Indiana Patient Safety Center
of the Indiana Hospital Association

Sepsis: See It. Stop It. Survive It.

Rebecca Hancock, PhD, RN, CCRC
Patient Safety and Quality Advisor
Indiana Hospital Association

Sepsis on the Streets of Indianapolis!

Objectives

Indiana Patient Safety Center
of the Indiana Hospital Association

1. *Identify clinical signs & symptoms across the continuum*
2. *Share Indiana sepsis legislative agenda.*
3. *Share current data on sepsis bundle compliance and readmissions Identify appropriate expectations for sepsis bundle and reducing time to treatment in the pre-acute phase, acute care phase and the post-acute care settings*
4. *Provide tools for infection education and communication tools for transitions*
5. *Consider critical conversations around sepsis care*

Identify

- Sepsis Symptoms
- Incidence of Sepsis
- Risk Factors
- Sources
- Treatment Guidelines
- Prevention

OLDER ADULTS- SEPSIS EXPERIENCED

What is Sepsis?

Indiana Patient Safety Center
of the Indiana Hospital Association

- *Sepsis is the body's overwhelming and life-threatening response to infection which can lead to tissue damage, organ failure, and death. Learn more about the symptoms of sepsis, which kills 270,000 Americans each year.*

Sepsis Definitions

Indiana Patient Safety Center
of the Indiana Hospital Association

- Sepsis: Life-threatening organ dysfunction caused by dysregulated host response to infection
- Septic Shock: Subset of sepsis with circulatory and cellular/metabolic dysfunction associated with higher risk of mortality

JAMA. 2016;315(8):801-810. doi:10.1001/jama.2016.0287

HEA 1275 Indiana Sepsis Law 2019

Indiana Patient Safety Center
of the Indiana Hospital Association

- Indiana Sepsis Guidelines
  - Requires the State Department of Health (ISDH) to: (1) adopt model guidelines based on recommendations of the task force; and (2) coordinate, develop, and implement sepsis guideline training.
  - Requires a hospital to adopt, implement, and periodically update evidence-based sepsis guidelines for the early recognition and treatment of patients with sepsis, severe sepsis, or septic shock that are based on generally accepted standards of care. Provides that a hospital that submits sepsis data as required by the Centers for Medicare and Medicaid Services Hospital Inpatient Quality Reporting program is presumed to meet the sepsis reporting requirements of this bill.
  - Evidence-based sepsis treatment guidelines must be provided if the ISDH requests them.

National Facts

Indiana Patient Safety Center
of the Indiana Hospital Association

1. Sepsis is the leading cause of death in U.S. hospitals; 3rd leading cause of death overall
2. Sepsis is the leading cause of readmissions to the hospital with 19 percent of people hospitalized with sepsis needing to be re-hospitalized within 30 days
3. More than 80 percent of infections leading to sepsis are contracted outside of the hospital
4. Ambulances deliver more patients with sepsis than heart attack and stroke combined
5. Up to 92% of all sepsis cases originate in community, not hospital
6. Nearly ¾ of Americans know symptoms of stroke but less than 1% know all sepsis symptoms; 78% can identify at least 1 sepsis symptom
7. 23% of Americans believe sepsis only happens in hospitals
8. Those under 45 are significantly more likely to have heard of sepsis than those over 45 (62% vs 53%)

(www.sepsis.org)

Sepsis Background Statistics

Indiana Patient Safety Center
of the Indiana Hospital Association

- *Prevalence & Cost*
  - Sepsis kills 270,000 Americans annually—one every 2 minutes (Sepsis Alliance, 2019)
  - Most common hospital discharge diagnosis @ $51,000 average in Indiana 20,000 per admission; $472 million in inpatient charges in Indiana (2018)
- *Mortality Rates*
  - 3rd leading cause of death in U.S. (Sepsis Alliance, 2016)
  - 15-30% of patients die (Sepsis Alliance 2019)
  - Causes 75,000 maternal deaths worldwide
- *Readmissions*
  - 20-25% of sepsis patients are readmitted to hospital within 30 days-leading cause of readmissions

- *7.6% increase in mortality for every hour delay in effective antibiotic therapy for septic shock (Kumar, 2006)*

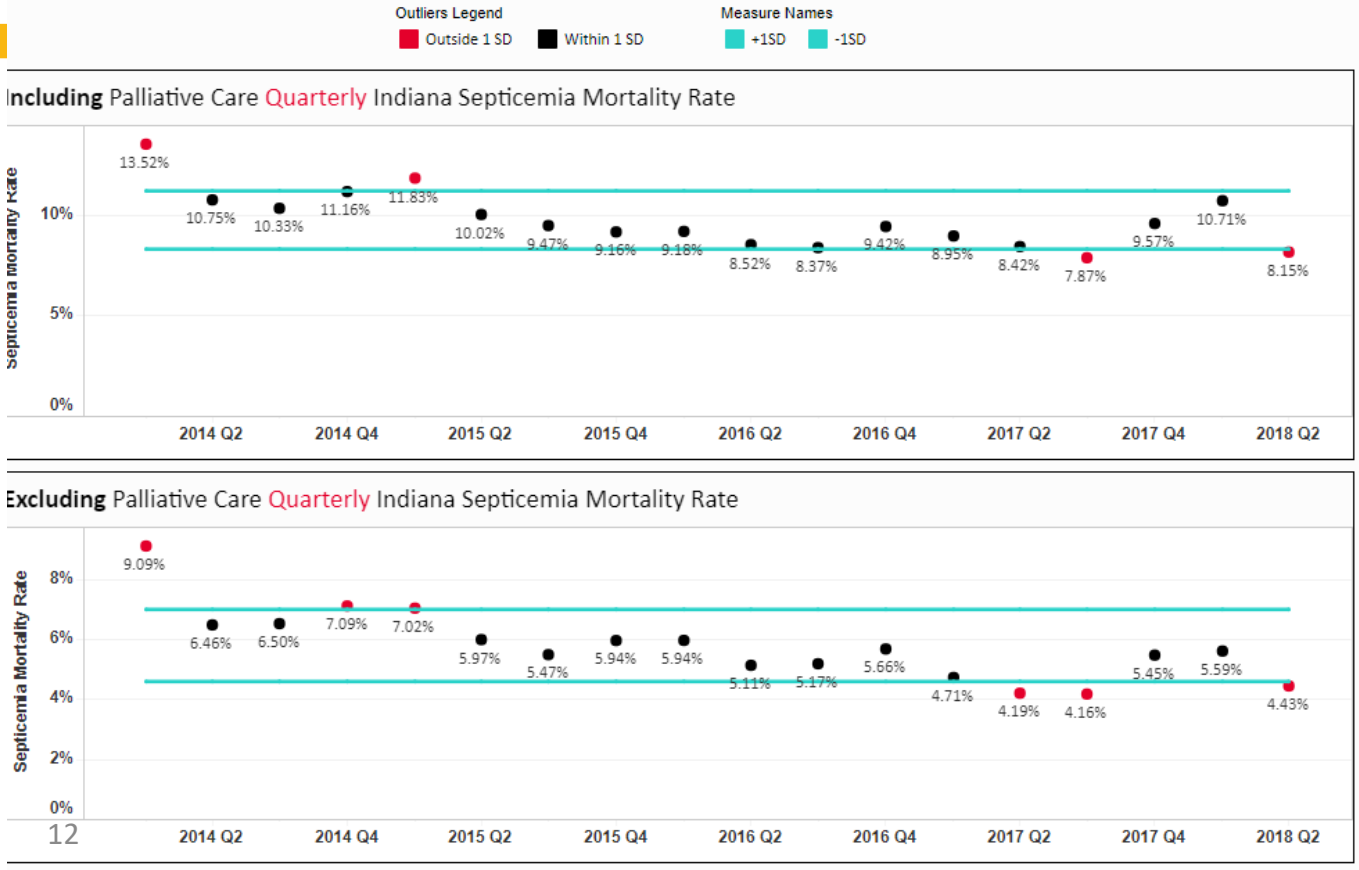
Indiana Facts

Indiana Patient Safety Center
of the Indiana Hospital Association

1. *Over 3,500 Hoosiers died in hospitals from sepsis in 2018.*
2. *In 2018, there were more inpatient deaths from sepsis than any other diagnosis.*
3. *The average charges for an inpatient with a sepsis diagnosis in Indiana is more than $51,000.*
4. *Sepsis is the most frequent inpatient discharge, aside from deliveries.*
5. *In 2018, sepsis as the primary diagnosis resulted in over $472 million in inpatient care charges/$24 billion in U.S.*

(www.survivesepsis.com toolkit from Indiana Hospital Association)

Quarterly Statewide Septicemia Mortality Rates Data by APR-DRG 720

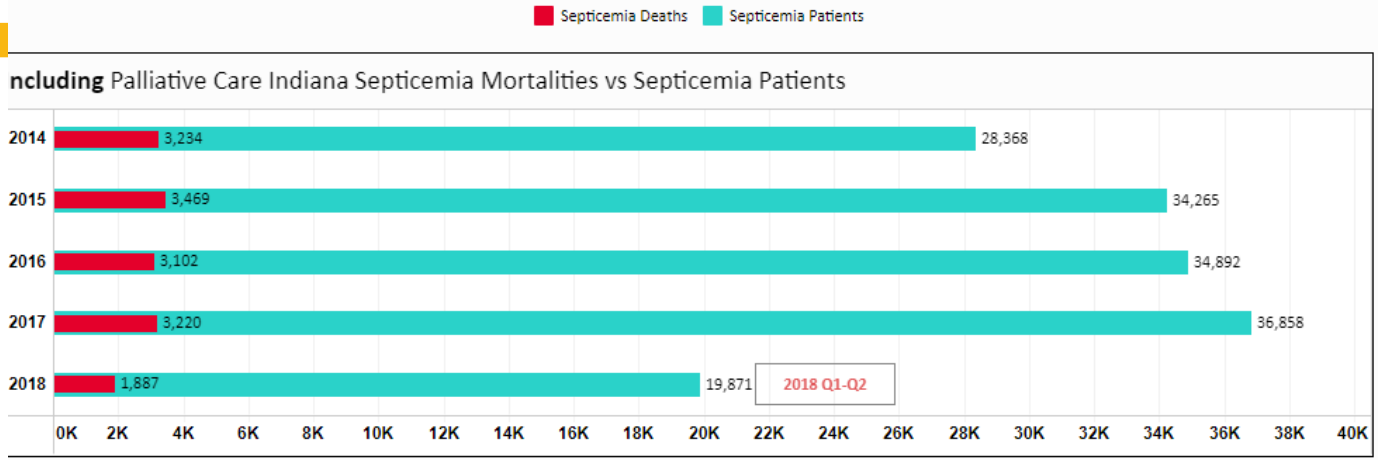


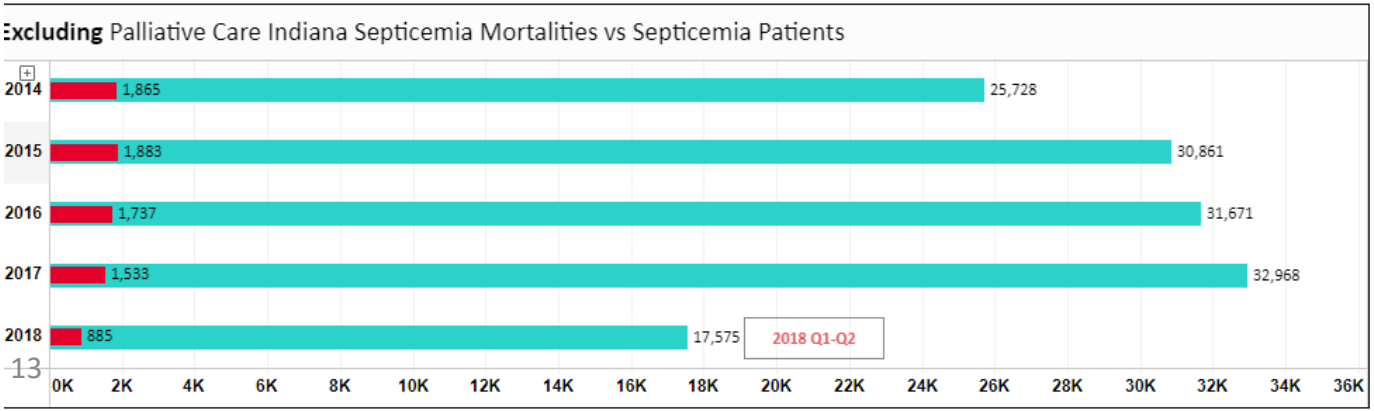
SEE IT. STOP IT. SURVIVE IT.

