Sepsis: Practical Pearls in Diagnosis and Treatment Decisions in Long-Term Care

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Speaker Disclosures

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Learning Objectives

By the end of the session, participants will be able to:

- Objective 1: Know the diagnostic criteria for sepsis
- Objective 2: Know principles of sepsis clinical management
- Objective 3: Understand the role of communication cascade
- Objective 4: Discern whether to treat in LTC or transfer

Case Presentation:

- 79 year old patient with indwelling foley and and history of CVA with dense left hemi, diabetes, hypertension, and CAD.
- Called by NP – facility called with patient having constitutional symptoms – acute change in condition
- Initial workup; 12K white count; no localizing symptoms.
- Ceftriaxone started; fever continues (99.5); she wants to add more antibiotics.
- Is this enough information for decision making?
- What did we do with patient?

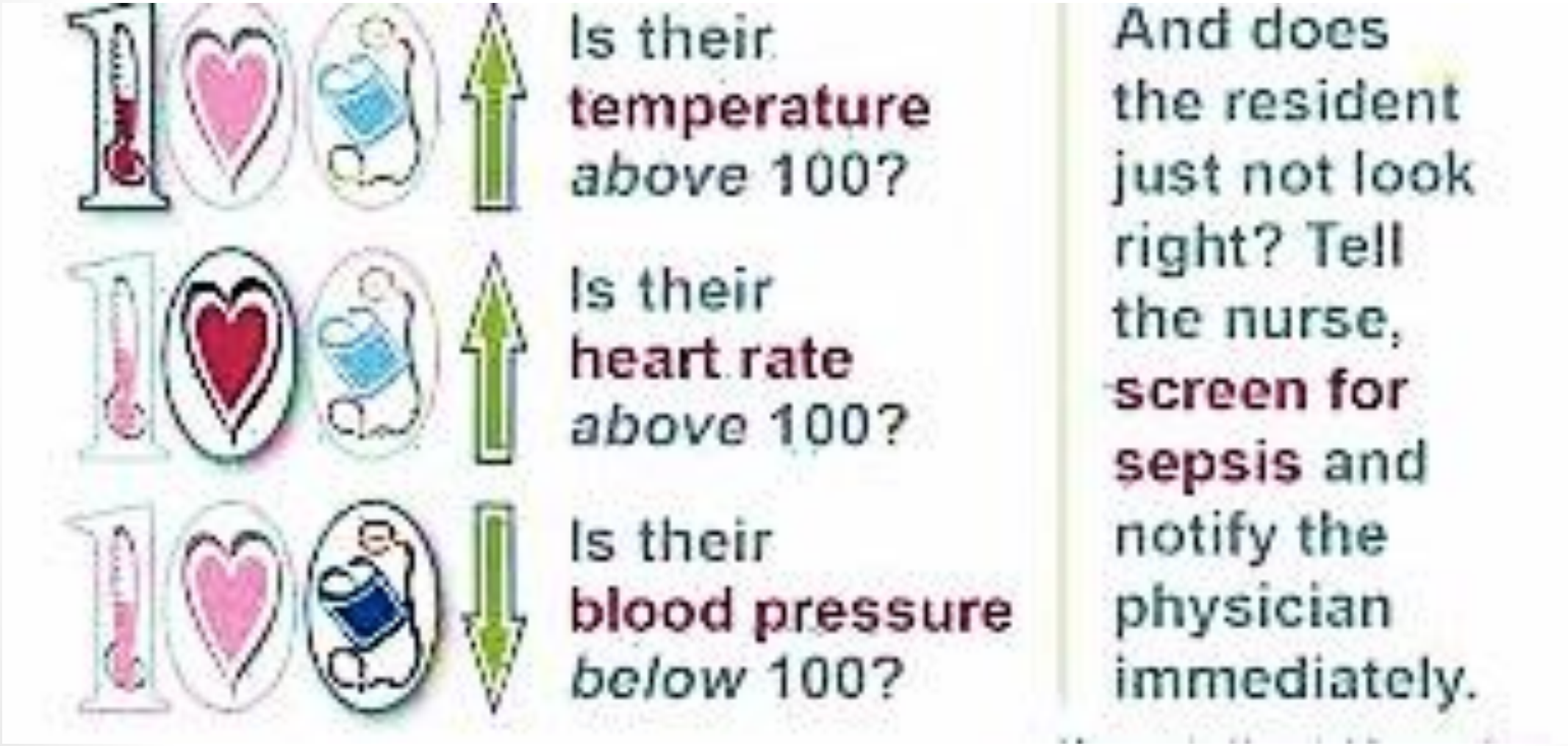
Audience Poll

- What is the criteria/screening tool does your nursing home use for sepsis recognition?

1. qSOFA
2. MHA -100-100-100
3. None- we diagnose on case by case basis
4. Other

QSOFA: identifying sepsis

Seeing Sepsis: Identifying Sepsis



Sepsis diagnosis in Nursing Home

ELSEVIER

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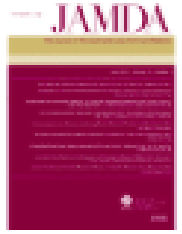


Original Study

Can Sepsis Be Detected in the Nursing Home Prior to the Need for Hospital Transfer?

Philip D. Sloane MD, MPH [a, b, c], Kimberly Ward BA [a], David J. Weber MD, MPH [c, d], Christine E. Kistler MD, MASc [a, b], Benjamin Brown BS [c], Katherine Davis BS [c], Sheryl Zimmerman PhD [a, e]

Diagnosing Sepsis in Nursing Home

Sepsis Tool	Sensitivity	Specificity
100-100-100	**79**	69
Oral temperature >99.0	51	85
qSOFA	27	88
Oral temp>100.2	40	93

Why is identification important?

Patient with severe sepsis	Nursing home residents	Non nursing home residents
Rate of ICU admission	40%	21%
Hospital LOS	7 days	5 days
In-hospital mortality	37%	15%

Ginde AA, Moss M, Shapiro NI, Schwartz RS. Impact of older age and nursing home residence on clinical outcomes of U.S. Emergency Department visits for severe sepsis. J Crit Care 2013;28:606e611.

