

Antibiotics before cultures in septic suspected patients



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No More Waiting - Antibiotics Before Cultures in Septic Suspected Patients

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Introduction - Identifying the Issue

September, 21 2013 was an abnormally busy day at Northeast Clark Hospital. At 6: 45 AM, 63 year old Mr. Davis Jones, present to the emergency department with a fever of 102. 6, heart rate of 110 beats per minute, and a respiratory rate of 22. His blood pressure is 91/63. He is weak and lethargic. His wife tells staff that during the past week he has been sleeping more than usual and not eating or drinking much. She suspects he has come down with the flu that has been going around. Mr. Jones is sent to a room and asked to put on a gown and informed that the doctor will be right in to see him. At 7: 00, the night shift nurse reports off the dayshift nurse of all of her patients, but fails to inform the dayshift nurse that Mr. Jones has yet to have cultures collected. At 7: 15, the dayshift nurse checks on Mr. Jones who is comfortably sleeping in the hospital bed with his wife by his side. Vital have not changed since admission. She continues to the next patient. At 7: 30 AM she rechecks on Mr. Jones and realizes that he has yet to have cultures drawn and collects the supplies. Cultures are collected at 7: 45 AM and sent to the lab. At 8: 00 lab results show WBC 16, 000. The nurse reports the findings immediately to the attending physician, who orders intravenous (IV) antibiotics and fluids. Pharmacy sends up the antibiotics at 8: 30 AM and the nurse begins infusion at 8: 45 AM. At 9: 00 AM, Mr. Jones's blood pressure drops to 58/42, heart rate soars to 160 beats per minute, and he is unconscious and unresponsive. The staff frantically rushes to infuse IV fluid into Mr. Jones but he goes into

cardiac arrest. All resuscitation attempts are made, but at 9: 45, Mr. Jones is pronounced dead.

Sepsis and bloodstream infections have become a major cause of hospitalization and death in the United States. In these situations it is a standard protocol to collect blood cultures before administration of antibiotic, however, this can often delay the treatment needed to reduce the chance of death of patients with septicemia. With new advances in culture collection technology, blood culture collection containers now contain antimicrobial removal media, which makes it no longer necessary to delay treatment of antibiotics in order to wait for untreated blood specimens to be collected. By using the antimicrobial removal media enriched blood collection containers for all patients with suspected sepsis, antibiotic treatment can be initiated faster, hospital stays will be shorter, cost of care will be decreased, and fewer people will die due to septicemia.

Analysis of the Current Situation

Currently, standard protocol for septic suspected patients is for blood cultures to be collected from two different ventipuncture sites before the initiation of any antibiotic therapy using aseptic technique. It is also recommended that antibiotic therapy be initiated within one hour of onset of septicemia. According to a research study by Anand Kumar (2006), every hour of delay in antimicrobial therapy result in an increase in mortality of 7.6%. While the majority of hospital facilities strive to achieve the goal of cultures and antimicrobial therapy within the one hour time frame, the reality is that very few are actually successful. It is estimated that only about

12% of patients actually receive the antimicrobial therapy within the first hour(Daniels, 2011). To make matters worse, emergency departments struggle with overcrowding. According to hospitalstats. org, the median emergency department wait time in the Clark County Valley is 3 hours 25 minutes(Hospital Stats, 2014).

Identifying the signs and symptoms of sepsis is a huge barrier to providing timely treatment. Another huge problem with the standard protocol for cultures before antibiotic therapy is that 50% to 82% of patients presenting to the emergency or intensive care facilities with suspected septicemia have already been given an antibiotic before admission and culture collection(Zadroga et al., 2013). However, with the initiation of facilities using antimicrobial removal resin blood culture containers, such as BACTEC PLUS, many of the barriers to providing timely care to septic suspected patients can be overcome. BACTEC PLUS has been proven to recover 95. 1% of bacterial pathogens in blood culture samples with therapeutic levels of antimicrobial agents present, and 100% of strains in control bottles (Flayhart, Borek, Wakefield, Dick, & Carroll, 2007).

Leading Change

It is estimated that 20, 000 people die worldwide every day from sepsis(Daniels, 2011). While the use of blood culture analysis is and always will be one of the most important evidence-based microbial testing procedures for determining diagnosis of septicemia, the need to wait for cultures to be drawn before administering life saving antimicrobial therapy is unnecessary. Patients with suspected septicemia need to be receiving

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antimicrobial therapy within the one hour time frame, whether or not cultures have been drawn. It needs to become standard protocol that the antimicrobial therapy be initiated in that one hour time frame, and move away from the standard being cultures first. To initiate this change, it is proposed that implementation of antimicrobial therapy be initiated immediately in septic suspected patients.

The Process of Change

Change will be in the emergency department. All medical staff, including physicians, nurses, LPNs, CNAs, and technicians will be informed of the change to take place by having multiple conferences and training sessions over a period of time, no less than four weeks, with a minimum of three different time slots occurring near shift change to accommodate all shifts for all employees to be able to attend. All attending staff will sign an agreement contract, including the understanding of the new policy to be implemented. Once they have been fully informed and have had the opportunity to express all misunderstanding and concerns with the new policy, implementation of the policy in the department will ensue. The emergency department will be fully stocked with BACTEC blood collection containers. Quality control agents will monitor compliance of the policy to record all valid data associated, including time frames of initiation of the antimicrobial agent and blood culture analysis using the antimicrobial removal media. Most importantly, infection control will assess the outcome of patients with confirmed septicemia and will closely evaluate the new treatment plan to verify if the policy is proving to be helpful in improving the outcome of patient survival rates.

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Impact of Change

If outcomes are positive, the facility can begin to implement the policy, following the same steps already stated, to more departments and continue to evaluate the effectiveness of the policy on each department until the entire facility is using the policy. In order to initiate the change it will take a team effort. All staff will need to comply in ensuring that all septic patients are receiving the antimicrobial therapy within the one hour time frame, regardless if cultures have been drawn first or not. This will be imperative for analysis as to if the new policy is effective in reducing the mortality rate of septic patients.

Conclusion

Sepsis infections are going to continue to be a major cause of hospitalization, but with new protocols including ensuring administration of antibiotics in septic suspected patients within the one hour time frame of onset regardless if cultures have been collected first, we can reduce the chance of death for these patients. As medical staff, we need to use the advances in culture collection containers like BACTEC to initiate faster treatment, which will make hospital stays shorter, decrease cost of care, and most importantly, save more lives.

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