Safety Center of the Indiana Hospital Association

Indiana Patient Safety Center of the Indiana Hospital Association

Septicemia Mortalities vs Septicemia Patient Volumes Data by APR-DRG 720





ect.org/Quality-Patient-Safety

Older Adults & Sepsis

Indiana Patient Safety Center
of the Indiana Hospital Association

- https://www.youtube.com/watch?time_continue=285&v=a0gbxCVgukw

Risk Factors for Sepsis

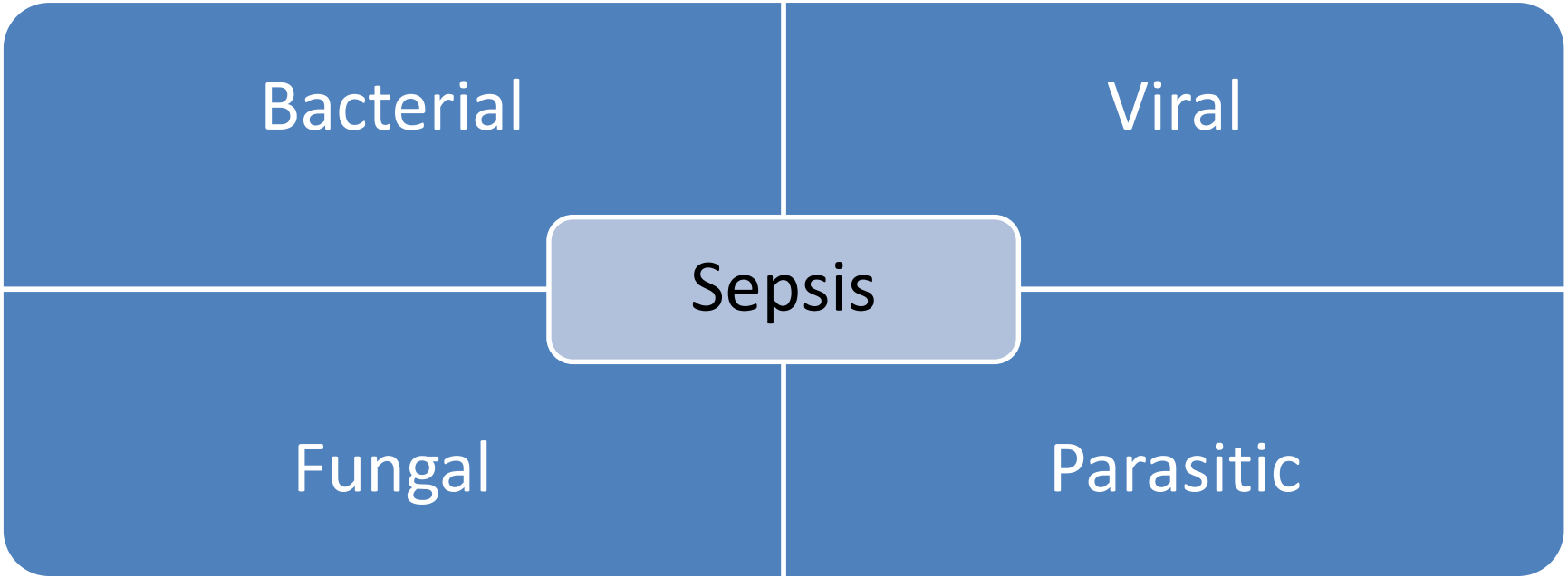
Indiana Patient Safety Center
of the Indiana Hospital Association

- *Recent UTI, pneumonia or operative event*
- *Diabetes*
- *Immunosuppressive therapy*
- *Elective surgery*
- *Chronic renal failure*
- *Alcohol abuse*
- *Splenectomy*
- *Non-modifiable factors: age (very old or young), gender (M>F), race (B>W)*

(Kumar et al, 2006; Torres et al, 2004; Englert & Ross, 2015)

Major Sepsis Types

Indiana Patient Safety Center
of the Indiana Hospital Association



Sepsis Signs & Symptoms (Patient Experienced)

Because sepsis stems from infection, symptoms can include common infection signs:

- *diarrhea*
- *vomiting*
- *sore throat*

Indiana Patient Safety Center
of the Indiana Hospital Association

https://www.ihaconnect.org/patientsafety/Initiatives/Pages/Survive-Sepsis.aspx

Sepsis Signs & Symptoms (Clinical)

Indiana Patient Safety Center
of the Indiana Hospital Association

Systemic Inflammatory Response Syndrome (SIRS) Criteria:

- **Suspected new or worsening infection with 2 or more:**
  1. Fever > 38.3 ◦ C / 100.4◦F or less than 36◦ F / 96.8 ◦ F (NSAIDS / Tylenol can mask)
  2. HR > 90 bpm (beta blockers can mask)
  3. RR >20 bpm
  4. WBC >12,000 or <4,000 of >10% bands

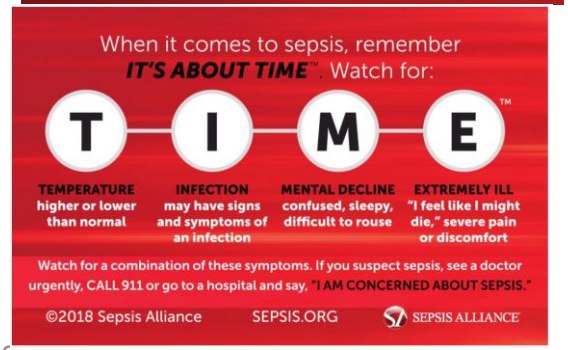
Other:

1. Altered mental status, falls
2. Severe Sepsis/Shock: SBP <90 mm Hg or SBP decrease >40 mm HG in adults
3. Delirium, anorexia, malaise, urinary incontinence, weakness, functional decline, withdrawal, agitation (Girard et al., 2015; Nasa et al., 2012; Englert & Ross, 2015)

Symptoms atypical in very old and very young

Sepsis Signs & Symptoms

Indiana Patient Safety Center
of the Indiana Hospital Association



terminology

Systemic Inflammatory Response Syndrome (SIRS)

- *Suspected or worsened infection with:*
  - Low blood pressure
  - Fever
  - Hypothermia
  - Heart rate over 90 bpm
  - Respiratory rate over 20 bpm
  - Significant edema
  - Hyperglycemia in absence of diabetes
  - Altered mental status?

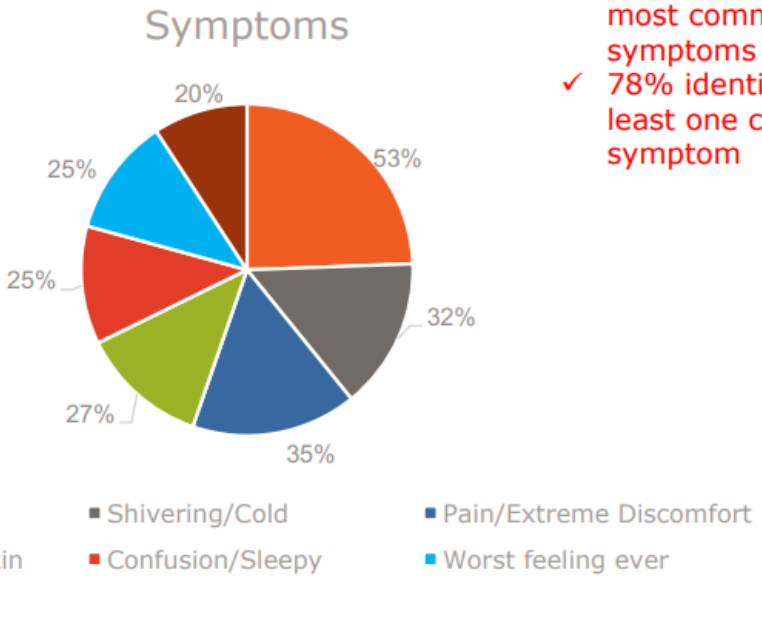
(Dellinger et al., 2013)

(Sepsis Alliance, 2016, 2019)

Sepsis Alliance Symptom Education

Indiana Patient Safety Center
of the Indiana Hospital Association

While most can identify a symptom of sepsis, nearly no one could identify all of the most common ones



- ✓ <1% correctly identified all of the most common symptoms
- ✓ 78% identified at least one correct symptom

Most Common Sources of Sepsis

Indiana Patient Safety Center
of the Indiana Hospital Association

Up to 22% sources unknown
(Kumar et al, 2006)

Pediatric

- Respiratory (57.2%)
- Genitourinary (21.6%)
- Device (9.3%)
- Abdominal (8.4%)
- Wound / soft tissue (2.9%)

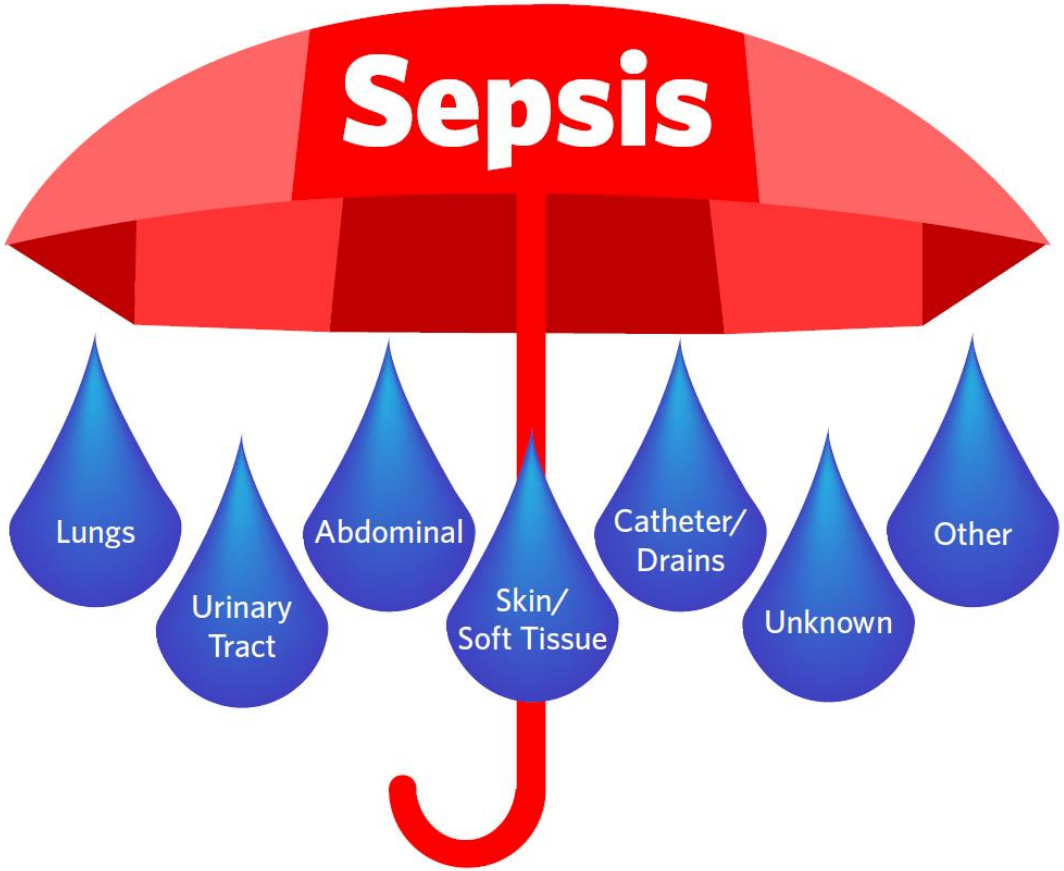
All Adult

- Respiratory (44%)
- Genitourinary (21%)
- Abdominal (21%)
- Skin (6%); Wound (4%); Catheter (4%)

Older Adult

- Urinary (44%)
- Respiratory (33%)
- Abdominal (16%)
- Skin or soft tissue (7%)

(Ruth et al, 2014; Kumar et al, 2006; Levy 2010; ElSohl et al, 2008)

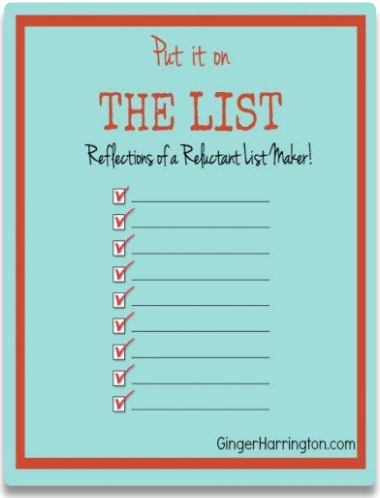

Sepsis
Lungs
Urinary Tract
Abdominal
Skin/ Soft Tissue
Catheter/ Drains
Unknown
Other

Continuum approach

Indiana Patient Safety Center
of the Indiana Hospital Association

Why focus on older adults?

Indiana Patient Safety Center
of the Indiana Hospital Association



- *66% of sepsis patients over 65 y.o. (Sutton & Friedman, 2013)*
- *Most common discharge diagnosis for readmitted patients*
- *20% re-hospitalized within 30 days; 40% within 90 days*
- *Guideline compliance improves mortality rate by 8% for older adults on Medicare (31% vs 23%) (Uppal & Dickerson, 2017)*
- *Age is independent predictor of mortality (Martin, 2012)*
- *More likely discharge to ECF (54% vs 76%) (Martin, 2012)*
- *Atypical symptoms*

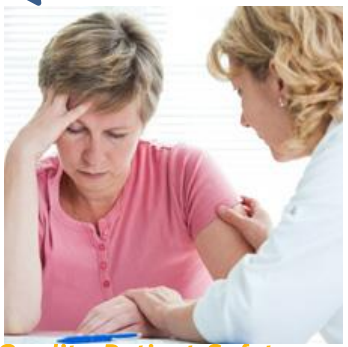
Interviews Results
Symptom Appraisal: Piecing Together Signs and Symptoms

Indiana Patient Safety Center
of the Indiana Hospital Association

Sepsis Symptoms and Risk Factors

Sepsis Symptoms Observed and Experienced by Nurses		
Case Study 1: Jane	**Case Study 2: Betsy**	**Case Study 3: Theresa**
Caregiver Observations	**Caregiver Observations**	**Patient Experiences**
1. Shaking cold 2. Decreased urine output 3. Listlessness 4. Confusion 5. † Hard to arouse 6. Fatigue 7. † Excessive sleep 8. Weakness 9. Dehydration 10. Decreased appetite 11. Really tired 12. "not feeling good" 13. Scared 14. Almost passed out	1. Not feeling well 2. Fever 3. Sweaty 4. Decreased energy 5. Decreased Parkinsonian movements 6. Decreased appetite 7. † Lethargy 8. Eyes "wouldn't light up" 9. "Just not himself" 10. History of aspiration pneumonia	1. Surgical site drainage 2. Back pain with inspiration 3. Nausea 4. Feeling of generalized discomfort 5. Feeling really bad 6. Unable to get out of bed 7. † Fever 8. Headache "like the top of my head coming off" 9. Low blood pressure 10. Vomiting 11. Heart rate 100

