Updates in Sepsis

Perspectives from a Sepsis Program Manager

Northwest Regional Hospital Medicine Conference

September 19, 2024

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19th Annual
Northwest Regional Hospital Medicine Conference

Conflicts of Interest

Nothing to disclose

September is Sepsis Awareness Month

SEPSIS » SAY SEPSIS SAVE LIVES
SEPTEMBER
SepsisAwarenessMonth.org

STATE OF OREGON

PROCLAMATION

OFFICE OF THE GOVERNOR

WHEREAS: September is nationally recognized as Sepsis Awareness Month to bring awareness to sepsis, the body's life-threatening response to infection, which can lead to tissue damage, organ failure, and death; and

WHEREAS: The growing problem of antimicrobial resistance is steadily increasing the frequency of sepsis cases. Each year, 1.7 million Americans are diagnosed with and 350,000 die from sepsis. More than 75,000 children in the United States develop severe sepsis each year; and

WHEREAS: Sepsis is the number one cost of hospitalization in the United States, with costs for acute sepsis hospitalization and skilled nursing estimated to be $62 billion annually; and

WHEREAS: On average, sepsis survivors have a shortened life expectancy, are more likely to suffer from an impaired quality of life, and often experience after-effects such as amputations and post-sepsis syndrome; and

WHEREAS: Communities that have historically lacked access to high-quality healthcare experience a disproportionate burden of sepsis-related suffering. Sepsis is the second-leading cause of pregnancy-related mortality in the United States; and

WHEREAS: A survey conducted by Sepsis Alliance found that less than 15% of American adults can identify the symptoms of sepsis. The signs of sepsis can be remembered with the mnemonic "TIME," which stands for "Temperature," "Infection," "Mental decline," and "Extremely ill." Awareness of the signs and symptoms of sepsis along with rapid diagnosis and treatment of sepsis can save lives and improve outcomes.

NOW, THEREFORE: I, Tina Kotek, Governor of the State of Oregon, hereby proclaim **September 2024** to be

SEPSIS AWARENESS MONTH

in Oregon and encourage all Oregonians to join in this observance.

IN WITNESS WHEREOF, I hereunto set my hand and cause the Great Seal of the State of Oregon to be affixed. Done at the Capitol in the City of Salem in the State of Oregon on this day, August 22, 2024.

Tina Kotek, Governor

LaVonne Griffin-Valade, Secretary of State

Objectives

- Provide updates and overviews related to sepsis since 2023
- Describe Center for Disease Control sepsis initiatives related to sepsis programs
- Discuss role of value-based purchasing as related to sepsis care
- Understand how documentation can impact care and reimbursement for sepsis care
- Try not to stir up too much controversy around CMS and metrics
  - I do not do abstraction of CMS sepsis data.

Sepsis Facts

- Affects nearly 49 million people worldwide each year
- More than 1.7 million people in the U.S. are diagnosed with sepsis each year
- 270,000 people die from sepsis each year in the U.S.
- Sepsis causes at least 261,000 maternal deaths each year world-wide
- Sepsis is a cause of increasing pregnancy-related deaths in the U.S.
- There were more than 13,700 sepsis-related amputations in the U.S. in 2012. An average of 38 amputations per day.
- Up to 50% of sepsis survivors are left with long-term physical and/or psychological effects.
- 30% of Adults have never heard of sepsis…

