Hiding in plain sight: Why are we worried about Ebola and not sepsis?

Sepsis kills more people in the United States than breast cancer, heart attacks, and the next two leading diseases combined. It is the leading cause of readmissions and for treatment costs exceeding twice that of the next most expensive condition. Survivors frequently suffer amputations and postsepsis syndrome, spending years on treatment and medication to recover. One in 150 people will be directly affected by sepsis, compared to the 1 in 33 million chance that a US resident would contact Ebola. We now have federal funding and a structured framework to treat Ebola, yet nothing exists to address sepsis even though the Centers for Medicare & Medicaid Services (CMS) reported spending $20 billion in 2011 treating its symptoms for Medicare and Medicaid patients. How do we continue to miss sepsis as a risk management emergency?

Ask any facility risk manager their fall rate and they will cite the statistics. Ask about their Ebola preparedness, and they will be able to explain the structure and resources now in place, even though the chances of an Ebola patient presenting to their facility is minuscule. Yet ask them about their sepsis rate, and most will have to struggle to answer.

Sepsis is not an easy word to say. It is not a word in common vernacular, and most Americans have never heard the word. It is not comfortably used by health care providers, who can be at a loss to more fully explain its definition to a patient or family. However, if a patient dies from an insect bite, pneumonia, a postoperative infection, the flu, or even Ebola, they likely died from sepsis. Yet sepsis is rarely used as a diagnosis, with providers instead using terms such as complications, rapid decline/deterioration, or blood infection to describe the patient’s condition. Like the old diagnosis of sudden infant death syndrome (SIDS), sepsis appears to remain a medical mystery. Why is it so hard to talk about sepsis?

UNDERSTANDING SEPSIS

Sepsis is the body’s response to an infection—not all infections but those that trigger an inflammatory response in the bloodstream, which moves to the organs and ultimately to the brain and heart. This response, where the body is fighting against the infection and losing, is called systemic inflammatory response syndrome (SIRS). It is the first step of several leading to the onset of septic shock and likely death. Sepsis remains a condition with a mortality rate ranging from 20% to 50%, depending on the aggressiveness of treatment and the stage when treatment is started. Every hour of delayed treatment results in an increased mortality rate tenfold (see Figure 1).
Once sepsis is diagnosed, the only halting treatment is aggressive antibiotic and antifungal IV treatment. This essentially strips the body’s immunity system in an effort to perform a medical “reboot,” with the hope that it will stop the inflammatory response while the infection is treated. When caught early, sepsis is completely treatable. When caught midstream, the patient may suffer the consequences but may have a chance at survival. But if the early symptoms are missed, death is likely the only result.  

Why call sepsis a risk management nightmare? Because it is preventable, treatable, and, if missed, can have costs in the hundreds of thousands of dollars to treat a single patient. And we still have the likely chance that those patients will die.

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It’s costly in resources, as patients frequently require intensive care unit (ICU) residence as well as multispecialty care. It is time sensitive, and where resources don’t exist, patients can decline while awaiting specialists to arrive. Sepsis doesn’t have a specialty area dedicated to its patients, and most community hospitals may not have infectious disease specialists available. It is not a specialty area diagnosis, but instead a condition that can arise anywhere, at any time, simply triggered by some type of invasive contact with the human body. The singular trauma—from the insect bite to undergoing surgery—starts the SIRS, where moments of indecision can result in complete compromise and irreversible damage.

Patients present in the emergency department (ED) with sepsis symptoms that can mimic those of the flu—body chills, low oxygen levels, fatigue, confusion, and lightheadedness. The symptoms can be subtle, and the patients often too weak or lethargic to fully explain what they are experiencing. It is then easy to treat the patients conservatively, sending them home for rest and liquids, only to have them die within hours of discharge. If they don’t die? Their organs have shut down in an effort to preserve the heart and brain, pulling all resources from the limbs first, then starting to shut down the lesser organs—the kidneys, lungs, and sensory functions. This means that limbs are sacrificed and require amputation to deal with circulation loss. The body is simply preserving all resources for its main core, leaving those areas of the body not necessary for survival.

Sepsis primarily arrives through the ED, with 80% of diagnosed cases identified before admission. Once hospitalized, 2 of 3 septic patients will die. Furthermore, if sepsis develops during an inpatient stay (most frequently postoperatively), the mortality statistics remain the same. Subtle initial symptoms are missed as commonly on hospital floors as they are in the community. Being already in the hospital does not increase the chance of survival.

MALPRACTICE RAMIFICATIONS

National verdicts in cases of a missed sepsis diagnosis have increased to millions of dollars. A 2015 verdict search finds verdicts across the United States ranging from $2 million to over $30 million, based on the simple premise that the condition is preventable and treatable, and yet it is missed. Jurors see survivors, often with multiple limb amputations, or the deceased’s loved ones, and understandably feel tremendous sympathy. Sympathy can drive verdicts and settlement values, and as sepsis awareness becomes more widespread, so does the public’s expectation that it will be prevented.

