

Case study on pneumonia

[Literature](#), [Poetry](#)



Case Study: Pneumonia and Pressure Ulcer Prevention in an Elderly MICU Patient June 6, 2012 Case Study: Pneumonia and Sepsis in an Elderly MICU Patient L. M. is a 75-year-old female who suffers from severe dementia and lives in a SNF. She was diagnosed with lung cancer in 2005 and as a result had a right upper and middle lobectomy. She also has a history of severe emphysema. L. M. has had several pneumonic infections and has an allergy to Pneumovax. She has a recurrent aspiration risk and received a tracheostomy and a PEG tube in January 2012. On April 25, 2012, L.

M. was found to be increasingly fatigued, somnolent, and had shortness of breath accompanied with tachycardia as witnessed by the staff at the SNF. When she arrived at the emergency department, she was tachycardic with a heart rate in the 130-140's and tachypnic with a respiration rate in the 30-40's. L. M. , who normally depends on 2 liters of oxygen at home, desaturated to 88% requiring oxygen support increased to 4 liters. Her baseline systolic blood pressure is 100-110 and it was measured in the low 90's in the ED. She also had an increased temperature of 38. degrees Celsius. As a result of L. M. 's increase in temperature, heart rate, and respiratory rate accompanied with pneumonia, the emergency department treated her for sepsis. Labs drawn showed an increase in white blood cells and lactic acid, as well as an increase in PCO₂ and a decrease in PO₂. She was aggressively resuscitated with IV boluses as necessary followed by maintenance normal saline. She was also administered Vancomycin, Cefepime, Azithromycin, and Metronidazole. In addition, her chest x-ray illustrated a near complete opacification of the right lung field.

She was diagnosed with sepsis secondary to pneumonia complicated by a right lower lung collapse due to mucus plugging. I assumed care of L. M. in the MICU ten days after her admission in the ED. She had been intubated and put on a mechanical ventilator. She was put on pressure support mode at a rate of 10, PEEP of 5, FiO₂ of 40%, and her tidal volumes averaged around 230. She had three bronchoscopies, however, there was still evidence of mucous plugs and L. M. was unable to clear lung secretions. Respiratory therapy attempted to decrease the pressure support on the ventilator but L.

M. showed increased signs of respiratory distress. At the point that I took over care for the patient, my goals were: prevent aspiration and further spread of infection and improve ventilation and perfusion. Interventions for my patient to prevent aspirations and decrease risk of further infection included suction contaminated secretions, raise the head of the bed, and use of Chlorhexidine wash. Protocol for suctioning an intubated patient in the MICU is every 4 hours or more frequently if necessary depending on the patient. L. M. had a history of recurrent aspirations and was at risk for increased infection because she was on a ventilator. “ Closure of the glottis prevents aspiration of oropharyngeal secretions. When a patient is intubated with an endotracheal tube, the glottis remains open, leaving only the inflated cuff for protection against aspiration (Bennett, Bertrand, Penoyer, Sole & Talbert, 2011). ” Therefore, routine suctioning helps to eliminate the pooling of secretions above the cuff of the endotracheal tube, where aspiration is most likely to occur.

In addition, raising the head of the bed to 30-45 degrees decreases aspiration and the risk of ventilator-associated pneumonia. “ The single most cost-free intervention found to reduce the incidence of VAP is elevation of the HOB (Stonecypher, 2010). ” Although my patient was already diagnosed with pneumonia, it was important to prevent the spread of the infection to the healthy portion of her lungs or have a recurrence of sepsis. Chlorhexidine is an antiseptic that has been proven to inhibit dental plaque formation and gingivitis.

I swabbed my patient’s mouth with Chlorhexidine once a shift as a protocol in her plan of care. The use of an antiseptic solution helps to decrease the amount of bacteria in the oral mucosa and thus prevents the colonization of bacteria in the respiratory tract (Institute for Healthcare Improvement, 2012). Another important intervention was to maintain the head of the bed at 30-45 degrees and position L. M. ’s left lung into a dependent position to improve ventilation and perfusion. L. M. ’s O2 was decreased to 63 and her CO2 was increased to 50.