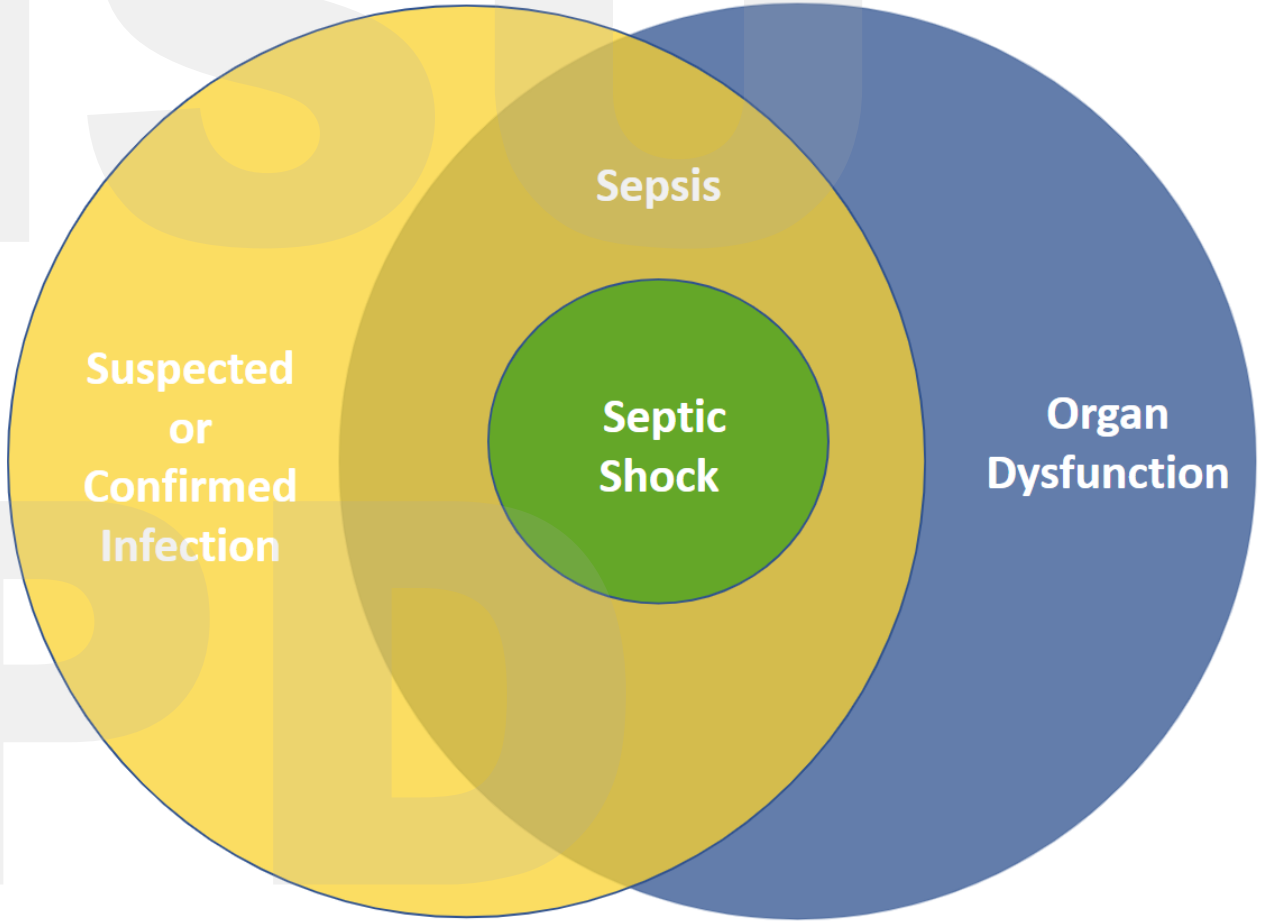
Problem with Sepsis…

- Sepsis is a clinical syndrome not a specific disease process
- Sepsis remains difficult to diagnose and there is no specific treatment to improve outcomes
- Optimal Sepsis care is linked to time based interventions
  - Antibiotics
  - Resuscitation (Fluids / Pressors)
  - Source control

Definitions… for the purposes of this talk

- **Sepsis** is life threatening organ dysfunction caused by a dysregulated host response to infection. (Sepsis -3)

- **Septic Shock** a subset of sepsis in with underlying circulatory, cellular, and metabolic abnormalities contribute to a greater risk of mortality than by sepsis alone.