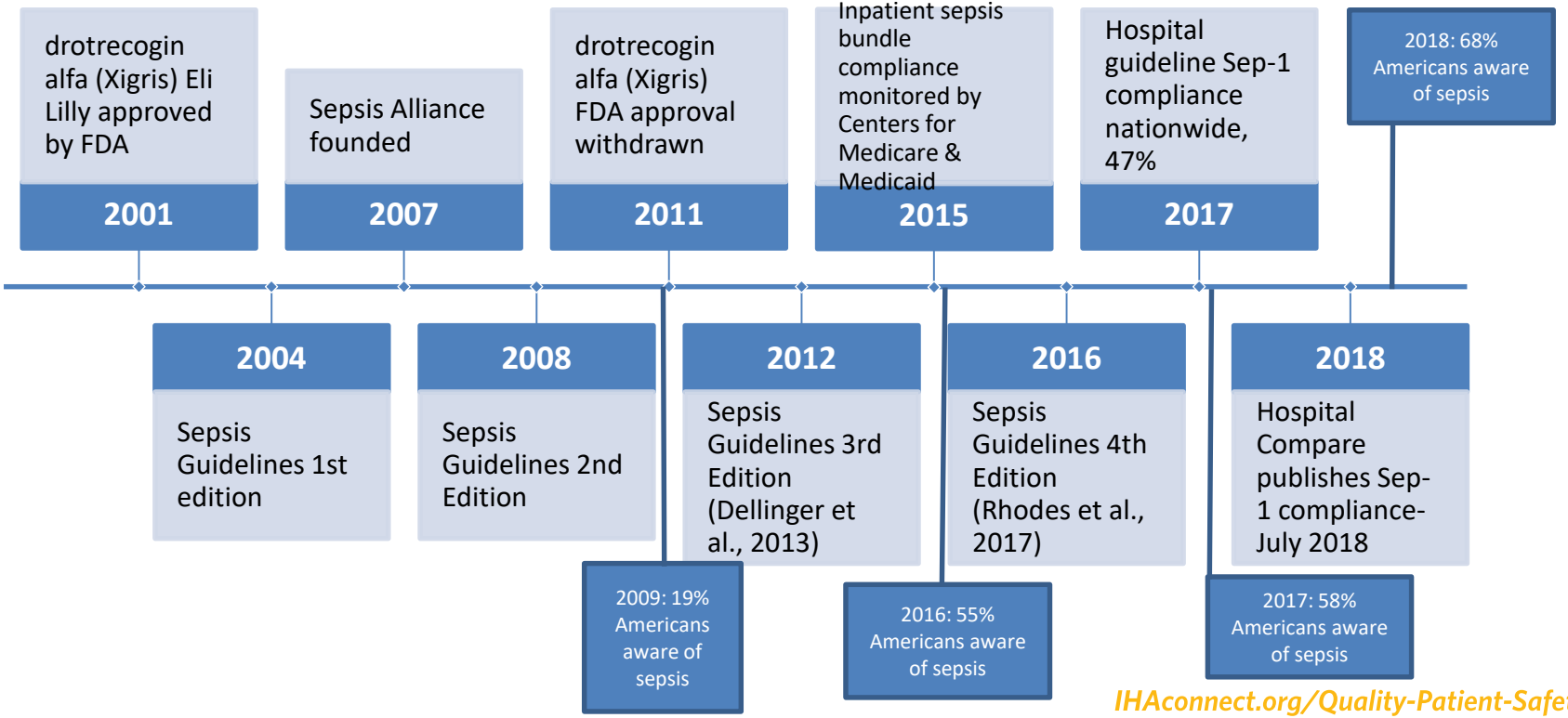
"I started feeling generalized discomfort, wouldn't call it pain…. I got to feeling really bad and couldn't get out of bed."



† Symptom triggering help-seeking in ED

History:
Sepsis Inpatient Guidelines

Indiana Patient Safety Center
of the Indiana Hospital Association



What are the sepsis guidelines / bundle?

Indiana Patient Safety Center
of the Indiana Hospital Association

- *Use diagnostic criteria & initiate treatment within 3 hours of severe sepsis presentation (time zero):*
  1) Assess lactate blood levels, if >2 recheck, if >4 implement bundle
  2) Obtain blood cultures prior to starting antibiotics
  3) Initiate antibiotic therapy
  4) Give intravenous colloidal fluids, 30 ml / kg ideal body weight for hypotension

  (e.g. 150 lb = 2,045 ml =~ 2 quarts)

Sepsis Screening & Pathway

Indiana Patient Safety Center
of the Indiana Hospital Association

Chart record – use patient label. Do not remove from chart

Evaluation for Severe Sepsis Screening Tool

Instructions: **Use this optional tool to screen patients for severe sepsis in the emergency department, on the medical/surgical floors, or in the ICU.**

1. Is the patient's history suggestive of a new infection?

- ☐ Pneumonia, empyema
- ☐ Urinary tract infection
- ☐ Acute abdominal infection
- ☐ Meningitis
- ☐ Skin/soft tissue infection
- ☐ Bone/joint infection
- ☐ Wound infection
- ☐ Blood stream catheter infection
- ☐ Endocarditis
- ☐ Implantable device infection
- ☐ Other infection _____

___ Yes ___ No

2. Are any two of following signs & symptoms of infection both present and new to the patient? Note: laboratory values may have been obtained for inpatients but may not be available for outpatients.

- ☐ Hyperthermia > 38.3 °C (101.0 °F)
- ☐ Hypothermia < 36 °C (96.8°F)
- ☐ Altered mental status
- ☐ Tachycardia > 90 bpm
- ☐ Tachypnea > 20 bpm
- ☐ Leukocytosis (WBC count >12,000 μL–1)
- ☐ Leukopenia (WBC count < 4000 μL–1)
- ☐ Hyperglycemia (plasma glucose >140 mg/dL) or 7.7 mmol/L in the absence of diabetes

___ Yes ___ No

If the answer is yes, to both questions 1 and 2, *suspicion of infection* is present:

- ✓ Obtain: **lactic acid**, **blood cultures**, CBC with differential, basic chemistry labs, bilirubin.
- ✓ At the physician's discretion obtain: UA, chest x-ray, amylase, lipase, ABG, CRP, CT scan.

3. Are any of the following organ dysfunction criteria present at a site remote from the site of the infection that are NOT considered to be chronic conditions? Note: in the case of bilateral pulmonary infiltrates the remote site stipulation is waived.

- ☐ SBP < 90 mmHg or MAP <65 mmHg
- ☐ SBP decrease > 40 mm Hg from baseline
- ☐ Creatinine > 2.0 mg/dl (176.8 mmol/L) or urine output < 0.5 ml/kg/hour for 2 hours
- ☐ Bilirubin > 2 mg/dl (34.2 mmol/L)
- ☐ Platelet count < 100,000 μL
- ☐ Lactate > 2 mmol/L (18.0 mg/dl)
- ☐ Coagulopathy (INR >1.5 or aPTT >60 secs)
- ☐ Acute lung injury with PaO2/FiO2 <250 in the absence of pneumonia as infection source
- ☐ Acute lung injury with PaO2/FiO2 <200 in the presence of pneumonia as infection source

___ Yes ___ No

If *suspicion of infection* is present AND *organ dysfunction* is present, the patient meets the criteria for SEVERE SEPSIS and should be entered into the severe sepsis protocol.

Date: ____/____/____ (circle: dd/mm/yy or mm/dd/yy) Time: ____:____ (24 hr. clock)

Version 7.2.13

SAINT JOSEPH MERCY HEALTH SYSTEM
A Member of Trinity Health

ST. JOSEPH MERCY ANN ARBOR
ST. JOSEPH MERCY LIVINGSTON

SEPTIC SHOCK CLINICAL PATHWAY

Room # _____ ICU admission Date: _____ Time: _____

Please complete the following:

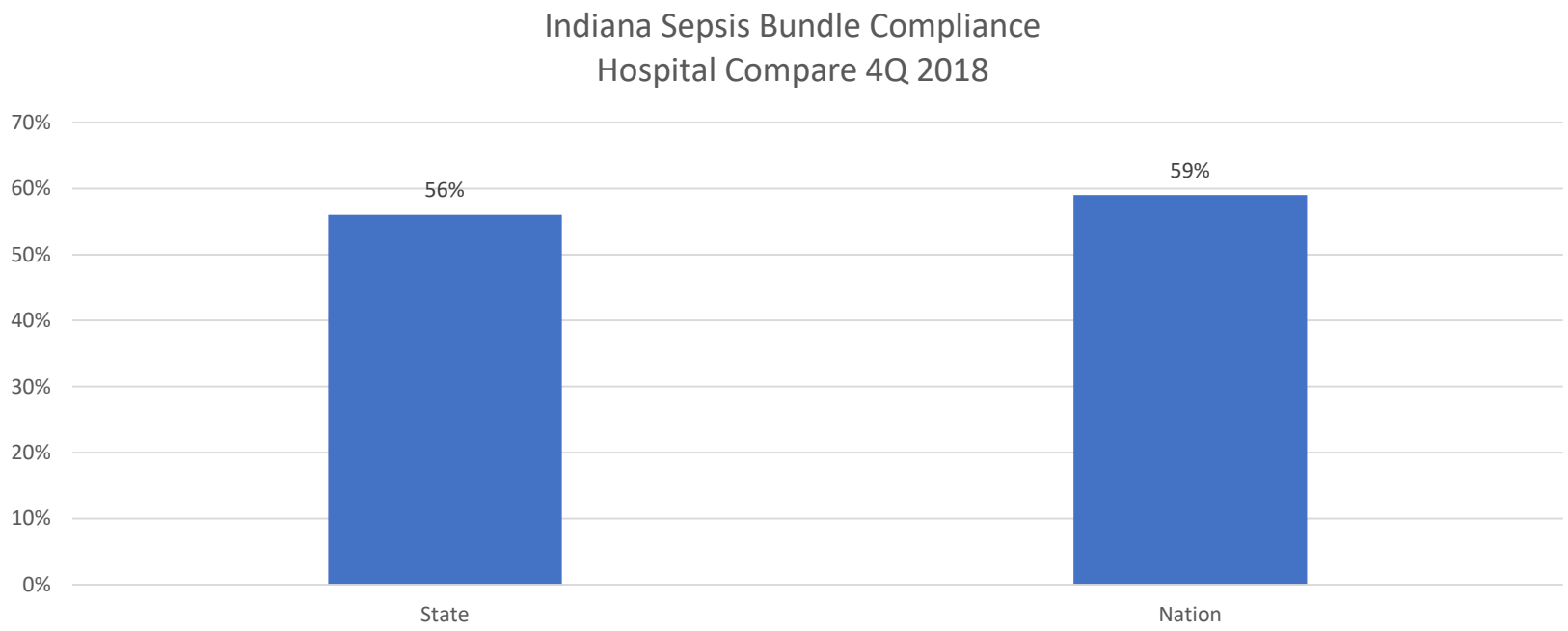
- **ED Triage: Date:** _____ **Time:** _____
- **Septic Shock* diagnosis (Time Zero): Date:** _____ **Time:** _____
- Patient transferred from (unit or hospital): _____
- Patient was identified as having severe sepsis or septic shock: ❑ ED ❑ Floor ❑ ICU Admission ❑ During ICU Stay
- Decision to move to comfort care in first 24 hours after diagnosis Yes No
- ICU discharge: Date: _____ Time: _____
- Discharge status: Alive Expired **Attending physician at time of diagnosis: ED** _____ **ICU** _____

***Septic Shock (Time Zero) defined as:** SBP less than 90mmHg or 40mmHg decrease from baseline after 30ml/kg fluid bolus, or requires vasopressors or initial lactic acid is greater than or equal to 4mEq/L

Date _____ to _____ 0-1 Hours	Decision Grid	Date _____ to _____ 1-6 Hours	Date _____ to _____ 6-24 Hours	Date _____ to _____ 24-72 Hours
❑ Initial Labs: serum lactic acid, additional labs as ordered by physician _____ Time Serum lactic acid drawn Yes No Blood Cultures X 2 Time 1: _____ Time 2: _____ ❑ Other Cultures: ❑ Establish IV access ❑ Volume resuscitate: initial 30ml/kg over 1 hour or as fast as possible then additional boluses as needed per order _____ Time Time initial fluid bolus completed to resolve hypotension ❑ Broad Spectrum Antibiotic-start after obtain blood culture (see Inforet under Pharmacy Guide to Antimicrobial Therapy) Yes No Was a new antibiotic initiated for this episode of septic shock? _____ Time Time antibiotic hung ❑ Source Control	Yes No Is patient hypotensive after initial fluid bolus? Yes No Did patient require vasopressor(s)? If YES to either, continue to next column (Septic Shock Bundle) Yes No Is lactic acid greater or equal to 4 mEq/L? Yes No Is there evidence of additional organ dysfunction besides elevated lactic acid? If YES to lactic acid & additional organ dysfunction, please continue to next column (Septic Shock Bundle) If NO to additional organ dysfunction, **please continue below:** ❑ Maintain MAP greater than or equal to 65 mmHg ❑ Maintain U/O of 0.5 ml/kg/hour ❑ Consider arterial line insertion ❑ Monitor Stroke Volume & Stroke Volume Variation to guide fluid resuscitation ❑ Ensure decrease in lactic acid x3 or normalization x2 within 12 hours • Begin next column (Septic Shock Bundle) if additional organ dysfunction occurs &/or patient remains/becomes hypotensive after initial 30 ml/kg fluid bolus	**Septic Shock Bundle Resuscitation Goals** Yes No CVP placed If no, why? _____ _____ Time Time CVP placed (record first CVP reading prior to x-ray confirmation) Record the **FIRST TIME** the following is achieved: _____ Time CVP 8-12 mmHg on vent 12-15 mmHg _____ Time MAP greater than or equal to 65 mmHg _____ Time SCVO2 greater than 70%: mixed venous greater than or equal to 65% _____ Time Optimized stroke volume (optional) Yes No Assess for risk factors for abdominal compartment syndrome (fluid resuscitation greater than 5 L in 24 hours or less) _____ Repeat lactic acid every 4-6 hours	**Septic Shock Bundle** Yes No Is patient on vasopressor at greater than 6 hours Yes No Consider Vasopressin for refractory septic shock In patients with acute lung injury or ARDS; Yes No Patient on mechanical ventilator _____ PaO2 / FiO2 ratio Yes No Is tidal volume 6ml/kg of ideal body weight in first 24 hours? Yes No Are the static or plateau inspiratory pressures less than 30cmH2O in first 24 hours?	❑ Confirm Infectious Source ❑ Re-assess need for broad spectrum antibiotics based on culture reports. Yes No Was there an organism identified? Yes No If YES, was the organism sensitive to the initial antibiotic? ❑ Discontinue Vancomycin if appropriate ❑ Re-evaluate need for invasive lines and tubes ❑ Nutrition Therapy ❑ Progress Mobility
Nurse				
Nurse				
Physician				
Signature, Date & Time				

http://www.hret-hiin.org/Resources/sepsis/18/sepsis-and-septic-shock-change-package.pdf

Hospital Compare 4Q2018



Retrieved 8.1.19 from Hospital Compare

Sepsis Bundle Compliance

Indiana Patient Safety Center
of the Indiana Hospital Association

– 7.6% increased mortality for every hour delay in effective antibiotic for septic shock (Kumar, 2006)

Sepsis Survival Rates with Bundle

Payer	Passed bundle	Did not pass bundle
All payer Oct 15-May 17	94.8% **Difference 7%**	87.9%
Medicare Oct 15-Mar 17	78.5% **Difference 9%**	67.7%

(Reddy et al, 2018; Dickerson (CMS), 2017, Kumar, 2006)

Setting Goals of Care:
2016 Surviving Sepsis Guidelines

Indiana Patient Safety Center
of the Indiana Hospital Association

- *We recommend that goals of care and prognosis be discussed with patients and families. (BPS)*

- *We recommend that the goals of care be incorporated into treatment and end-of-life care planning, utilizing palliative care principles where appropriate. (Strong recommendation; moderate quality of evidence)*

- *We suggest that goals of care be addressed as early as feasible, but no later than within 72 hours of ICU admission. (Weak recommendation; low quality of evidence)*

Patients' and Caregivers Experiences

Indiana Patient Safety Center
of the Indiana Hospital Association

Five main themes of needed education:

- awareness and knowledge of severe sepsis;
- experience of hospitalization,
- ongoing impact of severe sepsis;
- impact on caregivers; and
- support after severe sepsis.