We know that only 97% of malpractice cases are resolved outside of the courtroom. A review of the Western Litigation claims database shows over 25,000 asserted matters having a sepsis component. These cases, from across the United States, have a total incurred value of $1.6 billion. The cases have resulted in injury, from additional hospitalization and treatment needs (4%) to amputation of limbs (6%) and, ultimately, death (90%). The patients range from the elderly to the newborn and everyone in between (see Figure 2).
Sepsis cases are becoming incredibly difficult to defend, as clinical guidelines have been extensively published showing that early recognition and aggressive antibiotic treatment can halt SIRS. Recognizing sepsis symptoms does not require a specialist or unique resources. It can be treated at any facility, small or large, with success. Countries with national health systems have coordinated, standardized protocols in place, resulting in decreased sepsis cases and decreased mortality rates. In the United States, the changes are made hospital by hospital, with some notable exceptions where multifacility systems have recognized and addressed the challenge with significant results. But most patients will present to their local community hospitals, and it continues to be missed.

FINANCIAL IMPLICATIONS

CMS lists sepsis as the basis for $20 billion in care rendered in 2011, as well as the reason for more than 90% of all readmissions (and over 20% for sepsis readmissions). Sepsis hospitalizations average a cost of $18,400 per patient—twice that of the next most expensive condition (see Figures 3 and 4). Depending on how the hospital codes the patient care, reimbursement can vary. Most septic patients require ICU care, the most expensive bed in the hospital.

It is notable that sepsis is not on the list of NQF Never Events, nor is it typically a clinical outcome measurement reported consistently across the country. The underlying infection may be reported as a hospital-acquired infection, but the more devastating impact is the sepsis response.

One of the challenges in finding actual sepsis rates with precision is that sepsis can be coded via 22 different ICD-9 codes. How the hospital codes the patient’s care, and what codes they use to report sepsis, can dramatically impact what is reflected as a sepsis treatment and mortality rate. In 2009, the Agency for Healthcare Research and Quality (AHRQ) determined that within the United States, there were 836,000 discharges where sepsis was a primary diagnosis and 829,000 where it was a secondary diagnosis. Yet if sepsis is never diagnosed in the patient, the care would never be included in the statistics.

Sepsis is not predictable, as it can arise in any patient in response to a new or existing infection. But there are certain populations that are more affected by sepsis, with resultant increases in mortality rates, such as children, the elderly, and those with chronic conditions. Where a decreased immune system is present, sepsis can take hold and cause an immediate death.

LEGISLATIVE RESPONSE

Rory Staunton, a 12-year-old boy in New York, died of sepsis and gained media attention when his parents appealed to Governor Cuomo for a legislative response. The resulting legislation, called Rory’s Law, requires hospitals to treat patients with presenting symptoms meeting sepsis criteria or risk fines. The legislation has not been well received by the hospital community, as it was felt that dictating treatment via a political forum did not allow for the clinical judgment necessary to determine what was best for an individual’s care. In addition, the hospitals felt that requiring patients who had the symptoms, but not sepsis, to remain as inpatients directly impacted their ability to control their bed resources.
The legislation remains under review and with mixed reviews. While clear that the underlying motivation was correct—to increase the awareness and response to sepsis—the method of enforcement was created in a vacuum, without input of the health care industry. So rather than achieving its goal of increasing health care safety, the legislation instead became a public discussion on who gets to make health care decisions for patients. And sepsis once again moved to the background, instead of remaining in the forefront where it belonged.

EFFORTS UNDER WAY

The “Surviving Sepsis Campaign” was an international effort organized by physicians that developed and promoted widespread adoption of practice improvement programs grounded in evidence-based guidelines. The worldwide goal was to improve diagnosis and treatment of sepsis. Included among the guidelines were sepsis screening for high-risk patients; taking bacterial cultures soon after the patient arrived at the hospital; starting patients on broad-spectrum intravenous antibiotic therapy before the results of the cultures are obtained; identifying the source of infection and taking steps to control it (e.g., abscess drainage); administering intravenous fluids to correct a loss or decrease in blood volume; and maintaining glycemic (blood sugar) control. These and similar guidelines have been tested by a number of hospitals and have shown potential for decreasing hospital mortality due to sepsis.

Hospitals with successful reduction rates are starting to share their efforts. Dartmouth Hitchcock, Carolinas HealthCare System, Intermountain Healthcare, and others are publishing their mortality reductions when a sepsis awareness and immediate response program is put into place.

FUTURE INNOVATIONS

Currently, a blood culture can be done in the ED, with results back in a few hours, confirming the presence of an underlying infection. While helpful, this is not a definitive diagnostic tool for sepsis, since infection can be present without sepsis. As a consequence, several biotech companies are working to create testing that can quicken diagnosis in the ED by identifying the inflammatory response markers present at sepsis onset (such as neutrophil bands and lactate rates). Once the products are mainstream, testing will become the standard, and hospitals without testing will fail in successfully defending delayed diagnoses.