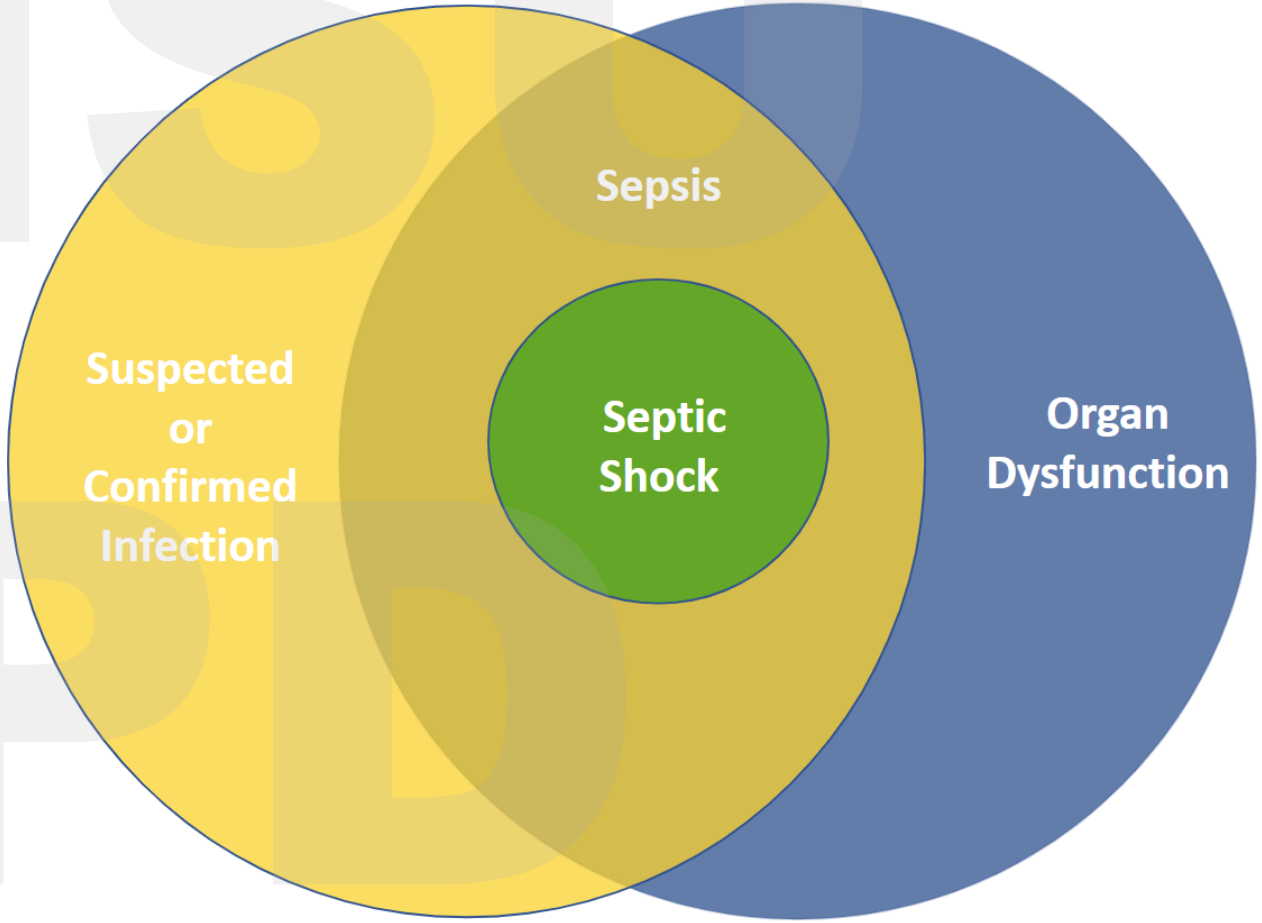


Definitions… for the purposes of this talk

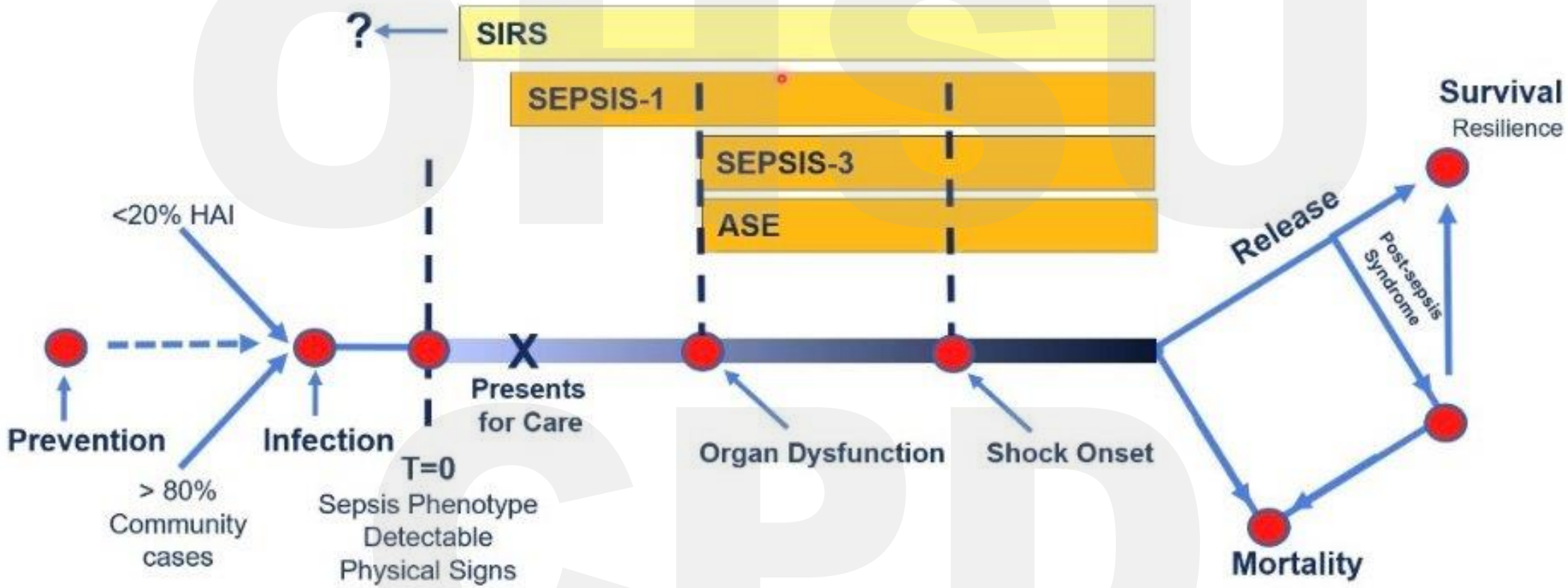
- "**CMS Sepsis**" - refers to the Sepsis-2 definition of 2 or more SIRS and suspected infection

- **Severe Sepsis** is a term that was removed in the Sepsis – 3 definition. Identifies infection with organ dysfunction

- Hope is that CMS and ICD coding will catch up in the coming years.