Clinical Investigations

A Qualitative Investigation of Patients' and Caregivers' Experiences of Severe Sepsis*

Katy H. Gallop, MSc[1]; Cicely E. P. Kerr, PhD[1]; Annabel Nixon, PhD[1]; Lara Verdian, MSc, MBA[2]; Joseph B. Barney, MD, MSPH[3]; Richard J. Beale, MB, BS, FRCA[4]

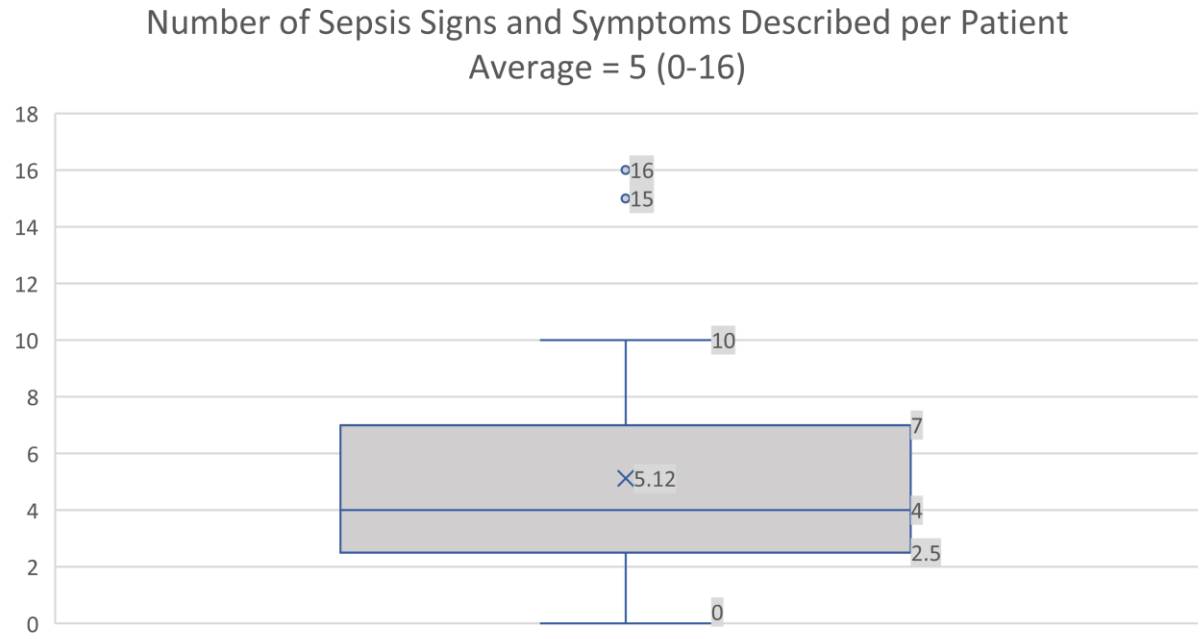
Gallop et al., 2015

Qualitative Analysis of Older Adults' Experiences in Faces of Sepsis-Pre-Acute Phase of Illness

Rebecca Hancock, PhD, RN, CCRC

Symptom Appraisal

Indiana Patient Safety Center
of the Indiana Hospital Association

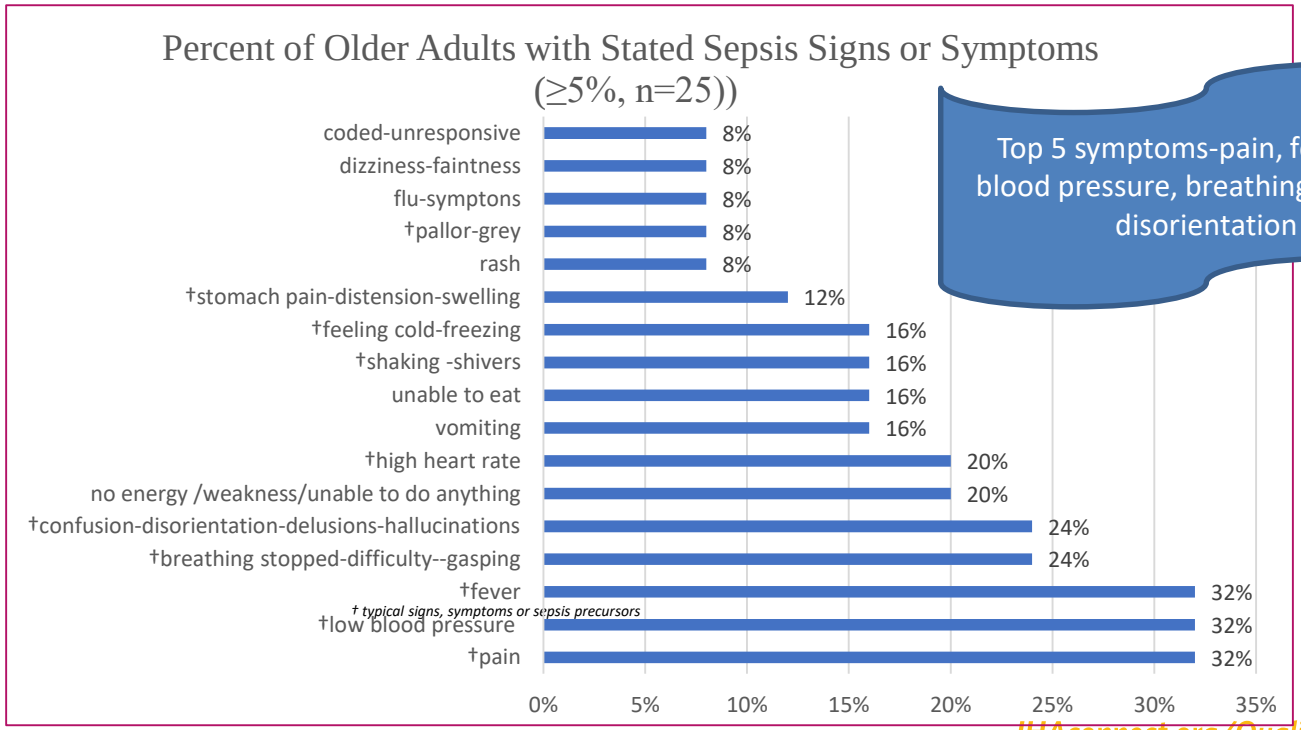


"Quantitizing"
(Sandelowski, 2000a)


SEPSIS EXPERIENCED
getting worse
couldn't feel legs
extreme joint pain
crippling pain
unwell
stomach distension
weight loss
disoriented
severe abdominal pain
symptoms
never recovered
freezing
hallucinations
unable to eat
low blood pressure
low potassium
rash
stopped breathing
no bowel movement
falling
delusions
gasping for air
end stage renal failure
faintness
incarcerated hernia
diverticulitis
cold or flu-like
agony
pain
shock
flu-like
panicking
felt worried
hard to arouse
TURP
cold
weak muscles
cold shivering
infection
left lung infection
organs shutting down
pulmonary embolism
bug bites
slurring words
cold lik
emotional
SEPSIS
coded
unable to move comfortably
feel legs
confused
dizziness
vomiting
not moving
very sick
drainage
not feeling well
not talking
urine infection
pale
feeling alone
coma
excruciating pain
shaking
pneumonia
anemia
UTI
difficulty breathing
fever
cough
unsteady blood pressure
water infection
hemorrhaging
energy
fatigue
high white blood count
caregiver upset
confusion
Ovarian cancer
scared
not eating
bowel blockage
felt warm and cold
high heart rate
weakness
kidney infection
stomach extension
urinary tract infection
distressed
organs swelling
shaking violently
feeling body shutting down
unable to do anything
diverticula
unable to walk
unstable blood pressure, heart rate, breathing
unresponsive
fistula

Faces of Sepsis
Older Adults Signs & Symptoms

Indiana Patient Safety Center
of the Indiana Hospital Association



Top 5 symptoms-pain, fever, low blood pressure, breathing difficulty, disorientation

Self-Management Strategies: Interventions When Reacting to Decline

Indiana Patient Safety Center
of the Indiana Hospital Association

- *Self-medication for fever, pain, nausea--*
- *Wound vac maintenance*
- *Ingesting fluids*
- *Information seeking*
- *Medical attention seeking*

"I got sicker, but I was trying to think, 'If I lie real still and drink plenty of fluids and take the ibuprofen, I'll get to feeling better.'"

"Treated the pain with the usual antacids and Tylenol and tried to go back to sleep"

Sepsis Challenges

Indiana Patient Safety Center
of the Indiana Hospital Association

- *Community & staff awareness*
- *Hospital sepsis bundle compliance*
- *Oral care & hand hygiene for pneumonia & infection prevention*
- *Post-acute care medical follow-up*
- *Post-discharge, engage patients and family in sepsis prevention education, especially for their primary source of sepsis infection*

Conclusion

Indiana Patient Safety Center
of the Indiana Hospital Association

- *Earlier access to EMS instead of longer self-appraisal of symptoms & identify source*
- *Beware of self-management that masks symptoms*
- *Engage caregivers as partners not adversaries*
- *Improve sepsis awareness to reduce time to treatment & guideline compliance*
- *Beware of cognitive changes, lethargy in older adults*
- *Anticipatory guidance to patients for risk of sepsis*

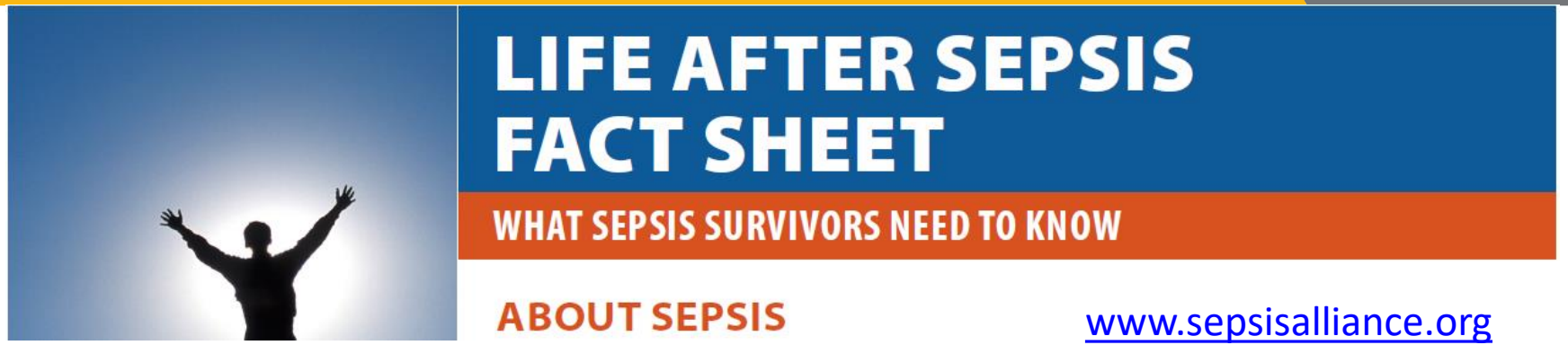
Life After Sepsis

Indiana Patient Safety Center
of the Indiana Hospital Association

- https://www.youtube.com/watch?time_continue=7&v=HIk64wdy44Q

Life After Sepsis

Indiana Patient Safety Center
of the Indiana Hospital Association



- Half of patients recover
- 1/3 die during the following year,
- 1/6 have severe persistent impairments (Prescott, 2018)

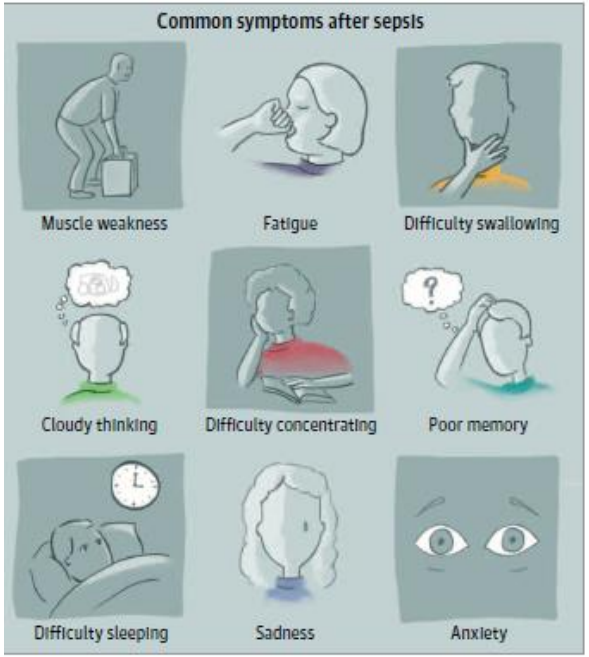
Sepsis Recovery

- THE REALITY OF THE SEPSIS EXPERIENCE & HEALTHCARE OPPORTUNITIES IN RECOVERY

Life after Sepsis

Indiana Patient Safety Center
of the Indiana Hospital Association

- *Impairments:*
  - Average 1-2 new functional limitations (e.g. inability to bathe)
  - 3 fold increase in mod-severe cognitive impairment
  - High prevalence of anxiety (32%), depression (29%), PTSD (44%) (Prescott, 2018)
    - Half of patients recover
    - 1/3 die during the following year,
    - 1/6 have severe persistent impairments (Prescott, 2018)



