborative environment, top management commitment and support along with fostering a patient-centered quality of care services. With a strong collaborative agreement in place between nursing and medical staff along with the use of a complaint-specific protocol and algorithm the patient who suffers from CAP will have an improved outcome.

Dissemination of the information to the medical practice where the change initiative was undertaken was first discussed with the physician. Plans were made to discuss the findings of the change initiative over the business days lunch period. A PowerPoint presentation was designed and presented, and a copy left in the waiting room so the key stakeholders, the patients were also informed. Dissemination of research information is a crucial aspect of any study (Hagan, Schmidt, Ackison, Murphy, and Jones, 2017).

I would inform other private medical practices to expand on this practice improvement initiative to enhance the RNs knowledge base and develop collaborative agreements within their team. Most importantly it is possible to change their private medical practice by reutilizing their strongest asset the RN. Furthermore, the RN using a CSP and algorithm can accomplish their goal of changing their scope-of-practice while

working within the confines of a CSP and algorithm in a private medical practice.

Nurses often find themselves on the front lines of new trends in the healthcare system; they may require more education and training depending on the clinical areas that they work in (Hussung, 2016).

Submission of a manuscript for consideration for publication such as the National Nurse Magazine to expand and change the scope-of-practice of a RN is a further way to disseminate information. The National Nurse Magazine is published 10 times per year and the target audience is the 2.5 million RN's who work in the healthcare industry. Edwards (2015) noted there are a variety of ways to disseminate research to a target audience; biomedical journals are by far the most common way to distribute information.

Analysis of Self

Scholar

As an advanced practice registered nurse I am prepared for the further advanced role and responsibility of a Doctorate of Nursing Practice (DNP) degree. Sherrod and Goda (2016) noted that the DNP might have a leadership role at the executive level in the healthcare system, specifically for change of healthcare along with improved patient income. A DNP student learns in the classroom, coursework and by application of the DNP Essentials in addition to the practical experience during clinical hours. A RN, nurse practitioner and DNP will always be a student by the nature of their position. Knowledge and learning is a never-ending role of advanced nursing professionals. I have also learned how to write, speak and disseminate information on a scholarly level.

The project that I undertook will allow me to grow in ways that I have not had the chance to as a bedside RN or an advanced nurse practitioner. According to the American Association of College of Nursing (AACN, 2006) the DNP program and the project specifically allowed me to grow in systems thinking, inter-professional collaboration, organizational leadership and analytic methods for evidenced-based practice. The knowledge that I have gained improved my communication skills along with improving my abilities to develop a strong collaborative bond with all levels of health care professionals in an organization.

A goal for the project was to change the scope-of-practice that a RN in a small private practice works in. Looking forward development of quality improvement projects to assist the RN in the development of collaborative agreements is a further goal to achieve. With a strong collaboration in place the RN using evidence-based practice will be empowered to advocate for himself or herself for change to occur in his/her role in a private medical practice.

As Practitioner

My journey as a DNP student taught me how to look at problem solving globally, from many facets instead of just one. The approach to process problems differently, and deliver quality care along while using evidence-based practice is one goal noted by the AACN (2016). Development of the algorithm and CSP required my understanding the role of a RN along with the role of a practitioner. Understanding both roles allowed me to convince the physician that the project initiative was plausible and should be adapted to the practice.

The ability to form a cohesive collaborative team deeply enriched my communication skills. With these newly expanded abilities I was able to use evidence-based practice in a way that was foreign to me. My skillfulness allowed me to present evidence-based practice to colleagues and newly found professionals while improving patient outcomes. I learned the importance of understanding how an organization is run and how all the individual moving parts are required for a system to become a whole. No longer will I speak to a colleague and communicate information individually, I will think and speak in terms of changing a complete system instead of a single part.

As Project Developer

My practicum experience afforded me the opportunity to have an active role at an organizational level, to develop and implement a change improvement project from initiation to its conclusion. I was a key stakeholder, and throughout the practicum experience I was the lead project team leader for the project change initiative. As a DNP project leader using Kotter's eight steps model for change (2012) I learned that as a key stakeholder it was my responsibility to show the medical team why change was mandated and how to develop a plan for change. Flexibility in the planning and implementation stages was compulsory for change to occur.

I relied on my abilities to design, plan, and develop the project, along with its implementation using evidence-based information. As a project developer of change, I gained knowledge in the necessary components for possible change to occur in the future of the health-care system. I designed the CSP and algorithm as the project developer I oversaw each step of development.

Payne et al., (2011) noted that having a project developer as the manager for change improved effectiveness of the project and most importantly had an open channel for communication throughout the healthcare team.