Outcomes of the Surviving Sepsis Campaign in intensive care units in the USA and Europe: a prospective cohort study

Mitchell M Levy, Antonio Artigas, Gary S Phillips, Andrew Rhodes, Richard Beale, Tiffany Osborn, Jean-Louis Vincent, Sean Townsend, Stanley Lemeshow, R Phillip Dellinger

Hospital mortality if origin is emergency department		3008 (24·6%)	736 (34·1%)	<0·0001
Hospital mortality if origin is ward	#	1661 (34·9%)	1481 (43·5%)	<0·0001
Hospital mortality if origin is ICU		644 (36·1%)	502 (48·0%)	<0·0001

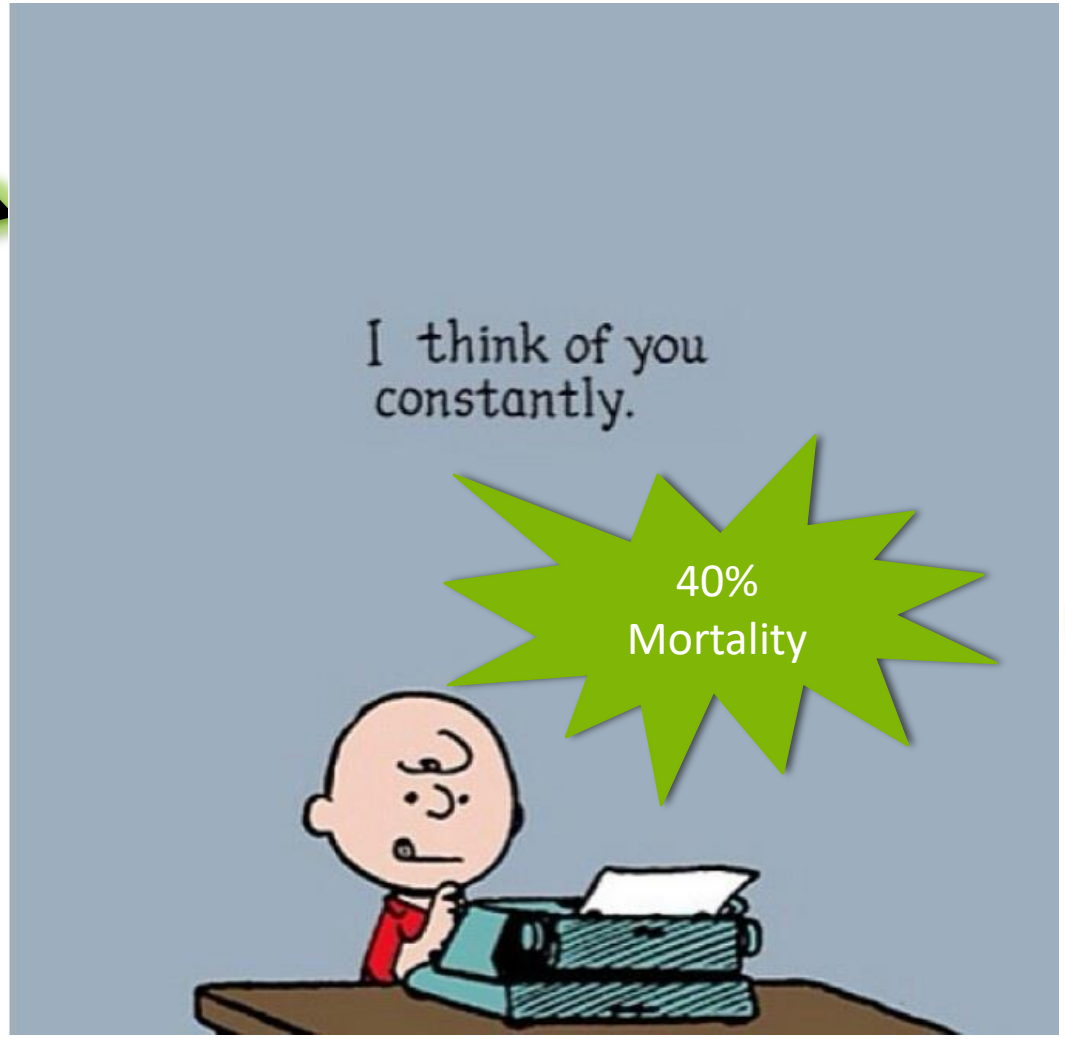
Lancet 2012

Action Items: Identification

- Use one standard tool that works for your facility.
- Impress the need for early identification
- Have a high level of suspicion