Functional Impairments

Indiana Patient Safety Center
of the Indiana Hospital Association

- *Functional limitations*
- *Cognitive limitations*
- *Anxiety*
- *Depression*
- *Post-traumatic stress disorder*
- *Chronic Illness Exacerbations*
- *Increased mortality*
- *Longer hospitalizations & ICU stay*

Readmissions

Indiana Patient Safety Center
of the Indiana Hospital Association

- Surviving patients who passed bundles had lower 30 day readmissions rate (20.4% vs 25.1%)

- 40% sepsis patients readmitted within 90 day for conditions treatable as outpatients—most commonly another bout of sepsis or another infection
  - Infection (11.9%), HF (5.5%) (Prescott et al, 2018; Prescott & Angus, 2018)

Post-hospital focus

Indiana Patient Safety Center
of the Indiana Hospital Association

- *Evaluating and reducing risk of medical setbacks:*
  - TIMELY identification of new physical, mental and cognitive problems for referral
- *Medications*
  - Review and adjust long term meds
- *Evaluate for treatable conditions:*
  - new or worsening infection, HF, renal failure, aspiration, sepsis, palliative (Prescott et al, 2018)
  - Timely evaluations
- *Community & Staff Awareness*
  - Symptoms & timely treatment
  - Support Programs

ECF patients with UTI most likely to be seen by practitioner for elevated temp, pulse, and delirium (2x)

Setting Goals of Care:
2016 Surviving Sepsis Guidelines

Indiana Patient Safety Center
of the Indiana Hospital Association

- *We recommend that goals of care and prognosis be discussed with patients and families. (BPS)*

- *We recommend that the goals of care be incorporated into treatment and end-of-life care planning, utilizing palliative care principles where appropriate. (Strong recommendation; moderate quality of evidence)*

- *We suggest that goals of care be addressed as early as feasible, but no later than within 72 hours of ICU admission. (Weak recommendation; low quality of evidence)*

Population and systems based approaches for sepsis prevention

Indiana Patient Safety Center
of the Indiana Hospital Association

Kempker *et al. Critical Care* (2018) 22:116
https://doi.org/10.1186/s13054-018-2048-3

Critical Care

COMMENTARY Open Access

Sepsis is a preventable public health problem

Jordan A. Kempker[1*], Henry E. Wang[2] and Greg S. Martin[1]

Abstract

There is a paradigm shift happening for sepsis. Sepsis is no longer solely conceptualized as problem of individual patients treated in emergency departments and intensive care units but also as one that is addressed as public health issue with population- and systems-based solutions. We offer a conceptual framework for sepsis as a public health problem by adapting the traditional model of primary, secondary, and tertiary prevention.

Primary Prevention of Infections and Sepsis Onset
Immunization
Hygiene
Public Awareness
Antibiotic Prophylaxis
Manage Risk Factors

Dialysis Center participation in NHSN, CDC database for tracking infections?

Kempker et al, 2018;

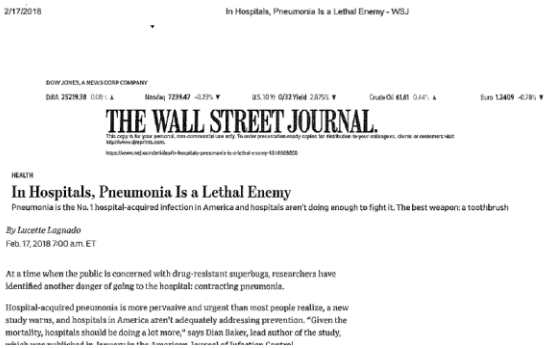
Adding life after sepsis

Indiana Patient Safety Center
of the Indiana Hospital Association

Hand Hygiene	Mobility	Nutrition	Immunization	Oral Hygiene
Address post-sepsis symptoms	Hydration	Sepsis education	Sepsis source specific education	Medical follow-up 1-3days

Non-Vent Hospital Acquired Pneumonia

Indiana Patient Safety Center
of the Indiana Hospital Association



2/17/2018 In Hospitals, Pneumonia Is a Lethal Enemy - WSJ

DOW JONES, A NEWS CORP COMPANY

THE WALL STREET JOURNAL.

HEALTH

In Hospitals, Pneumonia Is a Lethal Enemy

Pneumonia is the No. 1 hospital-acquired infection in America and hospitals aren't doing enough to fight it. The best weapon: a toothbrush

By Lucette Lagnado
Feb. 17, 2018 7:00 a.m. ET

At a time when the public is concerned with drug-resistant superbugs, researchers have identified another danger of going to the hospital: contracting pneumonia.

Hospital-acquired pneumonia is more pervasive and urgent than most people realize, a new study warns, and hospitals in America aren't adequately addressing prevention. "Given the mortality, hospitals should be doing a lot more," says Dian Baker, lead author of the study,

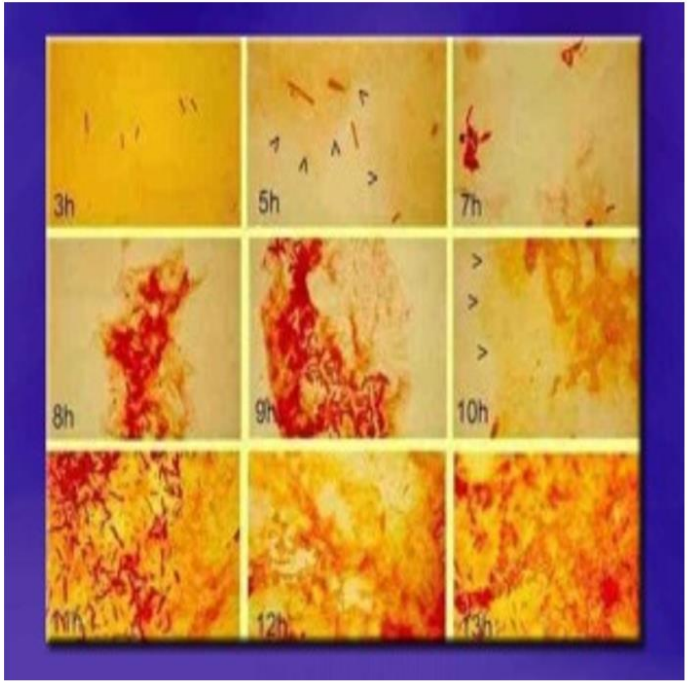
- Nurses: Barbara Quinn & Dr. Diane Baker @ Sutter Health, California
- Pneumonia is #1 hospital acquired infection according to CDC-
- 15-31% death rate from hospital acquired pneumonia
- "They go to the operating room within 20 minutes of brushing teeth"--& gargle
- Brushing teeth several times per day cut hospital pneumonias by 70% with 50,000 toothbrushes expenditure

(Brooks, J. (2018).Stop It. Non-Ventilator Hospital Acquired Pneumonia Research Update. https://www.ihaconnect.org/Resources/Public/Patient%20Safety/Sepsis/GMT20180918-190048_Sepsis-Awa_2256x1504.mp4;
(Lagnado, L. (2018). In hospitals, pneumonia is a lethal enemy. The Wall Street Journal. 2/17/2018)

Brush teeth!

Indiana Patient Safety Center
of the Indiana Hospital Association

Cycle of Bacteria Growth in the Mouth within Hours



What is your patient care policy for oral health?

Sepsis Awareness Month Toolkit 2019

Indiana Patient Safety Center
of the Indiana Hospital Association

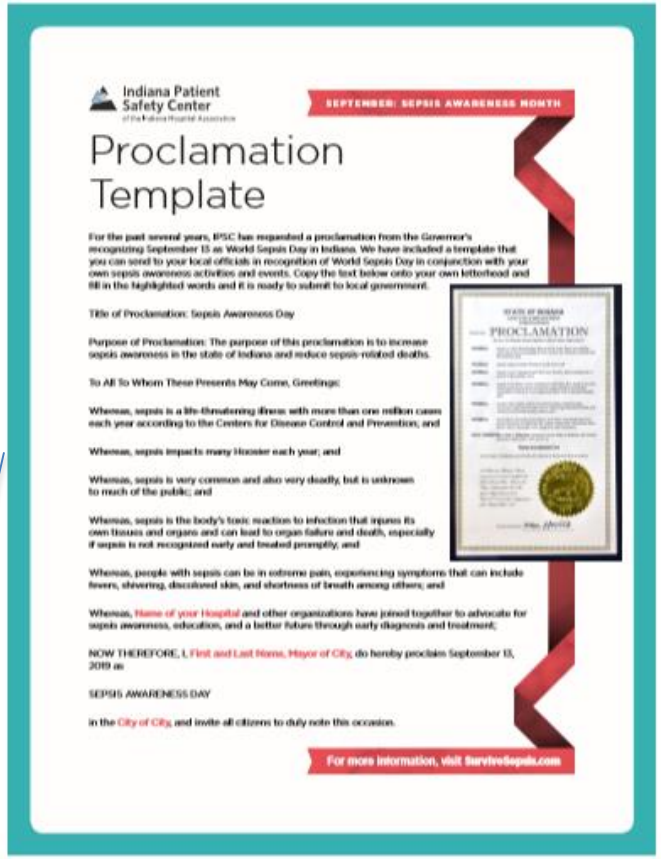
- *Updated Sepsis Toolkit Social Media Outreach & Community Education*
  - Sepsis Awareness Day is September 13, 2019—plan one community and one long term care educational program in September
  - Community & Clinical resources in toolkit
- *Podcasts*
  - Content for patient-centered and clinician-centered updates

www.survivesepsis.com

Toolkit Resources

Indiana Patient Safety Center
of the Indiana Hospital Association

- *Consider press releases to promote sepsis awareness in the community!*


Indiana Patient Safety Center

SEPTEMBER: SEPSIS AWARENESS MONTH

Proclamation Template

For the past several years, IPSC has requested a proclamation from the Governor's recognizing September 13 as World Sepsis Day in Indiana. We have included a template that you can send to your local officials in recognition of World Sepsis Day in conjunction with your own sepsis awareness activities and events. Copy the text below onto your own letterhead and fill in the highlighted words and it is ready to submit to local government.

Title of Proclamation: Sepsis Awareness Day

Purpose of Proclamation: The purpose of this proclamation is to increase sepsis awareness in the state of Indiana and reduce sepsis-related deaths.

To All To Whom These Presents May Come, Greetings:

Whereas, sepsis is a life-threatening illness with more than one million cases each year according to the Centers for Disease Control and Prevention; and

Whereas, sepsis impacts many Hoosier each year; and

Whereas, sepsis is very common and also very deadly, but is unknown to much of the public; and

Whereas, sepsis is the body's toxic reaction to infection that injures its own tissues and organs and can lead to organ failure and death, especially if sepsis is not recognized early and treated promptly; and

Whereas, people with sepsis can be in extreme pain, experiencing symptoms that can include fevers, shivering, discolored skin, and shortness of breath among others; and

Whereas, Name of your Hospital and other organizations have joined together to advocate for sepsis awareness, education, and a better future through early diagnosis and treatment;

NOW THEREFORE, I, First and Last Name, Mayor of City, do hereby proclaim September 13, 2019 as

SEPSIS AWARENESS DAY

in the City of City, and invite all citizens to duly note this occasion.

For more information, visit SurviveSepsis.com

PROCLAMATION

September 13 is Sepsis Awareness Day proclaimed by Governor Holcomb

Sepsis Toolkit Podcasts

Indiana Patient Safety Center
of the Indiana Hospital Association

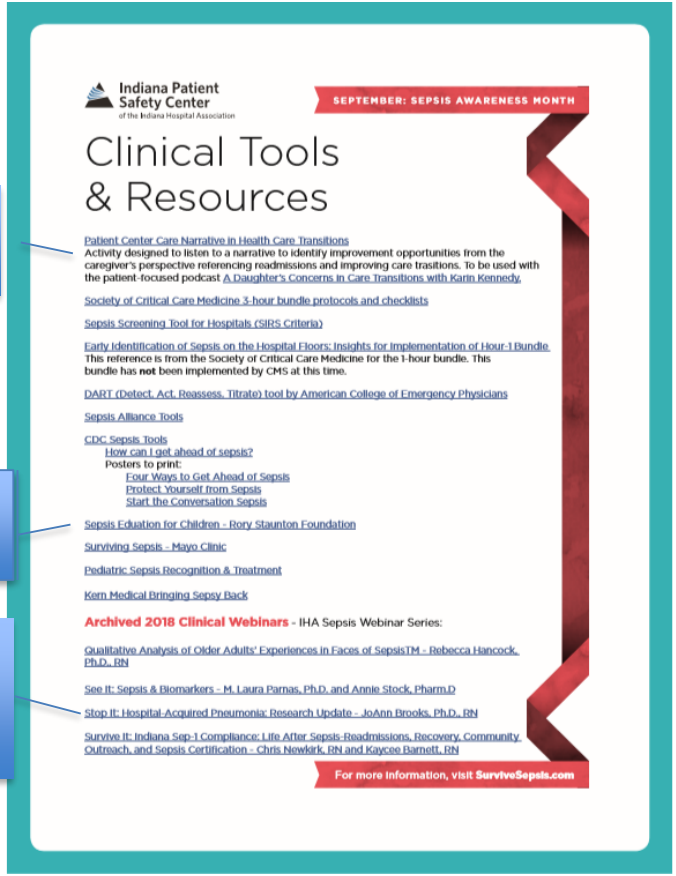
Toolkit Resources

Indiana Patient Safety Center
of the Indiana Hospital Association

Discussion tool for Care Transitions Podcasts

STEM School Age Education

Pneumonia Prevention with oral care



Indiana Patient Safety Center
of the Indiana Hospital Association

SEPTEMBER: SEPSIS AWARENESS MONTH

Clinical Tools & Resources

Patient Center Care Narrative in Health Care Transitions
Activity designed to listen to a narrative to identify improvement opportunities from the caregiver's perspective referencing readmissions and improving care trasitions. To be used with the patient-focused podcast A Daughter's Concerns in Care Transitions with Karin Kennedy.