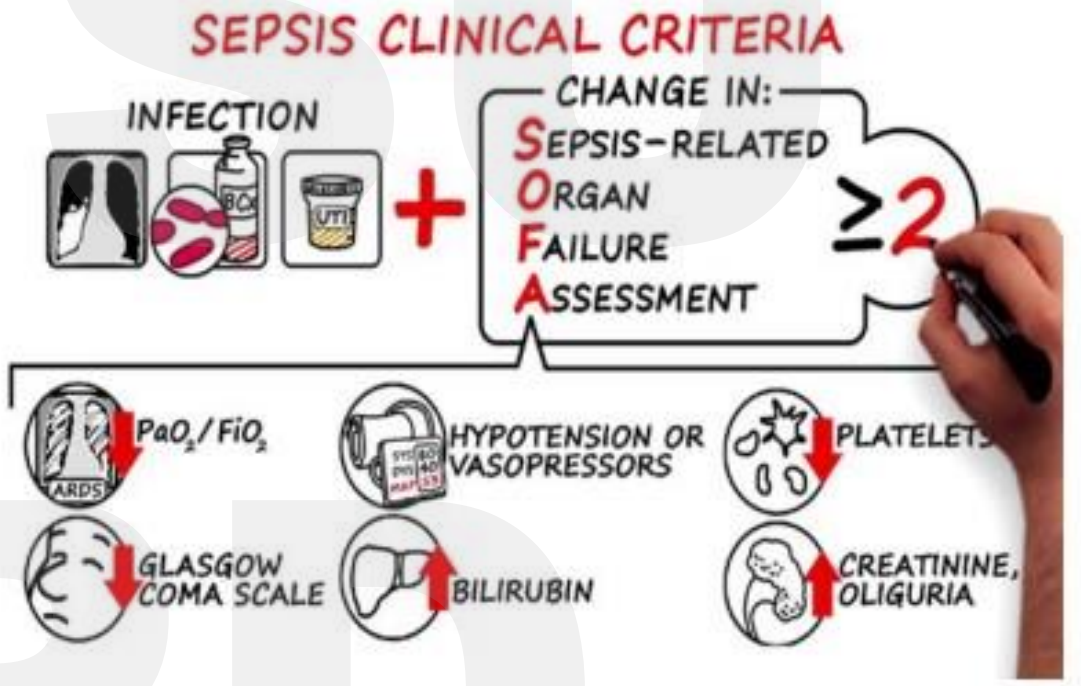


A Perspective: Sepsis Patient Continuum



Recognizing Sepsis

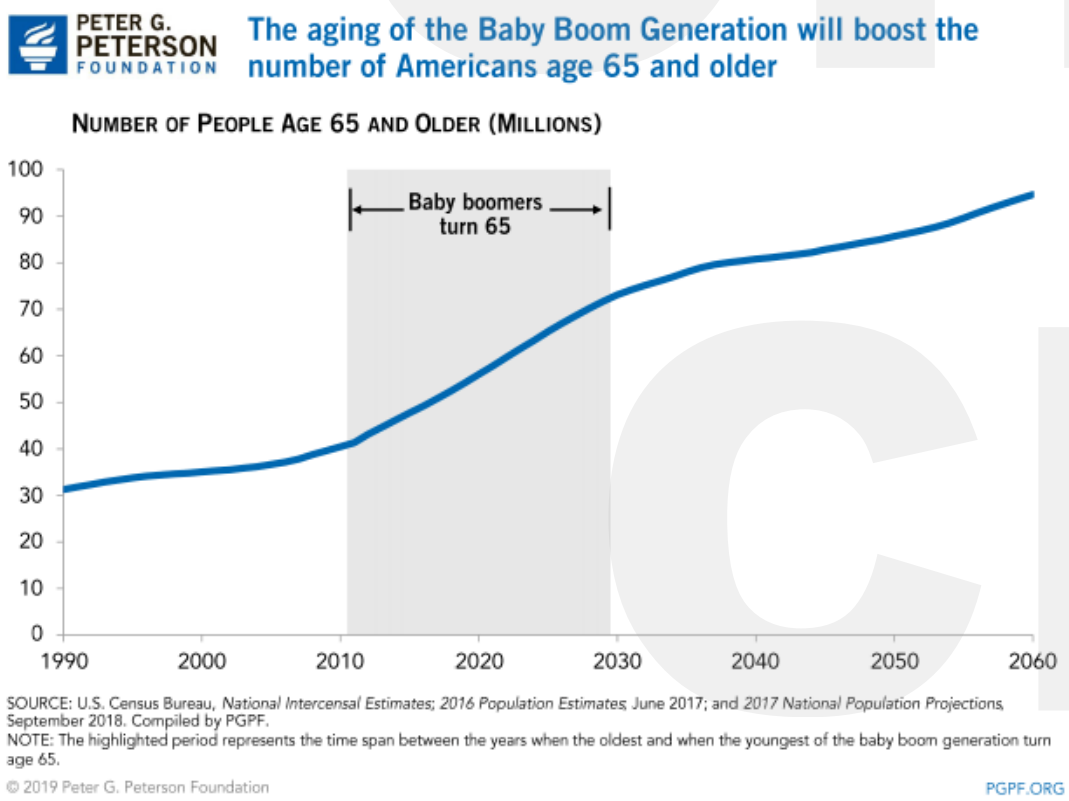
- Clinical Suspicion
- Constellation of signs and symptoms
- Use of screening tools?
  - SOFA
  - MEWS / NEWS
  - No best tool…