SEPSIS

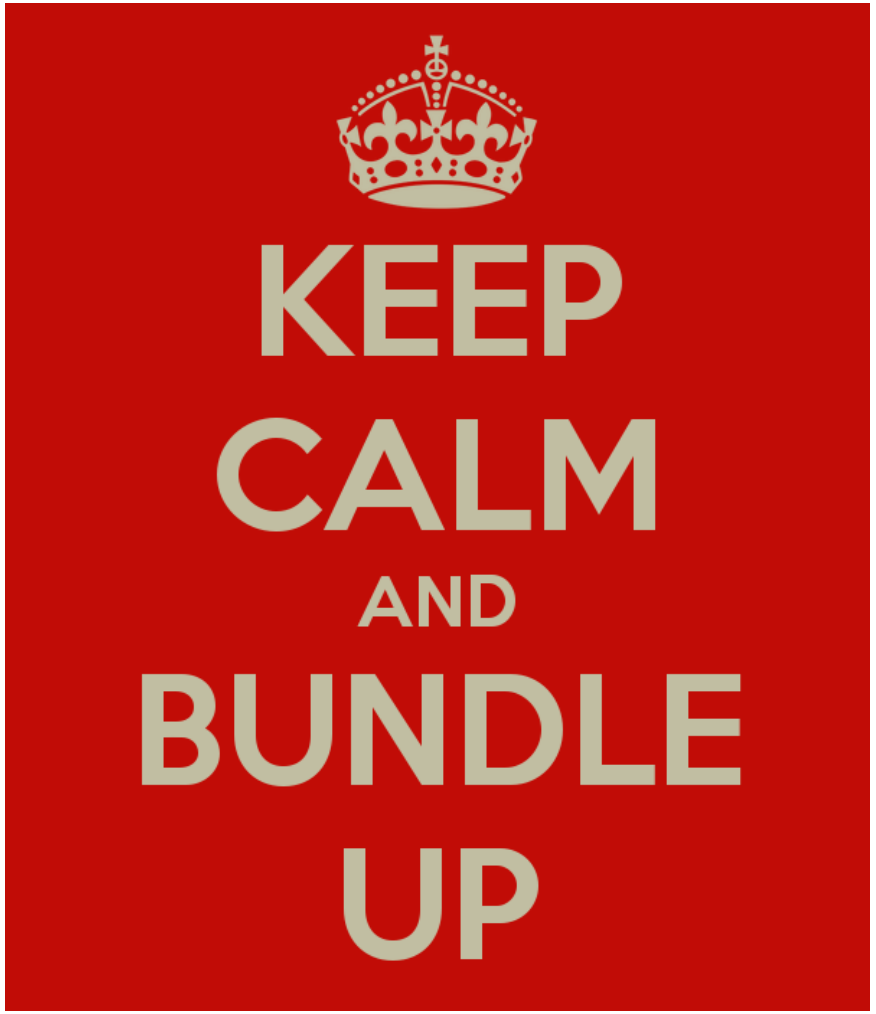
Acute change in condition



Treating known infection

Principles of management

TREATMENT OF ACUTE SEPSIS

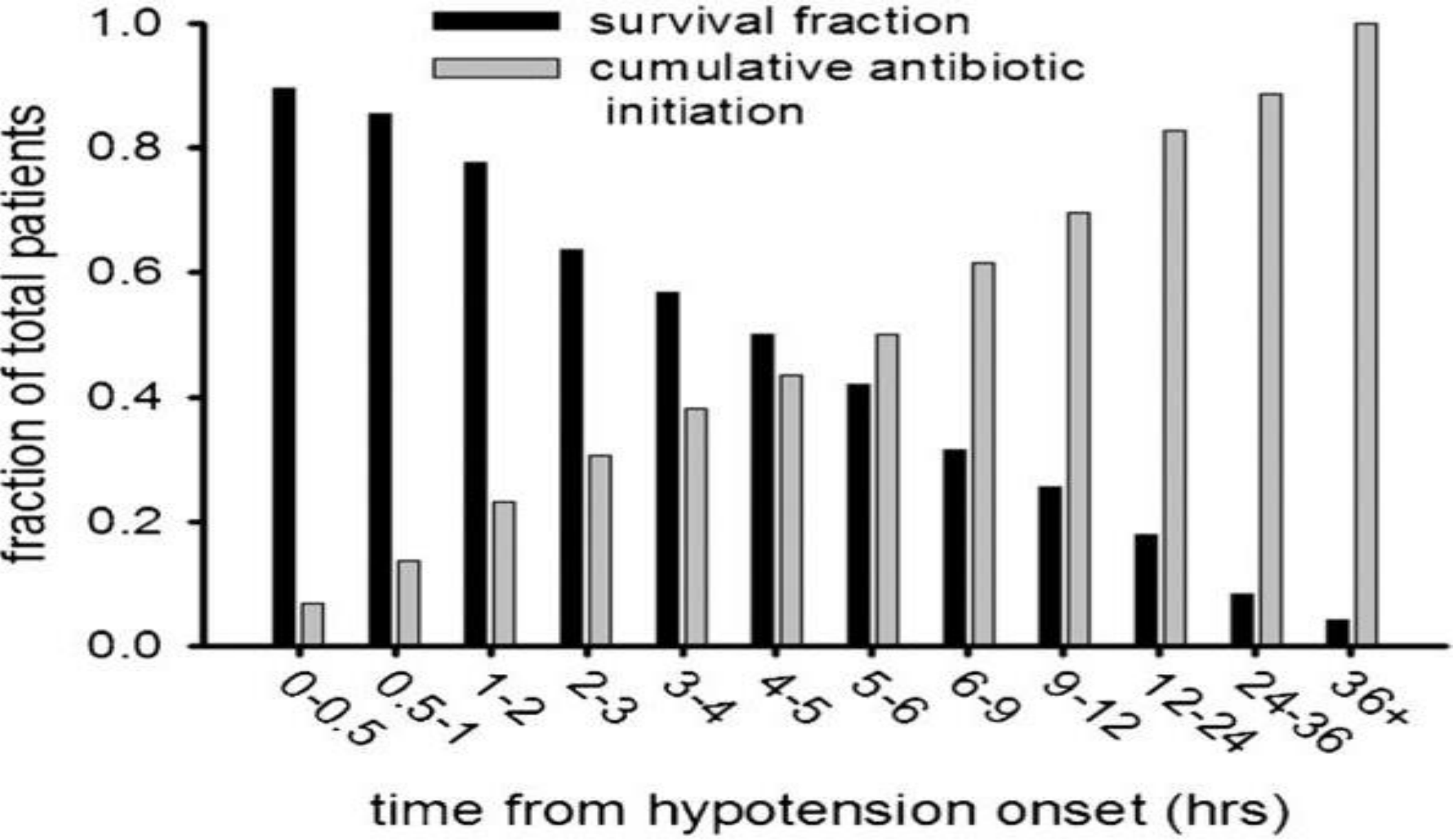


Effectiveness of the Bundles

- 263 patients –
- 6 hour bundle vs traditional treatment
- In hospital mortality 30.5 vs 46.5 with P=0.009

Early Goal-Directed Therapy in the Treatment of Severe Sepsis and Septic Shock
Emanuel Rivers, M.D., M.P.H., Bryant Nguyen, M.D., Suzanne Havstad, M.A., Julie Ressler, B.S., Alexandria Muzzin, B.S., Bernhard Knoblich, M.D., Edward Peterson, Ph.D., and Michael Tomlanovich, M.D. for the Early Goal-Directed Therapy Collaborative Group*

NEJM 2001



Curr Infect Dis Rep. 2015 Jul; 17(7): 493.