Society of Critical Care Medicine 3-hour bundle protocols and checklists

Sepsis Screening Tool for Hospitals (SIRS Criteria)

Early Identification of Sepsis on the Hospital Floors: Insights for Implementation of Hour-1 Bundle
This reference is from the Society of Critical Care Medicine for the 1-hour bundle. This bundle has **not** been implemented by CMS at this time.

DART (Detect, Act, Reassess, Titrate) tool by American College of Emergency Physicians

Sepsis Alliance Tools

CDC Sepsis Tools
- How can I get ahead of sepsis?
- Posters to print:
  - Four Ways to Get Ahead of Sepsis
  - Protect Yourself from Sepsis
  - Start the Conversation Sepsis

Sepsis Eduation for Children - Rory Staunton Foundation

Surviving Sepsis - Mayo Clinic

Pediatric Sepsis Recognition & Treatment

Kern Medical Bringing Sepsy Back

Archived 2018 Clinical Webinars - IHA Sepsis Webinar Series:

Qualitative Analysis of Older Adults' Experiences in Faces of SepsisTM - Rebecca Hancock, Ph.D., RN

See It: Sepsis & Biomarkers - M. Laura Parnas, Ph.D. and Annie Stock, Pharm.D

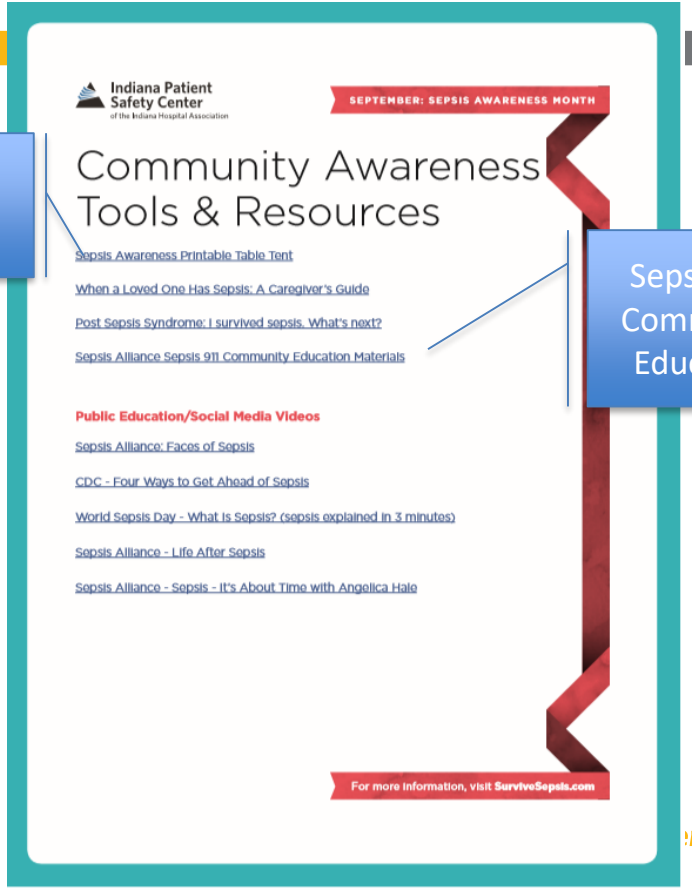
Stop It: Hospital-Acquired Pneumonia: Research Update - JoAnn Brooks, Ph.D., RN

Survive It: Indiana Sep-1 Compliance: Life After Sepsis-Readmissions, Recovery, Community Outreach, and Sepsis Certification - Chris Newkirk, RN and Kaycee Barnett, RN

For more information, visit SurviveSepsis.com

Print table tents

Sepsis 911 Community Education



Indiana Patient Safety Center
of the Indiana Hospital Association

SEPTEMBER: SEPSIS AWARENESS MONTH

Community Awareness Tools & Resources

Sepsis Awareness Printable Table Tent

When a Loved One Has Sepsis: A Caregiver's Guide

Post Sepsis Syndrome: I survived sepsis. What's next?

Sepsis Alliance Sepsis 911 Community Education Materials

Public Education/Social Media Videos

Sepsis Alliance: Faces of Sepsis

CDC - Four Ways to Get Ahead of Sepsis

World Sepsis Day - What is Sepsis? (sepsis explained in 3 minutes)

Sepsis Alliance - Life After Sepsis

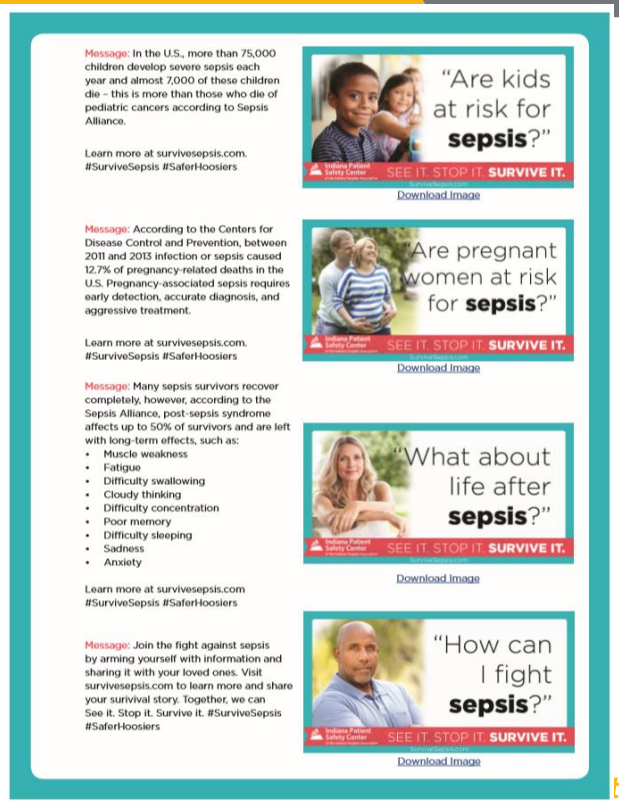
Sepsis Alliance - Sepsis - It's About Time with Angelica Hale

For more information, visit SurviveSepsis.com

Social Media

Indiana Patient Safety Center
of the Indiana Hospital Association

- Examples of social media messages
- Connect with your marketing department for plans
- “Like” IHA on Facebook & follow on LinkedIN & Twitter @IHAConnect
- Share social media--IHA will do regular postings



Message: In the U.S., more than 75,000 children develop severe sepsis each year and almost 7,000 of these children die – this is more than those who die of pediatric cancers according to Sepsis Alliance.

Learn more at survivesepsis.com.
#SurviveSepsis #SaferHoosiers

Download Image

Message: According to the Centers for Disease Control and Prevention, between 2011 and 2013 infection or sepsis caused 12.7% of pregnancy-related deaths in the U.S. Pregnancy-associated sepsis requires early detection, accurate diagnosis, and aggressive treatment.

Learn more at survivesepsis.com.
#SurviveSepsis #SaferHoosiers

Download Image

Message: Many sepsis survivors recover completely, however, according to the Sepsis Alliance, post-sepsis syndrome affects up to 50% of survivors and are left with long-term effects, such as:

- Muscle weakness
- Fatigue
- Difficulty swallowing
- Cloudy thinking
- Difficulty concentration
- Poor memory
- Difficulty sleeping
- Sadness
- Anxiety

Learn more at survivesepsis.com
#SurviveSepsis #SaferHoosiers

Download Image

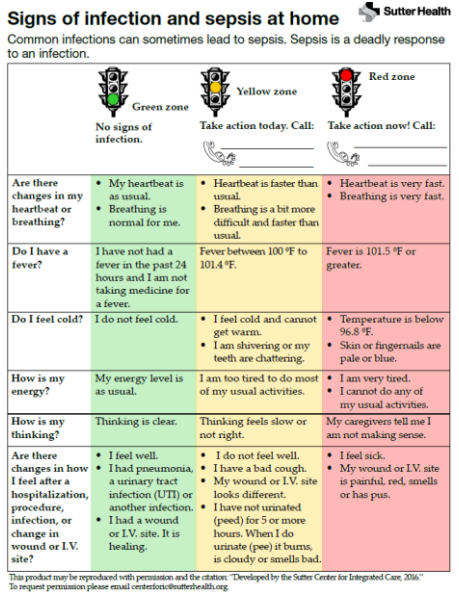
Message: Join the fight against sepsis by arming yourself with information and sharing it with your loved ones. Visit survivesepsis.com to learn more and share your survival story. Together, we can See it. Stop it. Survive it. #SurviveSepsis #SaferHoosiers

Download Image

Additional Sepsis Resources

Indiana Patient Safety Center
of the Indiana Hospital Association

- *Early Identification of Sepsis in Texas Nursing Homes curriculum & staff education by TMF Health Quality Institute*
- *ECF-home health Inspect Stop & Watch Tool*
- *ED flowsheets for bundle elements & care transitions*



Signs of infection and sepsis at home Sutter Health

Common infections can sometimes lead to sepsis. Sepsis is a deadly response to an infection.

	Green zone No signs of infection.	Yellow zone Take action today. Call: _____	Red zone Take action now! Call: _____
Are there changes in my heartbeat or breathing?	• My heartbeat is as usual. • Breathing is normal for me.	• Heartbeat is faster than usual. • Breathing is a bit more difficult and faster than usual.	• Heartbeat is very fast. • Breathing is very fast.
Do I have a fever?	I have not had a fever in the past 24 hours and I am not taking medicine for a fever.	Fever between 100 °F to 101.4 °F.	Fever is 101.5 °F or greater.
Do I feel cold?	I do not feel cold.	• I feel cold and cannot get warm. • I am shivering or my teeth are chattering.	• Temperature is below 96.8 °F. • Skin or fingernails are pale or blue.
How is my energy?	My energy level is as usual.	I am too tired to do most of my usual activities.	• I am very tired. • I cannot do any of my usual activities.
How is my thinking?	Thinking is clear.	Thinking feels slow or not right.	My caregivers tell me I am not making sense.
Are there changes in how I feel after a hospitalization, procedure, infection, or change in wound or I.V. site?	• I feel well. • I had pneumonia, a urinary tract infection (UTI) or another infection. • I had a wound or I.V. site. It is healing.	• I do not feel well. • I have a bad cough. • My wound or I.V. site looks different. • I have not urinated (peed) for 5 or more hours. When I do urinate (pee) it burns, is cloudy or smells bad.	• I feel sick. • My wound or I.V. site is painful, red, smells or has pus.

IHAconnect.org/Quality-Patient-Safety

Online Resources

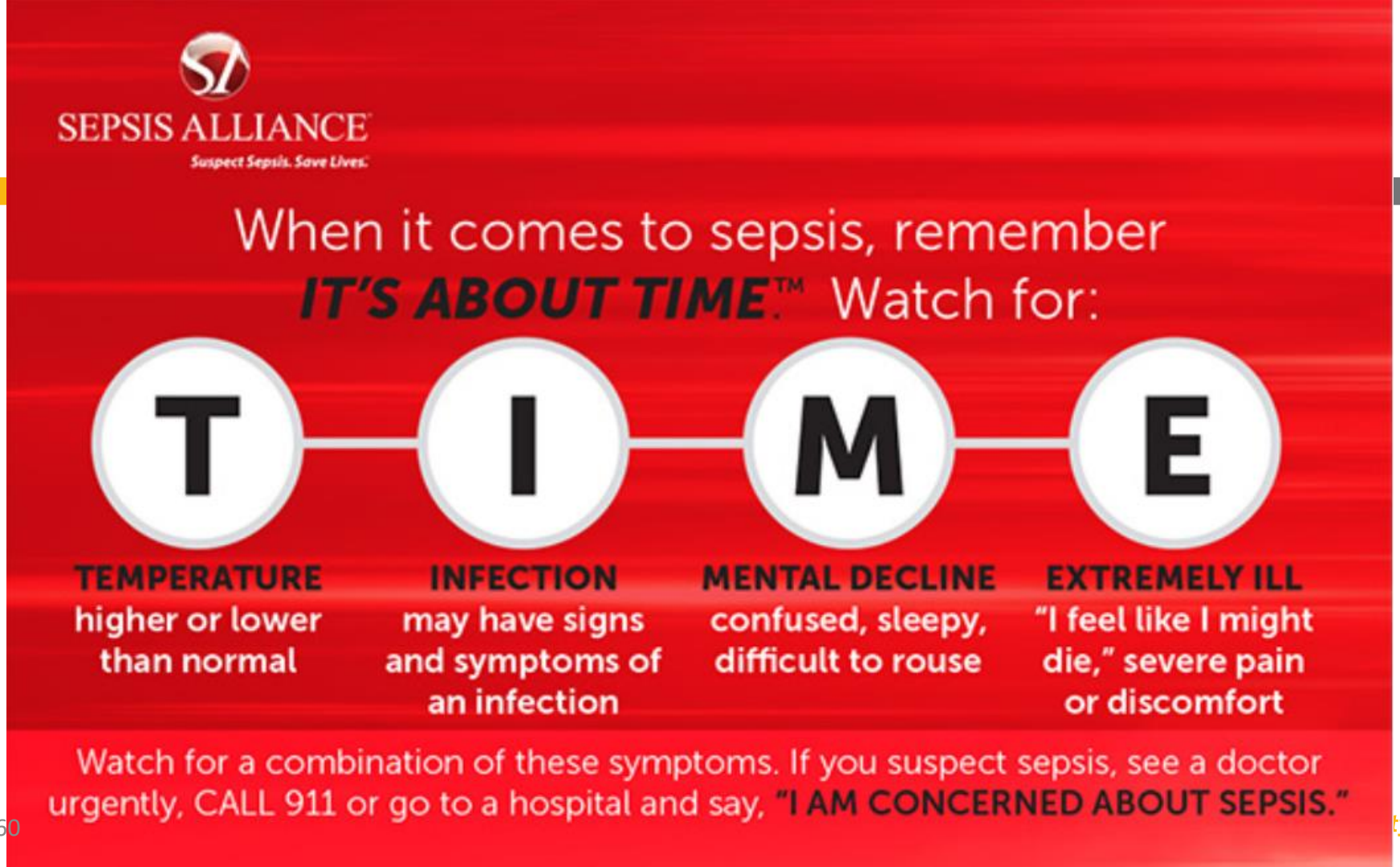
Indiana Patient Safety Center
of the Indiana Hospital Association

