FIRST RESPONDERS OF SEPSIS (NURSES)—SAVING LIVES

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• MY INSTITUTION HOUSTON METHODIST HOSPITAL PROVIDED PARTIAL SUPPORT IN COMING TO THIS CONFERENCE
• **The Texas Medical Center** is the largest medical center in the world. 9200 Patient beds

• TMC in Houston the center contains 54 medicine-related institutions, including 21 hospitals and 8 specialty institutions, 8 academic and research institutions, 4-Medical school, 7 Nursing Schools, 3 Public Health Organizations, 2 Pharmacy Schools, 1 Dental School
Why should we care about Sepsis?

- Sepsis is the leading cause of death by infection in the world
- Sepsis is the most underestimated health risk
- It affects more than 30 million people each year
- At least 6 to 8 million of them die - Equal Opportunity Killer
- Many surviving patients suffer from long term complications
- In USA it is the 11th leading cause of death and cost totaling app 17.7 billion dollars.
Who gets Sepsis?

Sepsis can affect anyone at any age
Making Health Care Safer
Think sepsis. Time matters.

Sepsis is a complication caused by the body’s overwhelming and life-threatening response to infection. It can lead to tissue damage, organ failure, and death. Sepsis is difficult to diagnose. It happens quickly and can be confused with other conditions early on. Sepsis is a medical emergency. Time matters. When sepsis is quickly recognized and treated, lives are saved. Healthcare providers are the critical link to preventing, recognizing, and treating sepsis.

Healthcare providers can:
- **Prevent infections.** Follow infection control requirements (e.g., hand hygiene) and ensure patients receive recommended vaccines (e.g., flu and pneumococcal).
- **Educate patients and their families.** Stress the need to prevent infections, manage chronic conditions, and seek care if signs of severe infection or sepsis are present.
- **Think sepsis.** Know sepsis signs and symptoms to identify and treat patients early.
- **Act fast.** If sepsis is suspected, order tests to determine if an infection is present, where it is, and what caused it. Start antibiotics and other medical care immediately. Document antibiotic dose, duration, and purpose.
- **Reassess patient management.** Check patient progress frequently. Reassess antibiotic therapy 24-48 hours or sooner to change therapy as needed. Be sure the antibiotic type, dose, and duration are correct.

**Want to learn more?** [www.cdc.gov/vitalsigns/sepsis](http://www.cdc.gov/vitalsigns/sepsis)

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**Leading the News**

**CDC report declares sepsis a medical emergency**

The Washington Post (8/23, Karidis) reports the Centers for Disease Control and Prevention released a report declaring sepsis a medical emergency because many physicians and nurses miss the early signs of the condition. In a statement, CDC Director Tom Frieden, MD, said, “When sepsis occurs, it should be treated as a medical emergency.”
Problem:

Sepsis is deadly when it’s not quickly recognized and treated.

Certain people with an infection are more likely to get sepsis.
- CDC evaluation found more than 90% of adults and 70% of children who developed sepsis had a health condition that may have put them at risk.
- Sepsis occurs most often in people 65 years or older or younger than 1 year, with weakened immune systems, or with chronic medical conditions (e.g., diabetes).
- While less common, even healthy infants, children, and adults can develop sepsis from an infection, especially when not treated properly.

Certain infections and germs lead to sepsis most often.*
- Four types of infections are often associated with sepsis: lung, urinary tract, skin, and gut.
- Common germs that can cause sepsis are Staphylococcus aureus, Escherichia coli (E. coli), and some types of Streptococcus.

*Among patients in the evaluation with an identified source of infection; however, infectious source cannot be identified in many patients.

Healthcare providers are key to preventing infections and illnesses that can lead to sepsis.

**EDUCATE** patients and their families about the early symptoms of severe infection and sepsis, and when to seek care for an infection, especially those at higher risk.

**REMIND** patients that taking care of chronic illnesses helps prevent infections.

**ENCOURAGE** infection prevention measures, such as hand hygiene and vaccination against infections.

Common infections can lead to sepsis:

- **Among adults with sepsis:**
  - 35% had a lung infection (e.g., pneumonia)
  - 25% had a urinary tract infection (e.g., kidney infection)
  - 11% had a type of gut infection
  - 11% had a skin infection

Know the signs and symptoms of sepsis.

- Shivering, fever, or very cold
- Extreme pain or discomfort
- Clammy or sweaty skin
- Confusion or disorientation
- Short of breath
- High heart rate

**SOURCE:** CDC Vital Signs, August 2016.
• So now we are dealing with a disease process which has a very high mortality rate, impacts all ages, high cost to patients and society.

• Health care providers have to answer this challenge
At our institution, Sepsis was the leading cause of mortality. We didn’t have a cohesive strategy for recognizing and treating it.