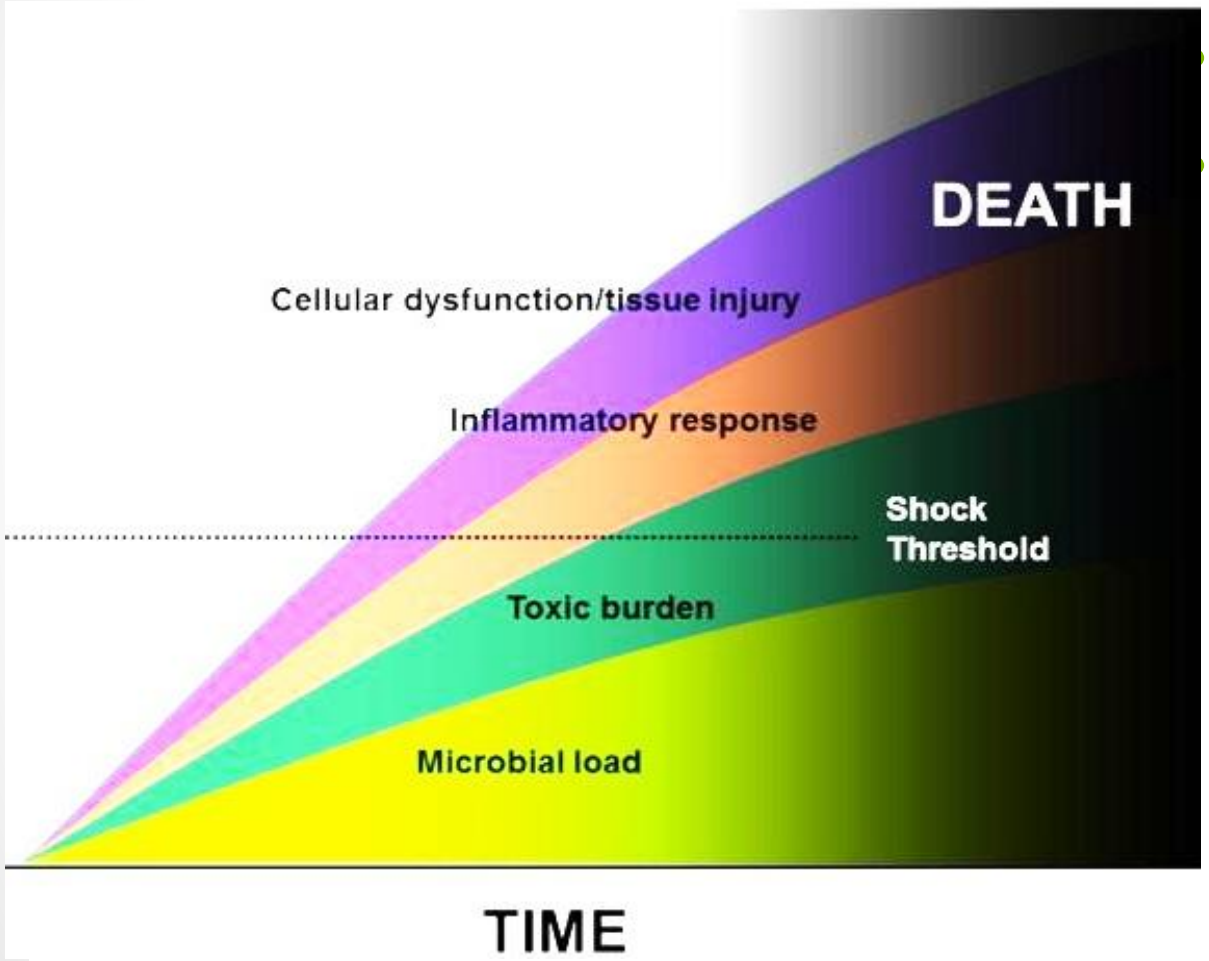
Antibiotic Choice

- Early – within 1 hour
- Appropriate –
  - Choice of antibiotic
  - Route of administration
  - Dose of antibiotic

Source	Choice
Lung	antipseudo beta lactam+AG/Antipseudo FQ+vanc
Urine	Antipseudo betalactam
Undifferentiated	Antipseudo beta lactam+AG/Antipseudo FQ+vanc

Curr Infect Dis Rep. 2015 Jul; 17(7): 493,
Clin Infect Dis 2009;48:503-35.

Broad Goals



Integrative paradigm-A. Kumar
Virulence. 2014 Jan 1; 5(1): 80–97

- Decrease microbial load
- Limit tissue injury by maintaining perfusion pressure

What's in a bundle?

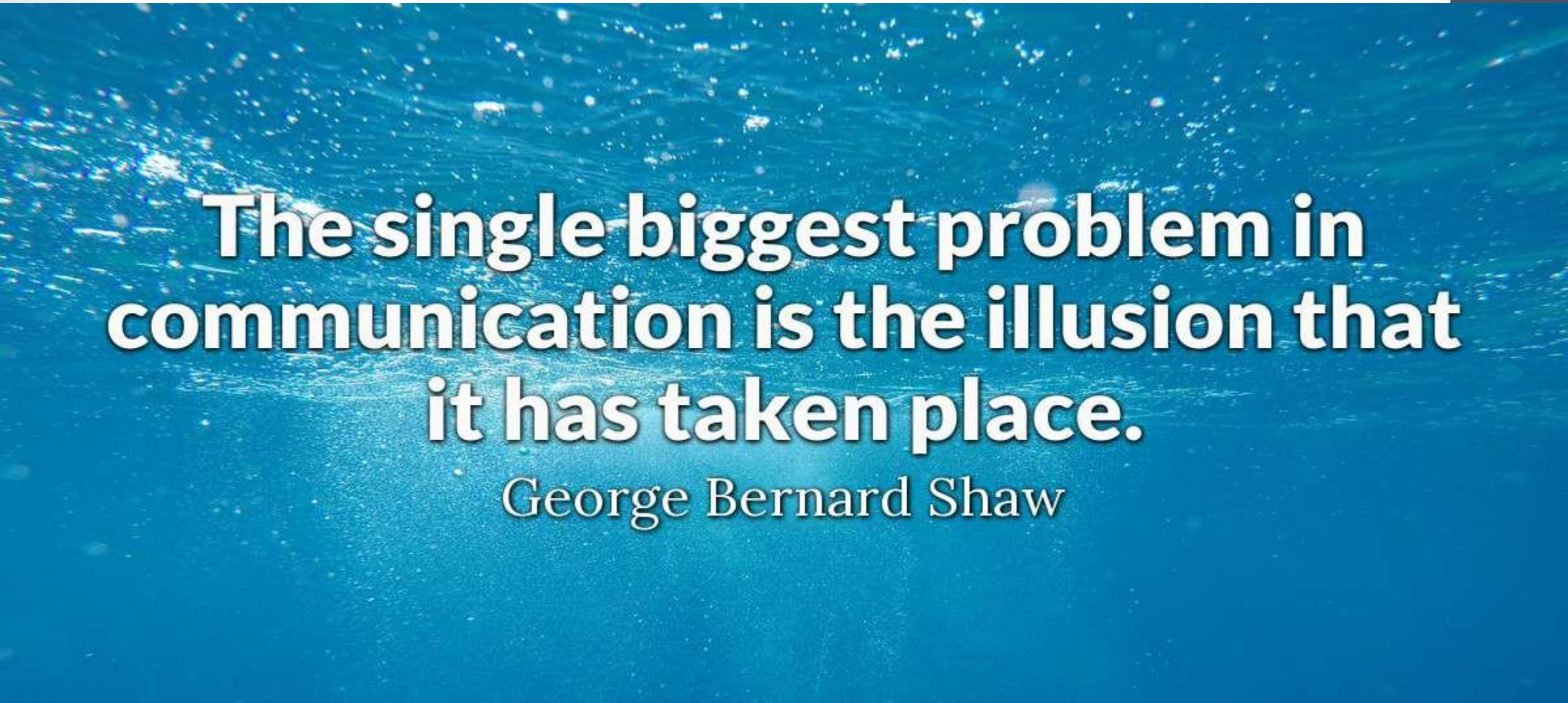
Hour-1 Bundle

- Measure lactate level. Re-measure if initial lactate is >2mmol/L
- Obtain blood cultures prior to antibiotic administration
- Administer broad- spectrum antibiotics
- Begin rapid administration of 30ml/kg crystalloid for hypotension or lactate ≥4mmol/L
- Apply vasopressors if patient is hypotensive during or after fluid resuscitation to maintain MAP≥65mm Hg