- *Sepsis Tools:*
  - IHA Sepsis Awareness Month Toolkit & Resources Sept 2019:
    - IHA Sepsis Awareness Webinars- www.survivesepsis.com
      - Dr. JoAnn Brooks- pneumonia prevention
      - 2019 Sepsis toolkit podcasts
  - CDC Sepsis Education
    - https://www.cdc.gov/sepsis/index.html
  - Sepsis Alliance Education, blogs, presentation template, disease specific education handouts:
    - www.sepsis.org
  - Rory Staunton Foundation Sepsis Education in Schools
    - https://rorystauntonfoundationforsepsis.org/education-modules/
  - Early ID of Sepsis in Texas in Home Health & Nursing Homes-education
    - https://www.tmf.org/Health-Care-Providers/Home-Health-Agencies
    - https://www.tmf.org/Health-Care-Providers/Nursing-Homes/Early-ID-of-Sepsis-in-Texas-Nursing-Homes

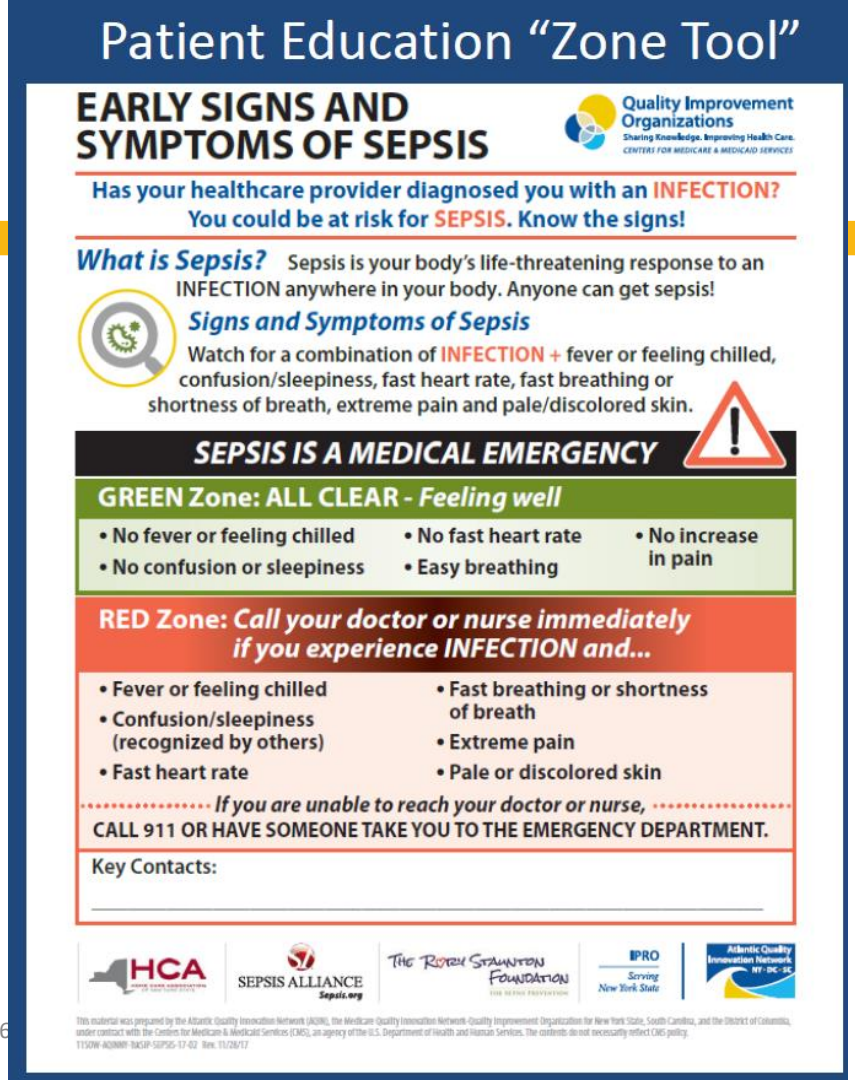
Online Videos (& there are many)

Indiana Patient Safety Center
of the Indiana Hospital Association

- *Sepsis & Older Adults*
  - https://www.youtube.com/watch?time_continue=285&v=a0gbxCVgukw
- *Life After Sepsis*
  - https://www.youtube.com/watch?time_continue=7&v=HIk64wdy44Q
- *See also 2019 Indiana Hospital Association Sepsis Awareness Month Toolkit video references*
  - www.survivesepsis.com


SEPSIS ALLIANCE
Suspect Sepsis. Save Lives.
When it comes to sepsis, remember
IT'S ABOUT TIME™ Watch for:
T
I
M
E
TEMPERATURE
higher or lower than normal
INFECTION
may have signs and symptoms of an infection
MENTAL DECLINE
confused, sleepy, difficult to rouse
EXTREMELY ILL
"I feel like I might die," severe pain or discomfort
Watch for a combination of these symptoms. If you suspect sepsis, see a doctor urgently, CALL 911 or go to a hospital and say, "I AM CONCERNED ABOUT SEPSIS."

Patient Education "Zone Tool"



EARLY SIGNS AND SYMPTOMS OF SEPSIS

Quality Improvement Organizations
Sharing Knowledge. Improving Health Care.
CENTERS FOR MEDICARE & MEDICAID SERVICES

Has your healthcare provider diagnosed you with an INFECTION?
You could be at risk for SEPSIS. Know the signs!

What is Sepsis? Sepsis is your body's life-threatening response to an INFECTION anywhere in your body. Anyone can get sepsis!

Signs and Symptoms of Sepsis

Watch for a combination of INFECTION + fever or feeling chilled, confusion/sleepiness, fast heart rate, fast breathing or shortness of breath, extreme pain and pale/discolored skin.

SEPSIS IS A MEDICAL EMERGENCY

GREEN Zone: ALL CLEAR - *Feeling well*

- No fever or feeling chilled
- No confusion or sleepiness
- No fast heart rate
- Easy breathing
- No increase in pain

RED Zone: *Call your doctor or nurse immediately if you experience INFECTION and...*

- Fever or feeling chilled
- Confusion/sleepiness (recognized by others)
- Fast heart rate
- Fast breathing or shortness of breath
- Extreme pain
- Pale or discolored skin

If you are unable to reach your doctor or nurse,
CALL 911 OR HAVE SOMEONE TAKE YOU TO THE EMERGENCY DEPARTMENT.

Key Contacts:

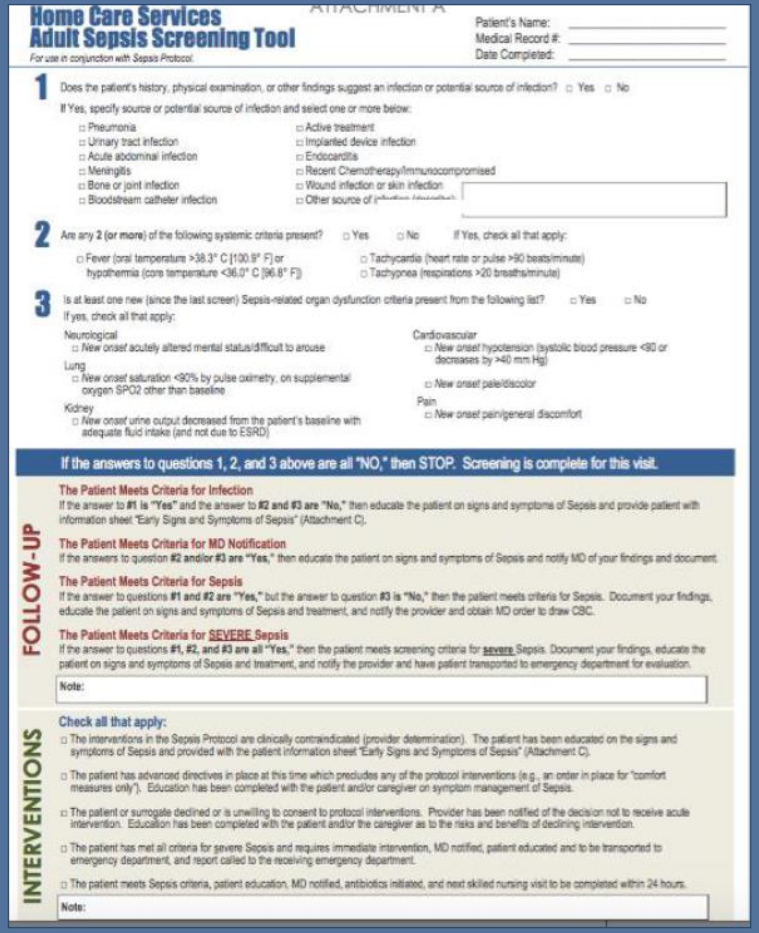
HCA · SEPSIS ALLIANCE Sepsis.org · The Robert Stanton Foundation · IPRO Serving New York State · Atlantic Quality Innovation Network NY-DC-PC

This material was prepared by the Atlantic Quality Innovation Network (AQIN), the Medicare Quality Improvement Network-Quality Improvement Organization for New York State, South Carolina, and the District of Columbia, under contract with the Centers for Medicare & Medicaid Services (CMS), an agency of the U.S. Department of Health and Human Services. The contents do not necessarily reflect CMS policy.
11SOW-AQINNY-TaskSIP-SEPSIS-17-02 Rev. 11/28/17

Indiana Patient Safety Center
of the Indiana Hospital Association

See Sepsis Alliance Webinar: Sepsis Across the Continuum & Homecare, Dec 2017: New Sepsis Intervention Initiatives in Home Care & Beyond (Cardillo, Bowerman & Bankert; 2017)

https://www.sepsis.org/resources/sepsis-alliance-webinar-series/



Home Care Services
Adult Sepsis Screening Tool

ATTACHMENT A

For use in conjunction with Sepsis Protocol

Patient's Name: _____
Medical Record #: _____
Date Completed: _____

1 Does the patient's history, physical examination, or other findings suggest an infection or potential source of infection? □ Yes □ No

If Yes, specify source or potential source of infection and select one or more below:

- □ Pneumonia
- □ Urinary tract infection
- □ Acute abdominal infection
- □ Meningitis
- □ Bone or joint infection
- □ Bloodstream catheter infection
- □ Active treatment
- □ Implanted device infection
- □ Endocarditis
- □ Recent Chemotherapy/Immunocompromised
- □ Wound infection or skin infection
- □ Other source of infection (describe)

2 Are any **2 (or more)** of the following systemic criteria present? □ Yes □ No If Yes, check all that apply:

- □ Fever (oral temperature >38.3° C [100.9° F] or hypothermia (core temperature <36.0° C [96.8° F])
- □ Tachycardia (heart rate or pulse >90 beats/minute)
- □ Tachypnea (respirations >20 breaths/minute)

3 Is at least one new (since the last screen) Sepsis-related organ dysfunction criteria present from the following list? □ Yes □ No

If yes, check all that apply:

Neurological
- □ *New onset* acutely altered mental status/difficult to arouse

Lung
- □ *New onset* saturation <90% by pulse oximetry, on supplemental oxygen SPO2 other than baseline

Kidney
- □ *New onset* urine output decreased from the patient's baseline with adequate fluid intake (and not due to ESRD)

Cardiovascular
- □ *New onset* hypotension (systolic blood pressure <90 or decreases by >40 mm Hg)
- □ *New onset* pale/discolor

Pain
- □ *New onset* pain/general discomfort

If the answers to questions 1, 2, and 3 above are all "NO," then STOP. Screening is complete for this visit.

FOLLOW-UP

The Patient Meets Criteria for Infection
If the answer to **#1 is "Yes"** and the answer to **#2 and #3 are "No,"** then educate the patient on signs and symptoms of Sepsis and provide patient with information sheet "Early Signs and Symptoms of Sepsis" (Attachment C).

The Patient Meets Criteria for MD Notification
If the answers to question **#2 and/or #3 are "Yes,"** then educate the patient on signs and symptoms of Sepsis and notify MD of your findings and document.

The Patient Meets Criteria for Sepsis
If the answer to questions **#1 and #2 are "Yes,"** but the answer to question **#3 is "No,"** then the patient meets criteria for Sepsis. Document your findings, educate the patient on signs and symptoms of Sepsis and treatment, and notify the provider and obtain MD order to draw CBC.

The Patient Meets Criteria for SEVERE Sepsis
If the answer to questions **#1, #2, and #3 are all "Yes,"** then the patient meets screening criteria for **severe** Sepsis. Document your findings, educate the patient on signs and symptoms of Sepsis and treatment, and notify the provider and have patient transported to emergency department for evaluation.

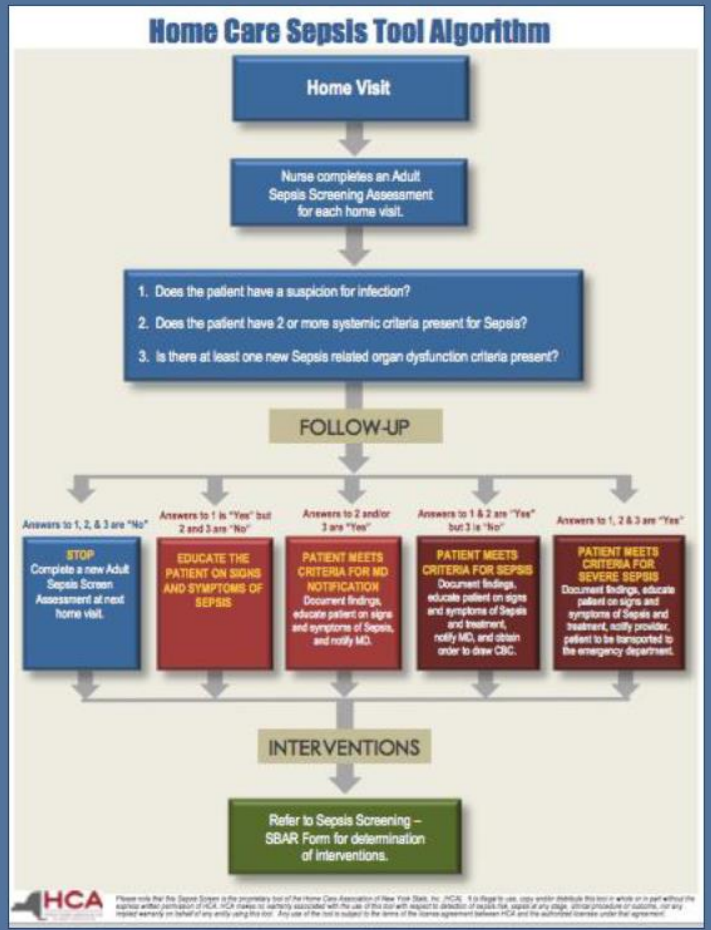
Note:

INTERVENTIONS

Check all that apply:

- □ The interventions in the Sepsis Protocol are clinically contraindicated (provider determination). The patient has been educated on the signs and symptoms of Sepsis and provided with the patient information sheet "Early Signs and Symptoms of Sepsis" (Attachment C).
- □ The patient has advanced directives in place at this time which precludes any of the protocol interventions (e.g., an order in place for "comfort measures only"). Education has been completed with the patient and/or caregiver on symptom management of Sepsis.
- □ The patient or surrogate declined or is unwilling to consent to protocol interventions. Provider has been notified of the decision not to receive acute intervention. Education has been completed with the patient and/or the caregiver as to the risks and benefits of declining intervention.
- □ The patient has met all criteria for severe Sepsis and requires immediate intervention, MD notified, patient educated and to be transported to emergency department, and report called to the receiving emergency department.
- □ The patient meets Sepsis criteria, patient education, MD notified, antibiotics initiated, and next skilled nursing visit to be completed within 24 hours.