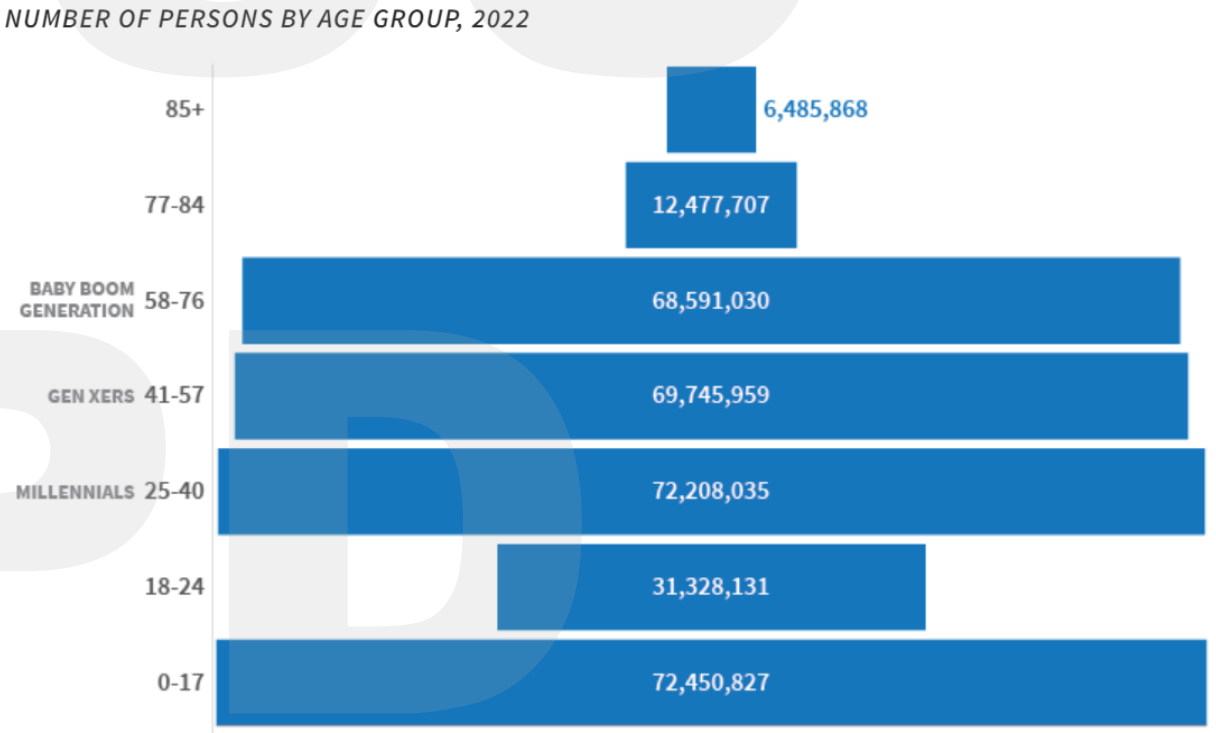


Physicians* should be looking for organ dysfunction every time they suspect infection. Conversely, they need to be looking for infection whenever a patient presents with organ dysfunction,"
Dr. Coopersmith

Sepsis: What to expect in the next 10 years!