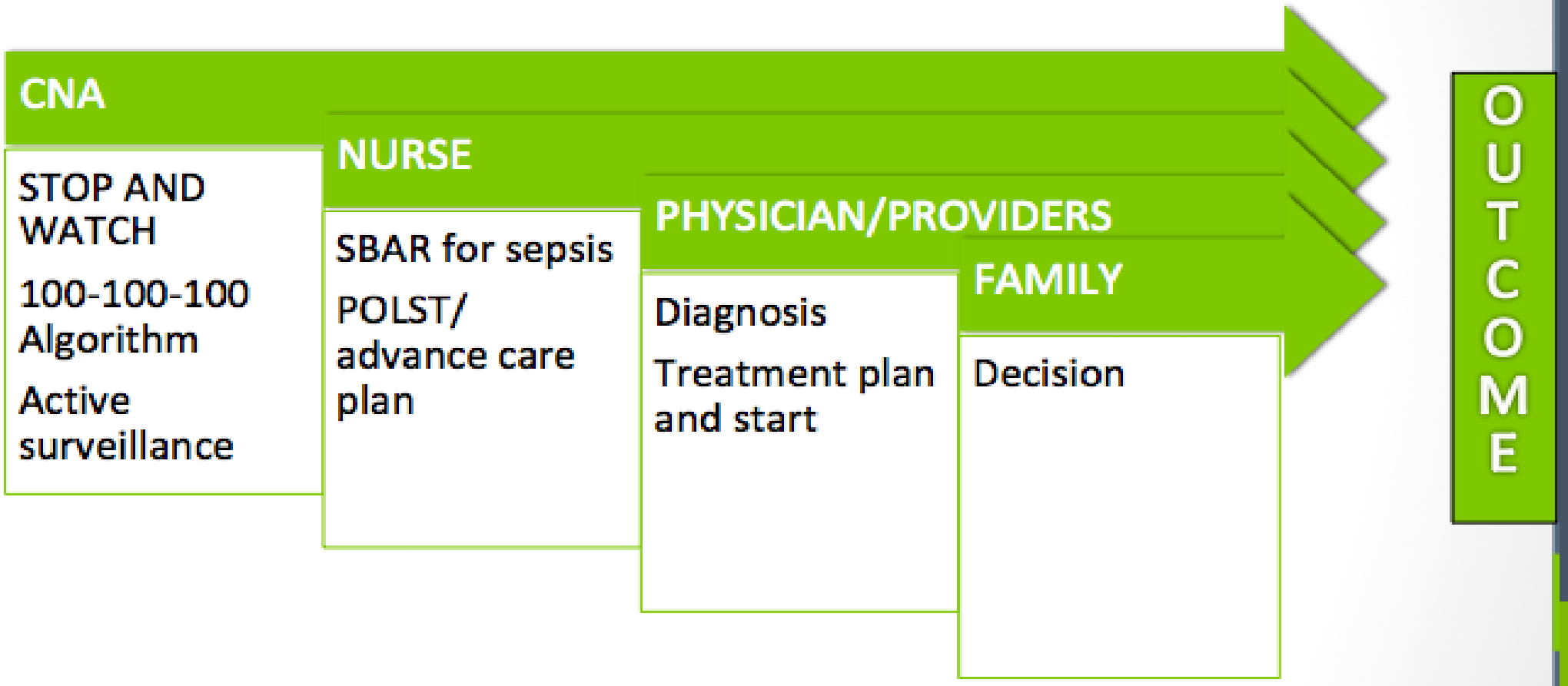
Audience Poll

- My nursing home has following capabilities:
  1. Lactate levels, blood culture bottles, coverage to start IV, broad spectrum antibiotics in e Box
  2. Blood culture bottles, Start IV, broad spectrum antibiotics in e Box, NO lactate
  3. Start IV, broad spectrum antibiotics in e Box, NO lactate, NO Blood culture bottles
  4. Broad spectrum antibiotics in e Box, NO lactate, NO Blood culture bottles, maybe/NO IV
  5. Are you kidding me?

Communication



Communication flow Cascade



Stop and Watch
Early Warning Tool

INTERACT®
Version 4.0 Tool

If you have identified a change while caring for or observing a resident, please **circle** the change and notify a nurse. Either give the nurse a copy of this tool or review it with her/him as soon as you can.

S
T
O
P
Seems different than usual
Talks or communicates less
Overall needs more help
Pain – new or worsening; Participated less in activities

a
n
d
Ate less
No bowel movement in 3 days; or diarrhea
Drank less

W
A
T
C
H
Weight change
Agitated or nervous more than usual
Tired, weak, confused, or drowsy
Change in skin color or condition
Help with walking, transferring, toileting more than usual

☐ Check here if no change noted while monitoring high risk patient

Situation:

_____ has screened positive for sepsis at_____
(*patient name*) (*time*)

Background:

1. _____has the following ***positive*** *criteria* for *SIRS*
   (*patient name*) (*state only those that apply*)

   a. Temperature > 100.6 (38C) or < 96.8% (36)
   b. BP < 90 mmHg or > 40 mmHg from baseline
   c. HR > 90/min
   d. Respiratory rate > 20/min
   e. Change in mental status, ALOC