Note:



Indiana Patient Safety Center
of the Indiana Hospital Association

rg/Quality-Patient-Safety

Sepsis Screen Tool – Follow-up Section

FOLLOW-UP

The Patient Meets Criteria for Infection

If the answer to **#1 is "Yes"** and the answer to **#2 and #3 are "No,"** then educate the patient on signs and symptoms of Sepsis and provide patient with information sheet "Early Signs and Symptoms of Sepsis" (Attachment C).

The Patient Meets Criteria for MD Notification

If the answers to question **#2 and/or #3 are "Yes,"** then educate the patient on signs and symptoms of Sepsis and notify MD of your findings and document.

The Patient Meets Criteria for Sepsis

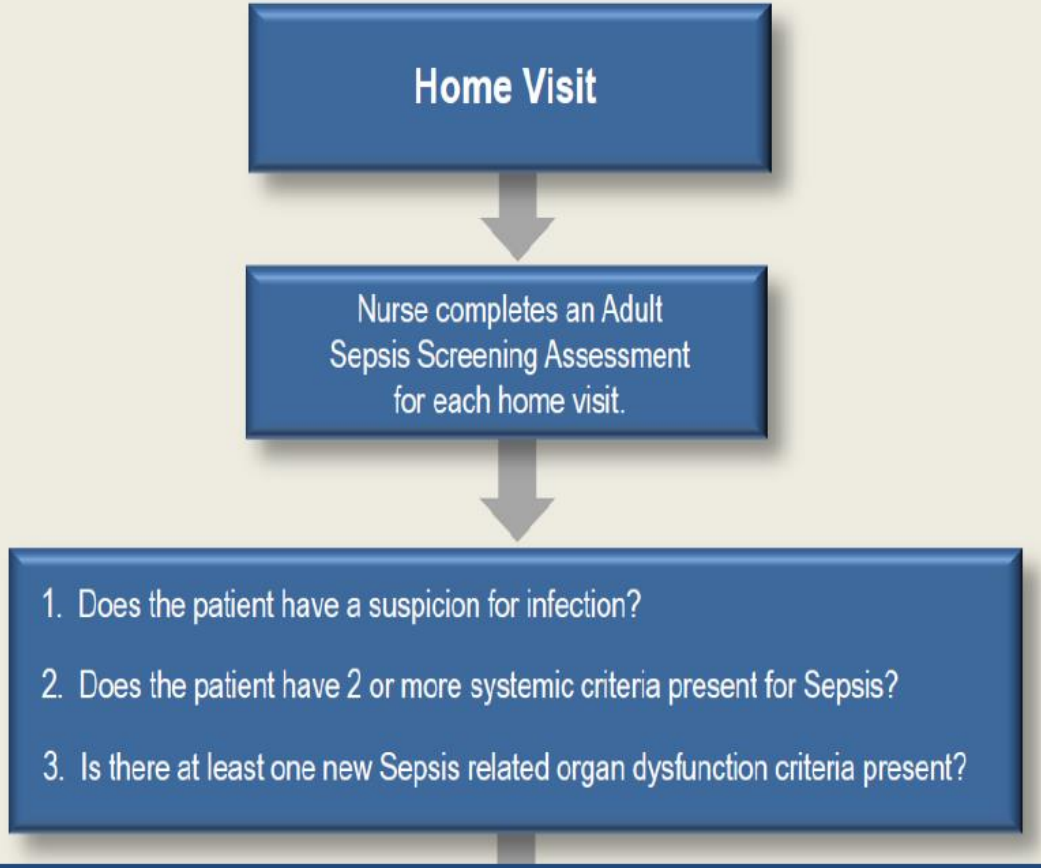
If the answer to questions **#1 and #2 are "Yes,"** but the answer to question **#3 is "No,"** then the patient meets criteria for Sepsis. Document your findings, educate the patient on signs and symptoms of Sepsis and treatment, and notify the provider and obtain MD order to draw CBC.

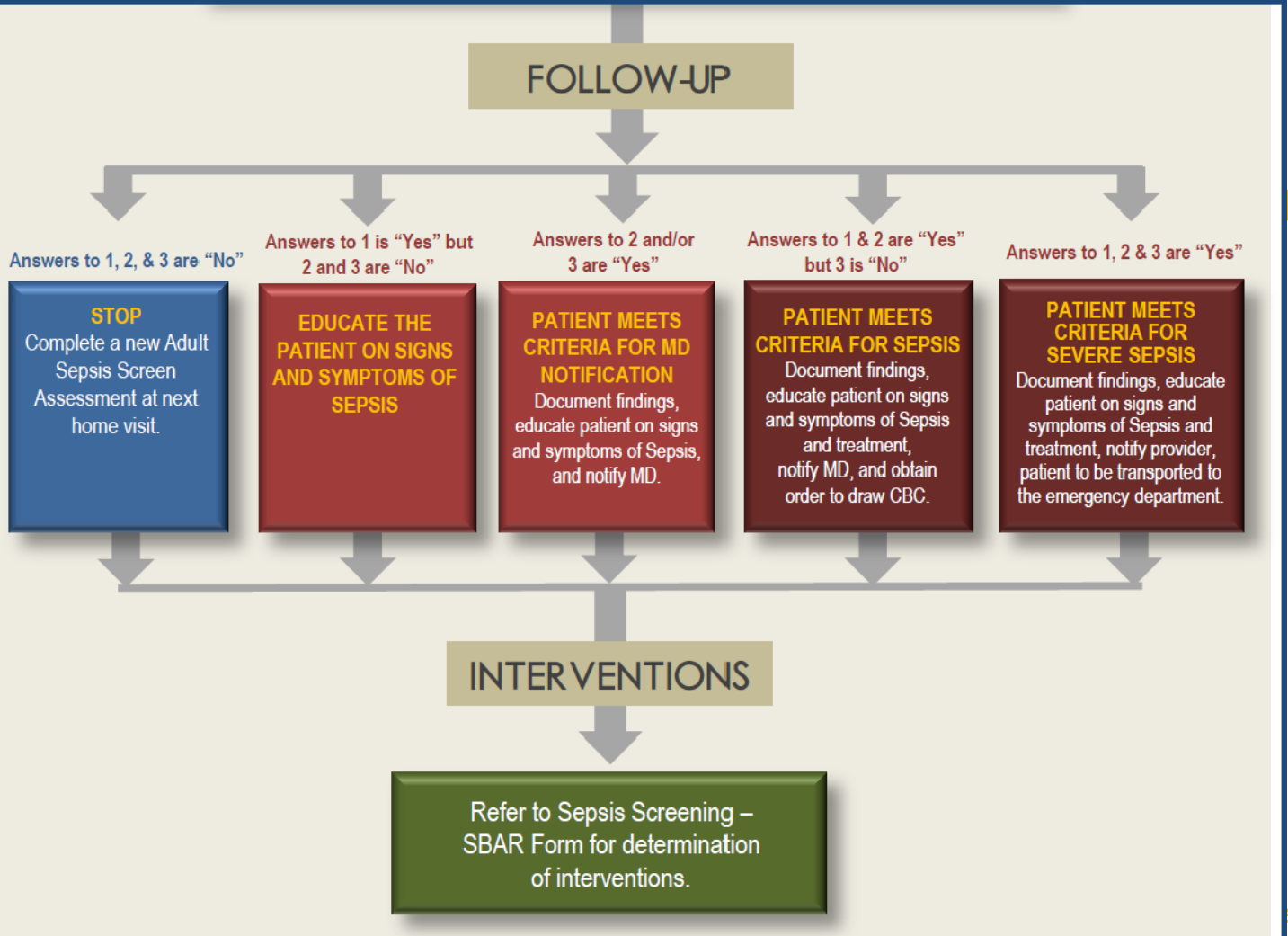
The Patient Meets Criteria for SEVERE Sepsis

If the answer to questions **#1, #2, and #3 are all "Yes,"** then the patient meets screening criteria for **severe** Sepsis. Document your findings, educate the patient on signs and symptoms of Sepsis and treatment, and notify the provider and have patient transported to emergency department for evaluation.

Note:

Home Care Sepsis Tool Algorithm





Indiana Patient Safety Center
of the Indiana Hospital Association

References

- *CDC Life after sepsis fact sheet. https://www.cdc.gov/sepsis/pdfs/life-after-sepsis-fact-sheet.pdf retrieved 11/6/2018/*
- *El Solh, A. A., Akinnusi, M. E., Alsawalha, L. N., & Pineda, L. A. (2008). Outcome of septic shock in older adults after implementation of the sepsis "bundle." Journal of the American Geriatrics Society, 56(2), 272–278. https://doi.org/10.1111/j.1532-5415.2007.01529.x*
- *Englert, N. C., & Ross, C. (2015). The older adult experiencing sepsis. Critical Care Nursing Quarterly, 38(2), 175–181. https://doi.org/10.1097/CNQ.0000000000000059*
- *Hancock, R.D. (2018). Qualitative analysis of older adults' experiences with sepsis. Doctoral Dissertation. https://scholarworks.iupui.edu/handle/1805/16791.*
- *Kumar, A., Roberts, D., Wood, K. E., Light, B., Parrillo, J. E., Sharma, S., … Cheang, M. (2006). Duration of hypotension before initiation of effective antimicrobial therapy is the critical determinant of survival in human septic shock. Critical Care Medicine, 34(6), 1589–1596. https://doi.org/10.1097/01.CCM.0000217961.75225.E9*
- *Martin, G. S. (2012). Sepsis, severe sepsis and septic shock: Changes in incidence, pathogens and outcomes. Expert Review of Anti-Infective Therapy. https://doi.org/10.1586/eri.12.50*
- *Nasa, P., Juneja, D., Singh, O., (2012). Severe sepsis and septic shock in the elderly: an overview. World Journal of Critical Care Medicine. 1(1): 23-30.*
- *Prescott, H.C. (2018). Post sepsis morbidity. JAMA, 319 (1), 91.*

References

Indiana Patient Safety Center
of the Indiana Hospital Association

- *Reddy, A., Blonsky, H., & Bauer, S. (2018). 11: Association between sepsis bundle compliance and hospital readmission. Critical Care Medicine, 46(1). Retrieved from https://journals.lww.com/ccmjournal/Fulltext/2018/01001/11___ASSOCIATION_BETWEEN_SEPSIS_BUNDLE_COMPLIANCE.14.aspx*
- *Rhodes, A., Evans, L. E., Alhazzani, W., Levy, M. M., Antonelli, M., Ferrer, R., … Dellinger, R. P. (2017). Surviving Sepsis Campaign: International Guidelines for Management of Sepsis and Septic Shock: 2016. Intensive Care Medicine (Vol. 43). Springer Berlin Heidelberg. https://doi.org/10.1007/s00134-017-4683-6*
- *Sepsis Alliance. (2016). Sepsis Alliance: News. Retrieved August 23, 2016, from https://www.sepsis.org/sepsis-alliance-news/fifty-five-percent-americans-heard-sepsis-nations-third-leading-killer-sepsis-aliance-survey-reveals/*
- *Sepsis Alliance: Symptoms. (2016). Retrieved March 2, 2018, from https://www.sepsis.org/sepsis/symptoms/*
- *Seymour, C. W., Rea, T. D., Kahn, J. M., Walkey, A. J., Yealy, D. M., & Angus, D. C. (2012). Severe sepsis in pre-hospital emergency care: Analysis of incidence, care, and outcome. American Journal of Respiratory and Critical Care Medicine, 186(12), 1264–1271. https://doi.org/10.1164/rccm.201204-0713OC*
- *Singer, M., Deutschman, C. S., Seymour, C., Shankar-Hari, M., Annane, D., Bauer, M., … Angus, D. C. (2016). The third international consensus definitions for sepsis and septic shock (sepsis-3). JAMA - Journal of the American Medical Association, 315(8), 801–810. https://doi.org/10.1001/jama.2016.0287*
- *Suzuki, M., Satoh, N., Nakamura, M., Horita, S., Seki. G., Morija, K., (2016). Bacteremia in hemodialysis patients. World Journal of Nephrology. Nov 6; 5(6): 489-496. doi: [10.5527/wjn.v5.i6.489]*

References

- *Torres, O. H., Munoz, J., Ruiz, D., Ris, J., Gich, I., Coma, E., … Vazquez, G. (2004). Outcome predictors of pneumonia in elderly patients: Importance of functional assessment. J Am Geriatr Soc, 52(10), 1603–1609. https://doi.org/10.1111/j.1532-5415.2004.52492.x*
- *Uppal, A., & Dickerson, B. (2017). Sepsis efforts at Bellevue Hospital and SEP-1 early management bundle, severe sepsis/septic shock: v5.0b through v5.2a analysis results. Retrieved from https://www.qualityreportingcenter.com/event/sepsis-efforts-at-bellevue-hospital-and-sep-1-early-management-bundle-severe-sepsisseptic-shock-v5-0b-through-v5-2a-analysis-results/*

Q & A, Action Items & Discussion

Rebecca Hancock
rhancock@ihaconnect.org