Long-term Professional Goals

Changing and improving patient-care is reliant on the DNP-prepared nurse. Scholarly trained and educated nurses, who work in a specialty, have the expertise to identify problems that affects patient's health-care goals. The DNP trained nurse has the responsibility to recognize that change is needed and for the change to occur from a global view. The outcome of the change initiative shows that more studies are required before changing the scope-of-practice for a RN could be initiated in other private medical practices. Redman, Pressler, Furspan, and Potempa (2014) supports the DNP prepared nurse contributes to the global change of healthcare especially as it relates to clinical practice.

A future professional goal is to educate the patient population using evidence-based practice in how to avoid an avoidable disease such as CAP. Publishing articles that I have written with evidence-based practice as the foundation is a long-term goal that the DNP program will allow me to achieve. The manuscripts that I will write will be sent to medical journals as well as non-medical journals to reach as many people as possible to avoid an avoidable disease process such as CAP.

Completion of the Project

Meeting the objectives recommended by the American Association of College of Nursing (2006) in the Essentials of Doctoral Education for advanced practice nurses was

to have the ability to translate research into practice along with an improved patient outcome. There were many obstacles that were overcome during my time working on this project. Searching and finding an alternate practicum site along with a physician to guide and precept me was by far the biggest hurdle that I overcame. Approval of the Institutional Review Board (IRB) from the facility and Walden University was a much less daunting task than I had anticipated. But these obstacles and hurdles taught me patience, endurance, and above all perseverance, they helped me become a stronger leader.

Solutions to obstacles were found sometimes by thinking and looking at different models for change. Kotter's eight steps for change is a model that I incorporated into this change initiative even though the model was designed for business. The DNP prepared nurse uses his/her expertise to advance and translate knowledge along with the ability to ensure the best-quality outcome using the best available information that is available (Zaccagnini and White 2011b).

Summary

The journey down the pathway to becoming a DNP has been a rewarding experience. Dissemination of the information that I have obtained from this project initiative should be shared with other private medical practices. Having a strong collaborative agreement in place earns trust and ensures compliance with a change project. As a project developer I learned to grow and adapt to change sometimes using other sources of evidence-based information besides medicine. Long-term goals taught me to look globally at a problem and to overcome that problem from a leadership view.

Most importantly this project has taught me perseverance, to overcome any challenge by accepting and working the problem through using evidence-based information as the foundation of change. Developing, designing, and implementing both the CSP and algorithm for the treatment of CAP is just the beginning of changing the scope-of-practice that a RN works under in a private medical office.

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Appendix A

Complaint Specific Protocol for Community-Acquired Pneumonia

Purpose

Community Acquired Pneumonia (CAP) is seen in patients who have not been admitted to a medical facility including a nursing home within the past six weeks and who have not been treated with antibiotics in the same time frame. The patient must be over sixty years of age without any significant comorbidities including chronic obstructive pulmonary disease (COPD), essential hypertension, end stage renal disease (ESRD), and asthma. The purpose of this complaint specific protocol (CSP) is for the baccalaureate educated registered nurse to empirically treat CAP after correctly diagnosing the patient using evidence-based practice (EVP). Treatment will be with an oral Fluoroquinolone such as Levofloxacin or a Macrolide such as Azithromycin, depending on the patients' allergies. There will be no deviation from using this protocol for the treatment of CAP.

SCOPE

Outpatients seen in a private medical office who suffer from newly diagnosed CAP.

POLICY

The RN using EVP while working under the license of a physician will have a strong collaborative agreement in place prior to empirically treating CAP using an approved oral antibiotic. A RN will not be permitted to deviate from the CSP under any circumstances. Should the patient not meet the criteria the physician will be willingly

available to examine the patient without question. Should the RN have any questions, concerns, and or reservations prior to the administration of the oral antibiotic the physician will be contacted. No deviation of the protocol will be tolerated.

DEFINITIONS

CAP- Community-Acquired Pneumonia

CSP- Complaint Specific Protocol

COPD- Chronic Obstructive Pulmonary Disease

EMR- Electronic Health Record

ESRD- End Stage Renal Disease

EVP- Evidence-Based Practice

RN- Registered Nurse (baccalaureate trained)

PROCEDURE

RECOGNITION:

- Obtain pertinent data related to the patient including DOB, Sex, Age, Home address, Phone number and Current e-mail address.
- Vital signs: Blood pressure, Heart Rate, Respirations, Temperature, Pulse Oximetry (POX), and, an accurate past medical history including all allergies
- Specifically a pulmonary examination with a primary diagnosis and a differential diagnosis

- The patient will be sent for routine laboratory work (complete blood count w/differential, complete metabolic profile, procalcitonin and Anterior/Posterior, lateral CXR.