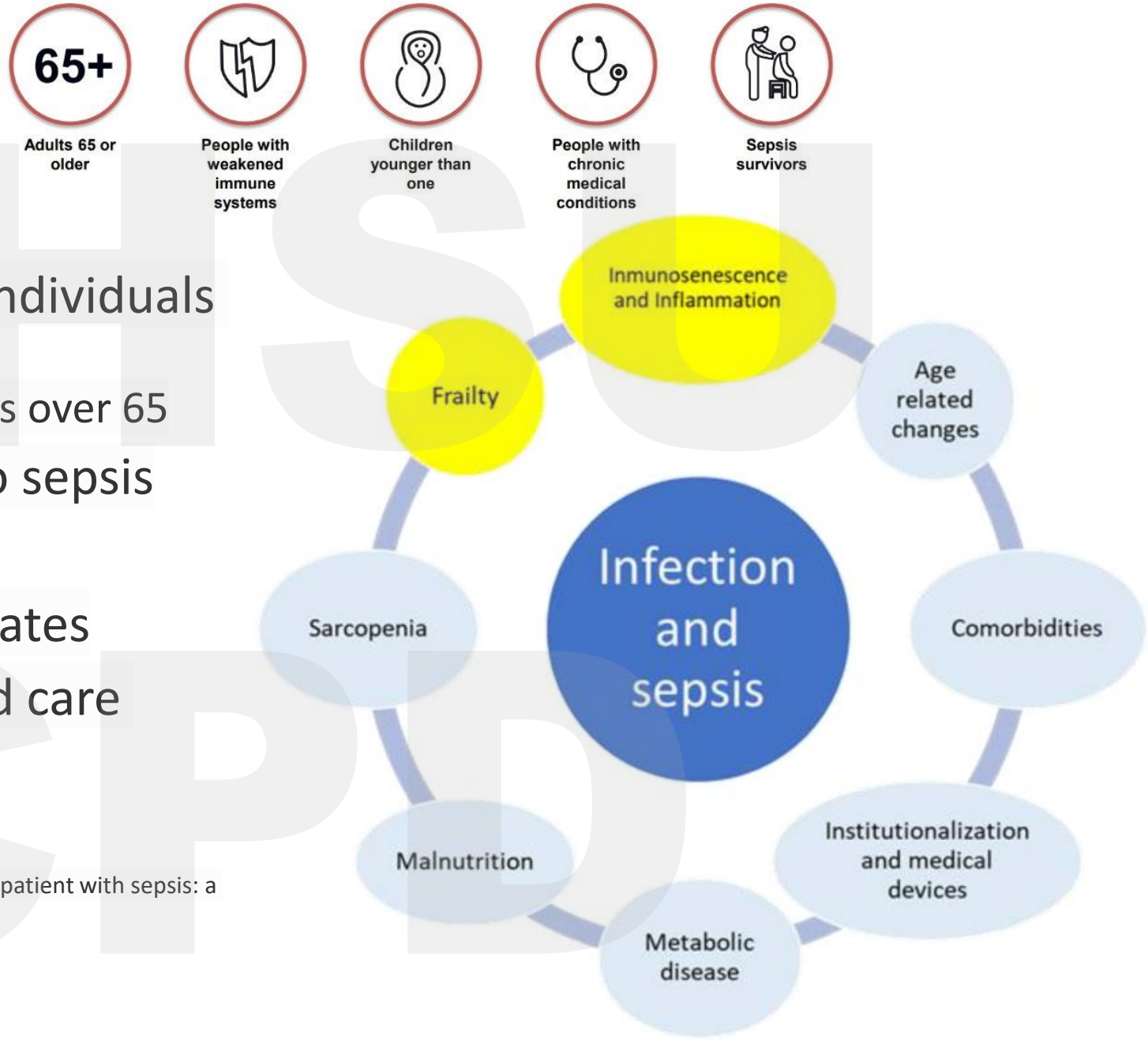
By 2030, All Baby Boomers Will Be Age 65 or Older





Sepsis and Age

- Sepsis particularly affects individuals above 70 years of age
  - 60-80% of all sepsis in adults over 65
- Heightened vulnerability to sepsis
- Ambiguous clinical picture
- Associated high mortality rates
- Goals of care and advanced care planning!



Ibarz, M., Haas, L.E.M., Ceccato, A. *et al.* The critically ill older patient with sepsis: a narrative review. *Ann. Intensive Care* **14**, 6 (2024). https://doi.org/10.1186/s13613-023-01233-7

Sepsis and Fluids

Early Restrictive or Liberal Fluid Management for Sepsis-Induced Hypotension

- Published in Jan 2023
- Among patients with sepsis-induced hypotension, the restrictive fluid strategy that was used in this trial **did not result** in significantly lower (or higher) mortality before discharge home by day 90 than the liberal fluid strategy.
- Both restrictive and liberal groups received ~ 2 L of fluid before randomization.