But even with the best and newest test results, the treatment will be the same, per the clinical guidelines published and promoted worldwide. Aggressive antibiotic and fluid therapy, close monitoring, and appropriate oxygenation will continue to be the treatment of choice—all of which are in the control of every hospital countrywide right now, with no additional training or resources needed. The key to successful treatment is timely recognition of symptoms. In facilities where staffing is limited or where one-on-one monitoring isn’t possible, early symptoms can be missed, resulting in a catastrophic downward spiral of a patient moving from early symptoms to septic shock. Every hour of delayed diagnosis increases the mortality rate significantly.

BRING IT OUT OF THE SHADOWS

A sepsis prevention initiative does not have to be costly, nor does it require a capital budget to purchase unique training tools. Great educational resources are available for free from websites such as Sepsis Alliance and Global Sepsis Alliance, including evidence-based research, clinical guidelines, groundbreaking innovation/treatment, and survivor stories.

Checklists, algorithms, and other tools are available from various online sources, especially where a program-wide implementation was successful.

Simulation-augmented training services present unique learning opportunities, as the providers can witness the mannequin’s dramatic decline into septic shock in person. This experience increases their awareness and appreciation of the necessary speed of diagnosis and treatment. Reading about a patient’s experience is one thing; watching a patient (even a plastic one) deteriorate right before your eyes is another.

MAKING A RETURN ON INVESTMENT ARGUMENT FOR A SEPSIS RISK INITIATIVE

So where should a risk manager start to implement a sepsis initiative? To achieve success in any risk endeavor, there needs to be an understanding of the global issue, then an investigation into the specific facility’s experience.

An Action Plan will include the steps listed in Figure 5. But an Action Plan alone will not generate results. The key is to have a multilevel implementation plan, communicated widely throughout the facility. At a minimum, a sepsis initiative should include:

- Education for all providers and staff on symptom recognition;
- Policies reflecting the clinical guidelines on immediate treatment;
- Sepsis response “crash carts” with resources needed to commence treatment;
- Signage facility-wide outlining the symptoms for ease of recognition by patient families and friends;
- Respect for the word—if someone says it, it needs to be considered;
- Community education to encourage early recognition and presentation to the ED where treatment can be commenced;

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• Coordination with EMS personnel on presenting symptoms as well as signs of decline during transport; and
• Common use of the vernacular. Say sepsis. Then rule it out.

As mentioned, posters, reference cards, wristbands, and other resources are available through resources such as Sepsis Alliance and Global Sepsis Alliance. The key to awareness is an assortment of visual triggers for providers, staff and patients/families to remember the signs, and to be on alert for patient deterioration. The more public and repetitive the information, the greater the chance that the symptoms will be suspected and recognized when they present.

The next step is to communicate to senior management the impact of the initiative in order to gain their support of the training and orientation efforts. The best way to facilitate this communication is to illustrate a return on investment (ROI) for the initiative in terms of additional patient care costs as well as a focus on enhanced patient safety.

To identify the ROI for the initiative, consider these steps:

1. Identify the facility’s current sepsis rate (a) and mortality rate (b).

2. Take the published average cost and length of stay information times the facility specific information to determine facility costs ($18,400 x a + (a x b)).

3. Identify the difference between the desired* mortality rate and the current hospital rate (a – 15% = percentage to be reduced (p)).

4. Multiply the percentage to be reduced by the published average cost (p x $18,400) to get the amount of potential savings in care costs.

5. Subtract the desired mortality rate* from the current mortality rate to determine the number of patient lives to be saved (15% – b = lives to be saved (L)).

6. Present to the board the information: by focusing on a sepsis early identification and treatment plan: we can save $___ in treatment costs and save ___ patient lives.

The final step is to take the message to your community through health fairs or presentations to key community organizations. Sepsis mortality rates decline when the patient presents to the ED, where treatment can commence. Educating community members on the need for early recognition and presentation to the health care facility can have a significant impact on sepsis rates in the community (see Figure 6). Facilitating support groups for sepsis survivors can also have a positive impact on healing.

Sepsis deserves attention. It is our obligation to bring more knowledge and focus on this preventable, but deadly, condition.
REFERENCES


ABOUT THE AUTHOR

Pamela L. Popp, MA, JD, DFASHRM, CPHRM, AIM, Executive Vice President/Chief Risk Officer for Western Litigation, Inc. is a health care risk lawyer dedicated to risk identification and mitigation. Currently chairing the Content Committee and serving as faculty for the ASHRM Risk Financing Boot Camp, Pamela has been an industry volunteer for her entire career, including serving as a past president of ASHRM, the AHA Certification Center, and the International Center for Captive Insurance Education (ICCIE). Her risk background became even more relevant when she experienced septic shock post operatively, and discovered an incredible area of health care risk that suddenly demanded her attention.