INCLUSION CRITERIA

- Must be over 60 years of age
- No significant comorbidities
- Temperature > 101°F (38°C)
- Increased Shortness of Breath (SOB), Dyspnea on Exertion (DOE), Increased Work of Breathing (WOB), Moist Product or Non-Productive Cough

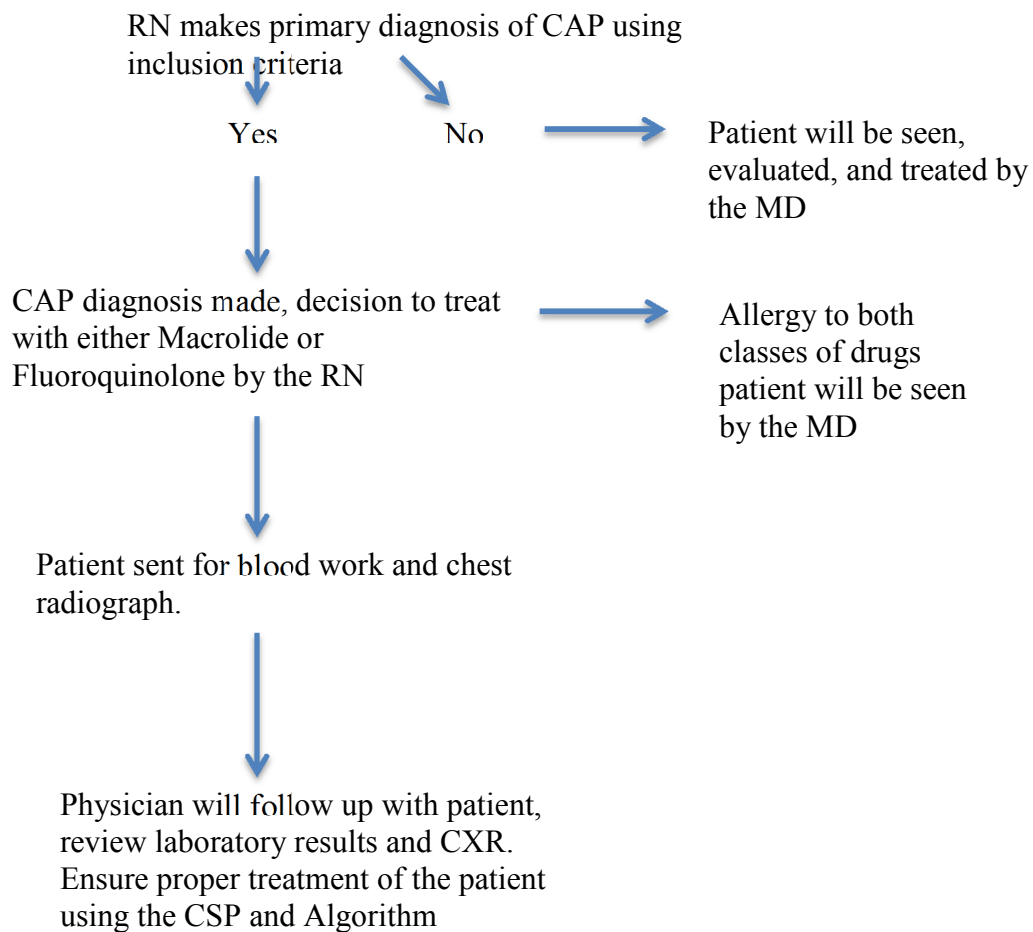
TREATMENT

- If the criteria is not met the patient will be evaluated and treated by the physician
- Should the patient meet the inclusion criteria the RN will then treat the patient with either a Fluoroquinolone or a Macrolide after obtaining a current set of vital signs. After treatment has been rendered the patient will then be sent for laboratory work and a chest radiograph. Again ensuring that all current data is correct so that the physician can follow-up with the patient in a timely manner.
- Treatment with antibiotics will not be delayed if the inclusion criterion is met under any circumstances regardless if the laboratory blood work or the chest radiograph is obtained.

FOLLOW-UP

- The physician will review each patient's chart that the CSP has been used to treat CAP. He will review all laboratory results along with the chest radiographic results until all roadblocks are resolved.
- There after the physician each quarter will randomly choose a chart a review the chart for accuracy and thoroughness of the chart. When the chart reviewed is found without error no further action will be required. If a chart is found incomplete or with a deviation(s) from the CSP the registered nurse will be questioned about the deviations and if required will have to complete the competencies again. This will be a non-disciplinary approach and a re-education process will be undertaken.