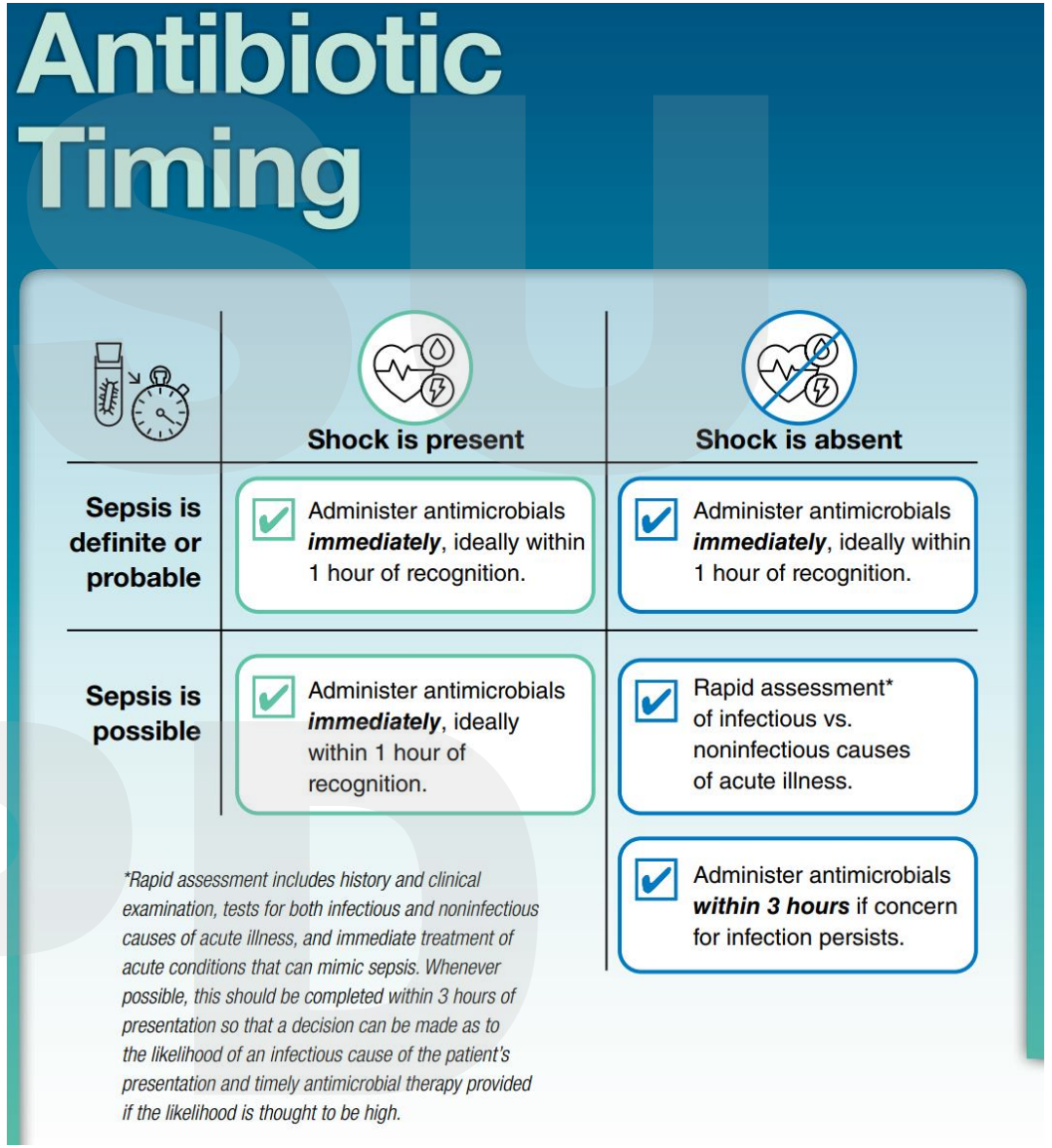
	Restrictive	Liberal	Total
Median volume of fluid administered before randomization (IQR) — ml	2050 (1500–2457)	2050 (1371–2442)	2050 (1450–2450)

Sepsis and Bundles: AIMS Study

- Assessment of implementation methods in sepsis: study protocol for a cluster-randomized hybrid type 2 trial

  - Head-to-Head: 1 v 3-hour Bundle
  - Implementation Study
  - Identify clinical sepsis phenotypes and impact on treatment

  - OHSU is a study site



Sepsis and Pediatrics

Development and Validation of the Phoenix Criteria for Pediatric Sepsis and Septic Shock

- Published January 2024
- Major revision based on a comprehensive multicenter retrospective cohort study across multiple centers including low resourced centers.
- Sepsis definitions for pediatric (> 37 weeks - <18 years) move toward alignment with organ dysfunction-based definitions
  - Mortality increased with this criteria
  - 7.1% mortality in high resource sites
- Point system based on organ dysfunction
  - Either 4 or 8 organ system model
  - 2 or More Points = Sepsis
  - If of the 2 - one or more cardiovascular points = Septic Shock

Table 2. The Phoenix Sepsis Score[a]

	0 Points	1 Point	2 Points	3 Points
Respiratory (0-3 points)				
	Pao_2:FIo_2 ≥400 *or* Spo_2:FIo_2 ≥292[b]	Pao_2:FIo_2 <400 and any respiratory support[c] *or* Spo_2:FIo_2 <292 and any respiratory support[c]	Pao_2:FIo_2 100-200 and IMV *or* Spo_2:FIo_2 148-220 and IMV	Pao_2:FIo_2 <100 and IMV *or* Spo_2:FIo_2 <148 and IMV
Cardiovascular (0-6 points)				
		1 point each (up to 3) for:	**2 points each (up to 6) for:**	
	No vasoactive medications[d]	1 Vasoactive medication[d]	≥2 Vasoactive medications[d]	
	Lactate <5 mmol/L[e]	Lactate 5-10.9 mmol/L[e]	Lactate ≥11 mmol/L[e]	
Mean arterial pressure by age, mm Hg[f,g]				
<1 mo	>30	17-30	<17	
1 to 11 mo	>38	25-38	<25	
1 to <2 y	>43	31-43	<31	
2 to <5 y	>44	32-44	<32	
5 to <12 y	>48	36-48	<36	
12 to 17 y	>51	38-51	<38	
Coagulation (0-2 points)[h]				
		1 point each (maximum of 2 points) for:		
	Platelets ≥100 × 10^3/μL	Platelets <100 × 10^3/μL		
	International normalized ratio ≤1.3	International normalized ratio >1.3		
	D-dimer ≤2 mg/L FEU	D-dimer >2 mg/L FEU		
	Fibrinogen ≥100 mg/dL	Fibrinogen <100 mg/dL		
Neurologic (0-2 points)[i]				
	Glasgow Coma Scale score >10[j]; pupils reactive	Glasgow Coma Scale score ≤10[j]	Fixed pupils bilaterally	