2. I suspect infection
   The most recent WBC is _____
   (*Consider infection if WBC > 12, 000 or < 4,000*)

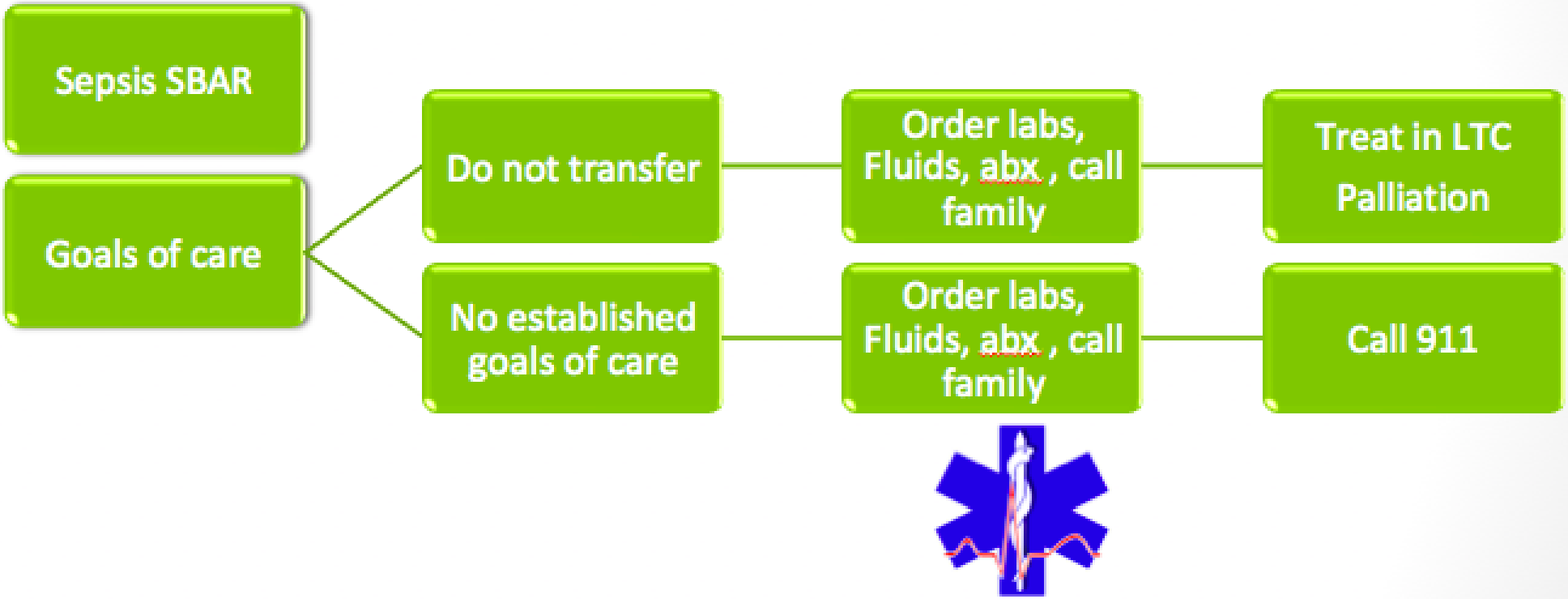
Assessment:

1. Vital signs are: _____
2. SAO_2 is _____, compared to _____(*lastreading*)
3. Mental status is now _____
4. Urine output is _____cc per hour or _____ over the last 8°
5. The most recent creatinine is ____; Creatinine on admission was ____

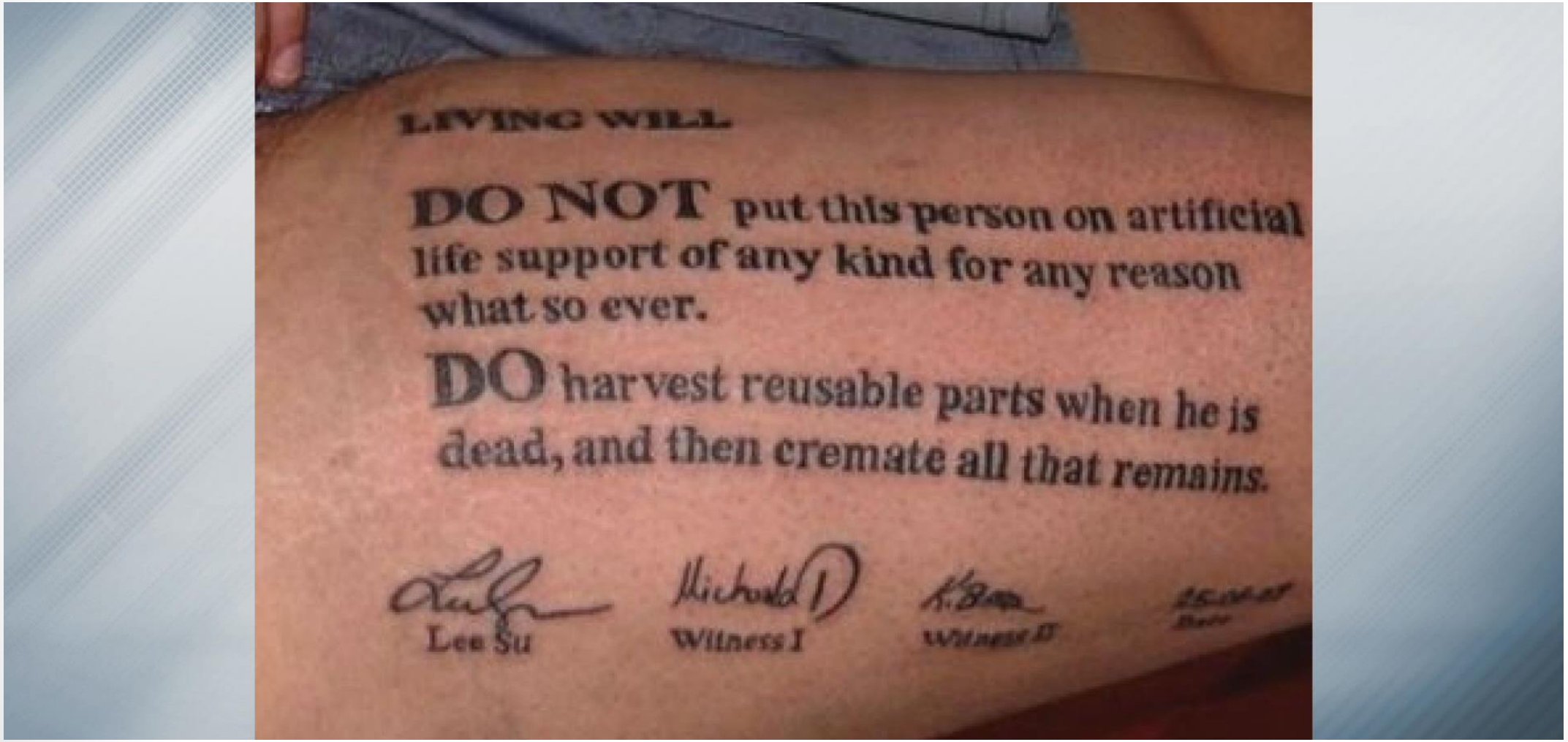
Recommendation:

1. I need you to evaluate the patient to confirm if they have severe sepsis
2. In addition to a stat Lactate, what other labs would you like me to order?
3. Should I start an IV and give a fluid bolus? (*if patient hypotensive*)

Decision and treatment cascade for sepsis



Let's not make our patients do this!



9 news tv.com

To transfer or NOT to transfer

- Nursing home residents with severe sepsis, compared with non-nursing home residents, had significantly higher rates of ICU admission (40% vs 21%), hospital LOS (median, 7 vs 5 days), and in-hospital mortality (37% vs 15%).

Ginde AA, Moss M, Shapiro NI, Schwartz RS. Impact of older age and nursing home residence on clinical outcomes of U.S. Emergency Department visits for severe sepsis. J Crit Care 2013;28:606e611.