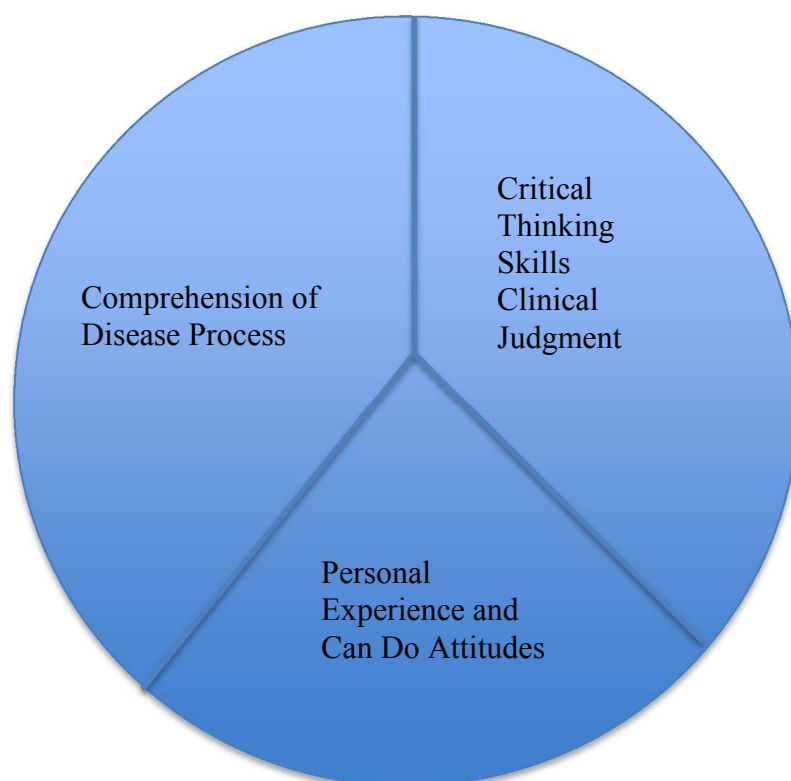
Appendix B

Algorithm for Treatment of Community-Acquired Pneumonia

Appendix C

Nurse Skills Competency**Definition**

Competency is the ability of the registered nurse to apply knowledge, skill sets, experience, and clinical judgment as well as critical thinking skills and a combination of all the above and incorporation of those skills in his or hers job performance. Along with these skills the registered nurse will be efficient in the pathophysiology and the most current treatment of Community-Acquired Pneumonia. A total of 10 continuing medical education (CME) hours per year must be obtained to remain current in his or hers competency skills.



Policy

The registered nurse will be proficient in obtaining an accurate long and short medical history and documents the most current findings in the EMR. An assessment to include: Change in Mental Status, Activity Intolerance, Dyspnea on Exertion (DOE), Increase work of Breathing (WOB), Increased Shortness of Breath (SOB), Coughing Productive-Nonproductive, Chills, Fever, Nausea, Vomiting, Diarrhea, Change in Appetite and any other pertinent information.

Physical Assessment

Vital Signs: Blood Pressure Bilaterally Arms

Heart Rate (60 seconds)

Breath Sounds (Both Lungs)

Temperature (Oral)

Pulse Oximeter (POX)

Comfort Level of Nurse Assessment Skills

The nurse was asked to answer each question and document their comfort level for assessment and communication skills using 1 to 5, where 1- Novice, 2- Advanced beginner, 3- Competent, 4- Proficient, 5- Expert.

1. Ability to obtain pertinent past and current medical history. 1 2 3 4 5
2. Acquire accurate current up-to-date patient information. 1 2 3 4 5
3. Vital signs assessment including BP, Heart Rate, Temperature, Respirations, Pulse Oximetry. 1 2 3 4 5

4. Physical Examination Assessment Skills Including: Mental Status, Skin Assessment, Lung Sounds, and Work of Breathing. 1 2 3 4 5
5. Communication skills: Presenting patient to attending physician. 1 2 3 4 5
6. Following a complaint-specific protocol and algorithm. 1 2 3 4 5
7. Knowledge of different classes of antibiotics. 1 2 3 4 5

Appendix D

Retrospective Data

1. Was the inclusion criteria met Yes _____ No
2. Was the patient admitted to the hospital Yes _____ No

Appendix E

Prospective Data

1. Does the patient meet the inclusion criteria Yes _____ No
2. Was the patient hospitalized Yes _____ No