Hence, we decided to do something about it.
Our Journey – Key Elements

• The organizational commitment and data-based leadership

• Development and integration of an early sepsis screening tool into the electronic health record (initially a paper based tool)

• Creation of screening and response protocols

• Engagement, Education, Training and Empowerment of Nurses
• Members of Care Management and Process Improvement Committee (Sepsis CMPI) included

• Physician representatives from ER, ICU, Acute Care floor

• Nursing Champions from ER, ICU, Floor

• Nurse Practitioners, Pharmacy, Infectious disease, Respiratory Therapist, Hospital Administration

• Quality and Patient Safety representative, IT
• Mortality exponentially increases when Sepsis progresses to Septic Shock

• The Key is diagnosing and treating at the stage of Sepsis vs. when they are in Septic shock
MORTALITY ESCALATES ALONG THE SEPSIS CONTINUUM: A CLEAR TREND EXISTS

Sepsis Mortality Continuum

- SIRS: 5%
- Sepsis: 10%
- Severe Sepsis: 25%
- Septic Shock: 60%
Some early descriptions of Sepsis

• Niccolo Machiavelli (1469–1527), as reported in his treatise, *The Prince*, in 1513. Early in the book, he very eloquently stated that, “hectic fever, at its inception, is difficult to recognize but easy to treat; left unattended it becomes easy to recognize and difficult to treat.”

• Although hectic fever is not the name by which we know sepsis now, the description of a disease that is difficult to recognize in its early stages, at a time when the condition may be amenable to treatment, and more difficult to treat in its later more obvious stages is a clear description of the more severe forms of sepsis.
There are 19.3 million nurses and midwives according to the World Health Organization's *World Health Statistics Report*, 2011.

Hence, Nurses are the first responders in hospitals playing a leading role in early recognition and helping to initiate treatment for sepsis.
“The most important practical lesson that can be given to nurses is to teach them what to observe—how to observe—what symptoms indicate improvement—what the reverse—which are of importance—which are of none—which are the evidence of neglect—and of what kind of neglect”

-Florence Nightingale, 1860
Validation of a Screening Tool for the Early Identification of Sepsis

Laura J. Moore, MD, Stephen L. Jones, MD, Laura A. Kreiner, MD, Bruce McKinley, PhD, Joseph F. Sucher, MD, S. Rob Todd, MD, Krista L. Turner, MD, Alicia Valdivia, RN, and Frederick A. Moore, MD
Screening Tool Elements

- Temperature
- Heart Rate
- Respiratory Rate
- Most recent White Blood Count
- Mental Status
• Screening done every 12 hours interval

• Initial work done in ICU, however, it was early on recognized that most of the opportunity was outside of ICU’s

• Re-Focus on patient presenting in ER, patients getting admitted from ER to acute care floors, and outside transfers to the hospital.
BUT How?
• Based on concept of L.A.F
1. Laboratory work (lactic acid and cultures)
2. Access, Antibiotics and Assessment,
3. Fluids, Follow Up
Improve health conditions.
George is a 72-year-old man with diabetes. During his check-up, George’s healthcare provider takes the opportunity to strengthen his chronic disease care (glucose control and skin care), provide recommended vaccines, and share information about symptoms that indicate an infection is worsening or sepsis is developing.

Educate patients and their families.
One month later, George has a cut on his foot that might be infected. He calls his healthcare provider, who tells him how to take care of the cut and signs of infection. Two days later, his foot is worse and he becomes short of breath, has clammy skin, and is more tired than usual. He recognizes symptoms are worsening and it could be sepsis. He seeks medical attention immediately.

Think sepsis. Act fast.
At the hospital, a healthcare provider recognizes the signs and symptoms of sepsis. She immediately orders tests to determine the source of infection and starts appropriate treatment, including antibiotics. She documents the dose, duration, and purpose of antibiotics.

Reassess patient management.
Healthcare providers closely monitor George’s progress and adjust therapy as needed. When George improves, his providers transfer him to a rehabilitation facility to continue his recovery. The hospital care team discusses his treatment plan with the team at the new facility.

We were able to decrease the mortality from 35% to as low as 11%
More than 1000 lives saved
More than 25 Million Dollars in cost avoidance
• Reminding and Reinforcing Nursing role (Nursing Champions and Core Competencies) – As Core Front Line healthcare Providers
Over reliance on technology is a mistake. The skills of the bedside RN, and the rest of the health care team are still critically relevant. Bringing their Experience and Training into action.
Take Home Messages - Nursing Impact

• A Process Map – that identifies Healthcare Providers who would back up Nursing alert in a systematic and Protocolized way.
• Measure, Measure, and Measure
Why do you think it Worked

- Reason number 1
- Reason number 2
- Reason number 3
- Let's Talk Key Steps that can potentially work in Most Institutions