Be aware:

- Mortality of sepsis is high
- Mortality is HIGHER if not following the full bundle!!
- May start treatment but several lab/ monitoring/ treatment resources may not be available in LTC facilities.
- The chance that patient will deteriorate despite initial treatment is high and we have no immediate ICU supportive interventions

Audience Poll

- BP was 90/60, HR 109, Temp 99.8ºF (post acetaminophen), RR 22. Mental status was clear. There was dark urine in the bag. Patient had right costovertebral angle tenderness. What would you suggest?
  1. IV access and fluid resuscitation
  2. IV access and fluid resuscitation and broad spectrum antibiotics
  3. Ask staff to call 911
  4. Ask for goals of care and establish IV access

Transfer to the hospital

Nursing Home Staff are First Responders for Sepsis

Jump et al., *JAMDA.* 2019; 20(3); 275-78

Sepsis Kits in PALTC Settings

Category	Specific Components	
Durable equipment	• Automated digital blood pressure machine • Blood pressure cuffs (disposable) in several sizes	• Pulse oximeter • Thermometer
Supplies	• Mask and tubing for supplemental oxygen • Kits for placing intravenous catheters (include several sizes) • Blood drawing equipment including tourniquets • Chlorhexidine swabs for cleansing skin prior to placing intravenous catheters and collecting blood cultures • Kit for placing urinary catheter to monitor urine output	• Sterile gloves (include several sizes) for placing the urinary catheter • Personal protective equipment including gowns, gloves and masks (include several sets) • Dressing supplies, packing and tape • Bags of sterile crystalloid fluid (e.g., normal saline or lactated ringers)

Jump et al., *JAMDA.* 2019; 20(3); 275-78

Sepsis Kits in PALTC Settings

Category	Specific Components	

Laboratory Tests	• Blood culture bottles (at least 2 sets of aerobic and anaerobic bottles)
	• Sterile containers to collect additional specimens as clinically indicated:
	  • urine (from a newly placed catheter)
	  • sputum culture
	  • stool, particularly if liquid
		• Bacterial culture swabs
		• Viral culture swabs and transport medium
		• Collection tubes for common laboratory studies†

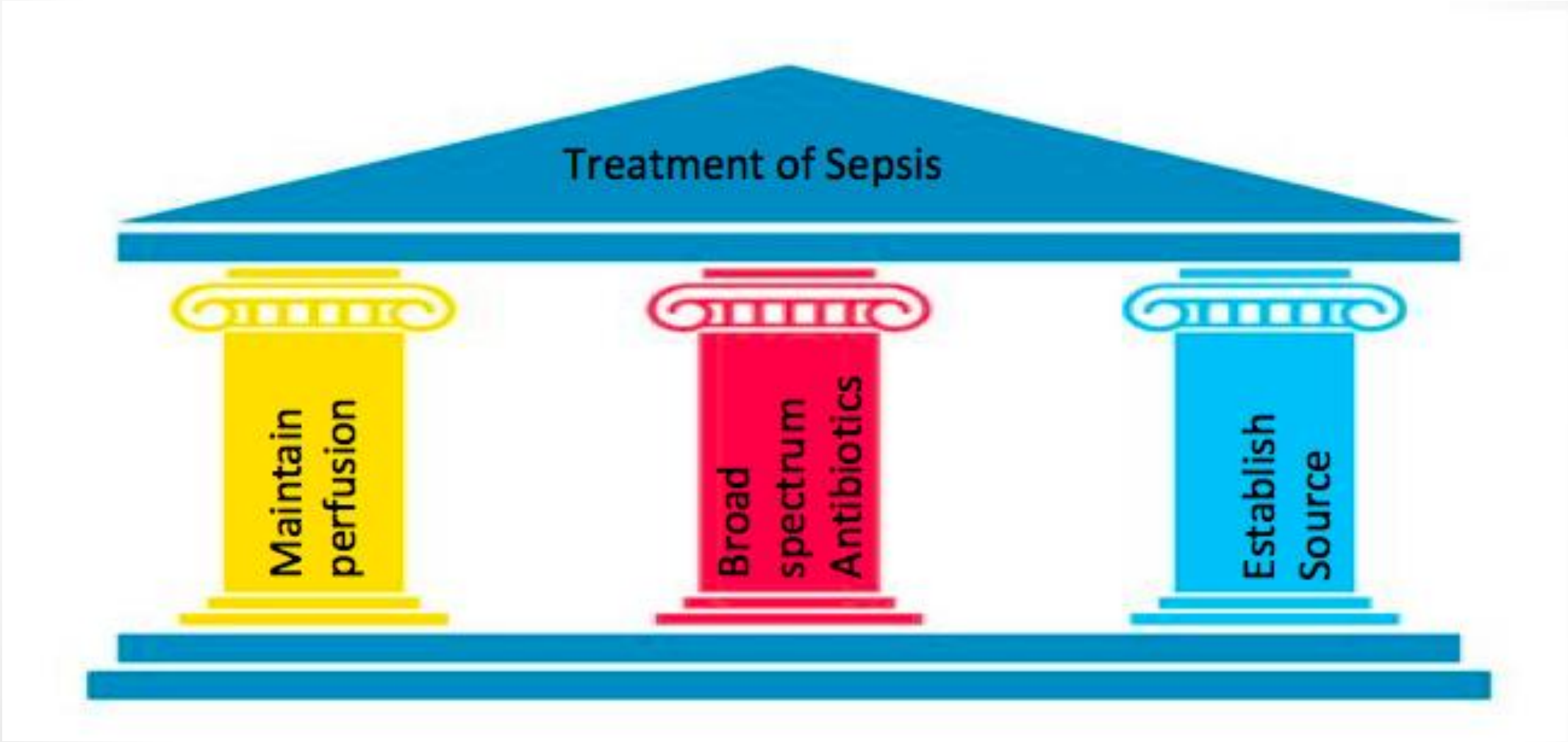
Antibiotics	• Oral: amoxicillin/clavulanic acid and linezolid • Intravenous: piperacillin/tazobactam and intravenous vancomycin	• If penicillin allergy: levofloxacin • If concern for C. difficile infection: oral vancomycin or fidaxomicin

*When appropriate, the components of the S-KIT should be labeled with an expiration date and replaced. Durable equipment should be checked quarterly for proper functioning and the supplies replaced at least annually.
†Lavender top for a complete blood count; light blue for PT/INR; gold top or red with a gold center for basic and complete metabolic panels, cardiac enzymes and C-reactive protein; grey top for lactic acid.