According to the IHI, it is recommended to elevate the bed to 30- 45 degrees to improve ventilation. Patients that lay in the supine position have lower spontaneous tidal volumes on pressure support ventilation compared to those laying at more of an angle (Institute for Healthcare Improvement, 2012). In regards to positioning, when the least damaged portion of the lung is placed in a dependent position it receives preferential blood flow. This redistribution of blood flow helps match ventilation and perfusion, therefore, improving gas exchange (Lough, Stacy & Urden, 2010).

Implementing these interventions combined with respiratory therapy, significantly improved the blood gas values for oxygen and carbon dioxide levels. “ Pressure ulcers are key clinical indicators of the standard and effectiveness of care (Elliott, Fox & McKinley, 2008). ” L. M. was at high risk for pressure ulcers for multiple factors such as immobility, poor nutrition, age, and health. Therefore, I used the Braden Scale as a quality indicator in order to assess the risk of pressure ulcers and also to initiate prevention.

The Braden Scale assesses pressure sore risks by examining certain criteria: sensory perception, moisture, activity, mobility, nutrition, and friction and shear. Each category is rated on a scale of 1-4, with the exception of the friction and shear category that is rated on a scale of 1-3. There is a possible score of 23. If a patient has a higher score, they are less susceptible to development of a pressure ulcer and vice versa. In the category of sensory perception, I rated L. M. at a 2 because she only responded to painful stimuli but could not communicate discomfort with the exception of restlessness.

I scored her at a 2 in the moisture criteria because she was often diaphoretic because of increased heart rate, increased respirations, and her linens had to be changed once a shift. In terms of activity, she was a 1 because she was confined to a bed both at the hospital and at the SNF she lived in. L. M. was very limited in her mobility and would only make occasional slight changes in her body position; therefore, I assessed her to be a 2. I rated her nutrition at a 2 because she weighed 84 pounds and was on tube feeding that seemed inadequate to meet her nutritional needs. In the last category, friction and shear, I gave her a 1 since she required maximum assistance in moving. She would frequently slide down in her hospital bed and required frequent

repositioning. L. M. 's cumulative score was a 10, which is considered a high risk for developing a pressure ulcer. “ Prevention of pressure ulcers is a fundamental aspect of intensive care nursing, and quality improvement methods are arguably the most cost-effective and intuitive approach to addressing this potentially serious problem (Elliott, Fox & McKinley, 2008). One of the interventions I implemented in order to prevent pressure ulcers in my patient was the use of support surfaces. The use of a pressure-redistributing mattress and pillow supports under bony prominences, assist in relieving pressure that the patient's body weight has on the skin when lying in bed for a pro-longed amount of time. If the pressure is not alleviated it can lead to impaired circulation, damage to the skin, and eventually tissue death (Gill, Reddy & Ronchon, 2006).

In order to further promote patient care, it is necessary to educate the patient, family, and/or caregivers. There are several different factors that could help to ensure a better quality of life for L. M. Consistent trach care and good oral hygiene can reduce the risk of bacteria entering the airways and causing recurrent respiratory infections. It is important for L. M. to maintain an elevation of the head of the bed to prevent aspiration and improve ventilation. Furthermore, frequent repositioning and the use of supportive devices is imperative to maintain skin integrity.

It will also be crucial to monitor L. M. 's vital signs to be able to recognize a recurrence of pneumonia or sepsis. References Bennett, M. , Bertrand, M. , Penoyer, D. A. , Sole, M. L. , & Talbert, S. (2011). Oropharyngeal secretion volume in intubated patients: The importance of oral suctioning. *American Journal of Critical Care*, 20(6), 141-145. Elliott, R. , Fox, V. , & McKinley, S.

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