Sepsis Literature Potpourri

- Failure to Rescue as a Quality Measure in Sepsis
  - Viewpoint that conceptualizes sepsis adverse outcomes through the failure to rescue viewpoint to improve outcomes.
- Assessment of Racial, Ethnic, and Sex-Based Disparities in Time-to-Antibiotics and Sepsis Outcomes in a Large Multihospital Cohort
  - Time to antibiotic was longer in both women and Black patients
  - Women with septic shock had higher adjusted in-hospital mortality (not moderated by time to antibiotic)
  - Just published…

Center for Disease Control and Sepsis

Hospital Sepsis Program Core Elements

Launched – September 2023

- Essential components to improve hospital management and outcomes of patients with sepsis.
- Outlines structural and procedural components to support care of patients with sepsis
- Program “How To”

CDC: Hospital Core Elements Core Elements

- Scalable program components
- Building blocks for new or mature sepsis programs and those with limited resources.
- Self assessment tool
- Educational webinar series on the core elements

ACTION	ESTABLISHED AT FACILITY	COMMENTS
27. **[Priority Example]** Our hospital has implemented a standard process to screen for sepsis on presentation and throughout hospitalization.	❑ Yes ❑ No	
28. **[Priority Example]** Our hospital has a hospital guideline or a standardized care pathway for management of sepsis, that addresses: • Screening • Clinical evaluation • Diagnosis • Antimicrobial selection • Source control • Fluid resuscitation • Indications for treatment escalation • Antimicrobial narrowing and stopping • Patient and family/caregiver education • Peri-discharge management	❑ Yes ❑ No	
29. **[Priority Example]** Our hospital has order sets for the management of sepsis tailored to patient populations served.	❑ Yes ❑ No	
30. **[Priority Example]** Our hospital has structures and processes in place to facilitate prompt delivery of antimicrobials, including: • Stocking of common antimicrobials in locations outside the pharmacy • Immediate processing of new antimicrobial orders • Clinician order entry systems that default to immediate administration of new antimicrobials • Pharmacists on-site in key locations outside the pharmacy	❑ Yes ❑ No	

Sepsis and Hospital Value Based Purchasing Program (HVBP)

- Centers for Medicare and Medicaid Services
  - Rewards hospitals with incentive payments for the quality of care in the inpatient setting.
  - Adjusts payments to hospitals under the Inpatient Prospective Payment System (IPPS) based on the quality of care
  - Goal is to encourage hospitals to improve the quality efficiency, patient experience, and safety

  - Supported through reduction of payments of 2% of DRG.
  - Funding is distributed to facilities according to performance
    - Reward top performers

  - Sepsis Care was added to the HVBP in FY 2026

Sepsis and Value Based Purchasing

- CMS SEP-1 (Severe Sepsis and Septic Shock Early Management Bundle) was adopted as part of the value-based purchasing program for FY 2026
- Financially reward hospitals making serious strides in sepsis care
- Performance Period 1/1/2024 – 12/31/2024
- Sepsis Performance is benchmarked at ~ 58% compliance with CMS SEP-1 Metrics
- Achievement points (compared to all other hospitals)
- Improvement points (how much improved from baseline)

Sepsis Coding and Documentation

- Most frequent principal diagnosis for hospitalizations
- Most expensive conditions to treat
- Increased scrutiny by payors
  - most frequently denied diagnosis
- CMS follows Sepsis-2 for review and payment
  - This is only applicable for MEDICARE patients in OREGON
- Third Party payers have adopted Sepsis-3 Criteria

This leads to confusion!

Sand J, Kuqi A. Current Challenges in Sepsis Documentation and Coding: A Review of the Literature. Perspect Health Inf Manag. 2023 Sep 1;20(3):1g. PMCID: PMC10701636.

Sepsis Coding and Documentation

- Sepsis diagnosis documentation should be clear in the connection of the abnormal clinical findings that support organ dysfunction
- Most common code for sepsis is A41.9 (Unspecified Sepsis)
- Severe sepsis without septic shock is R65.20
- Severe sepsis ***with*** septic shock is R65.21

- DRGS 871 and 872 are top denied diagnosis.
  - Most from missing clinical indicators
  - Gaps between sepsis 2 and sepsis 3 clinical criteria

Take Aways

- Sepsis will continue to be a burden to the health care system for the foreseeable future.
- Prevention of infection = sepsis prevention.
- Early recognition of infection and mitigating before patient develops sepsis is critical.
- Antibiotics (as well as antiviral and antifungals) remain the mainstay of treatment.
- CMS metrics and Value Based Care models are here with us as well as administrative burdens to properly document and code.


Questions?

Time Zero: What matters to the patient!