Jump et al., *JAMDA.* 2019; 20(3); 275-78

Treat in Nursing Home

Treatment of Sepsis in PALTC



Treat

- 30ml/kg X 60 KG=1800 ml in 1 hr.
- Keep MAP >65 [(diastolic X 2)+systolic]/3
- Follow up the lactate if the first level was high-

Treat

- Send all Cultures before the first dose of antibiotics which should be within 1 hour-
- Start with broad spectrum antibiotics (2 with shock) and narrow a.s.a.p. –
- Duration 7-10 days (typical) tailored to the organ of origin

Monitor

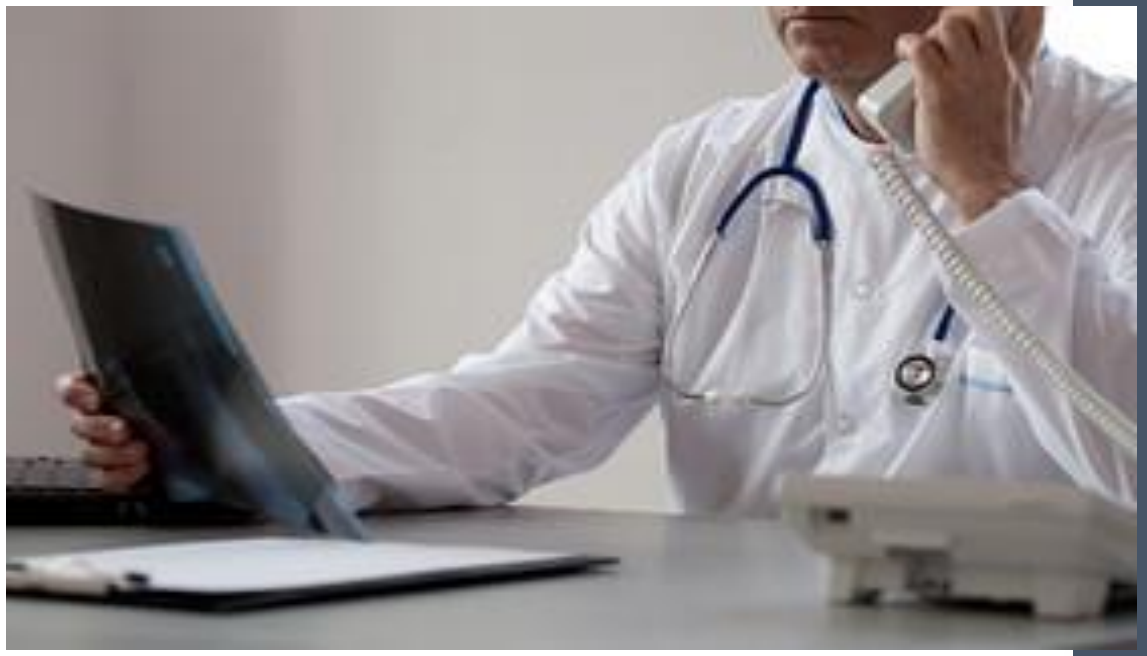
- Close monitoring of vital signs
- Watch for system failure with O2 monitoring, labs (glucose, creatinine, platelet)
- Watch for response (CBC, lactate level)
- Follow up Cultures

Watch out for complications

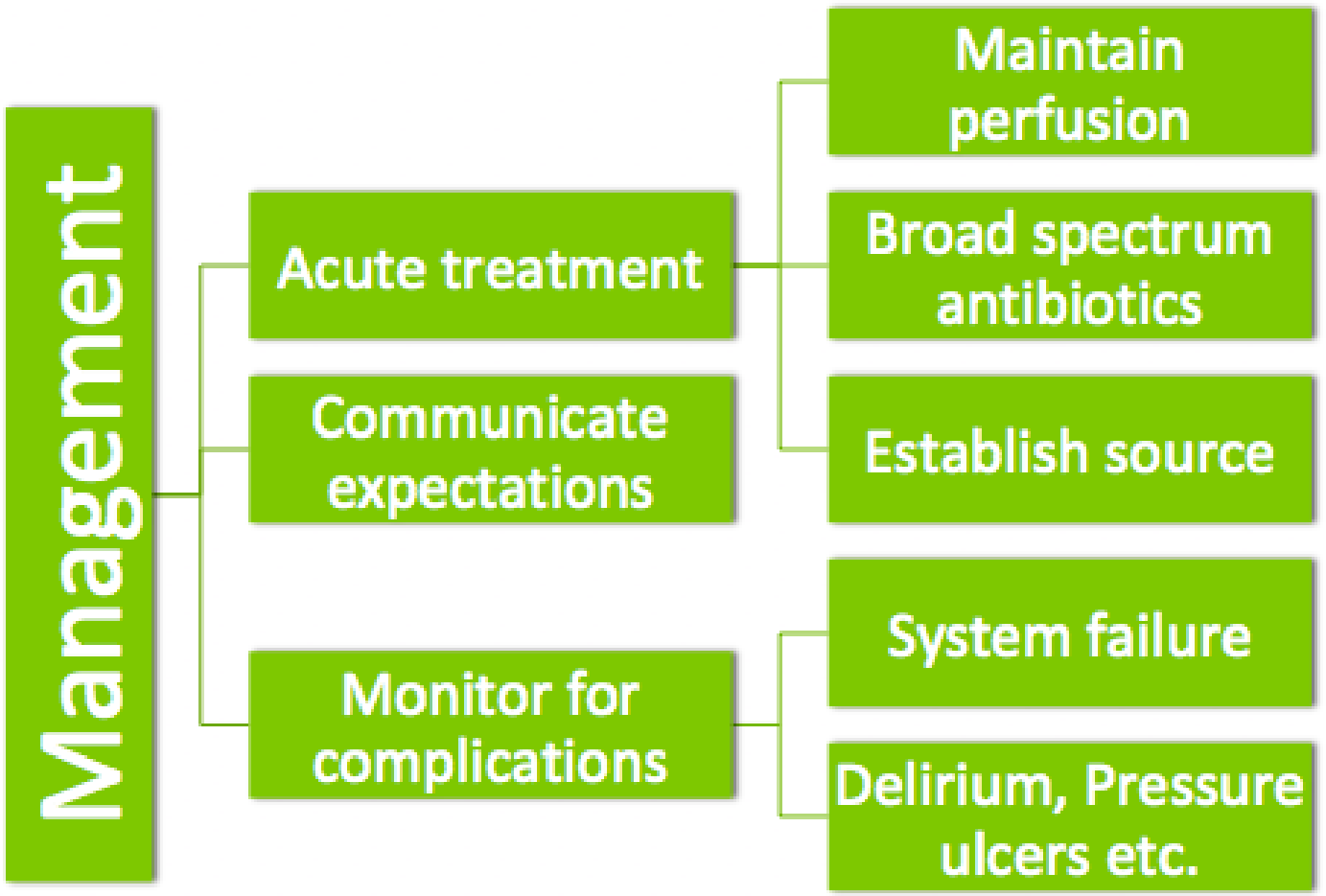
- Pressure ulcers
- DVT/ stress ulcer
- Deconditioning
- Nutrition
- Delirium

Communicate

- Call family to discuss prognosis and goals of care.



Management of sepsis in LTC

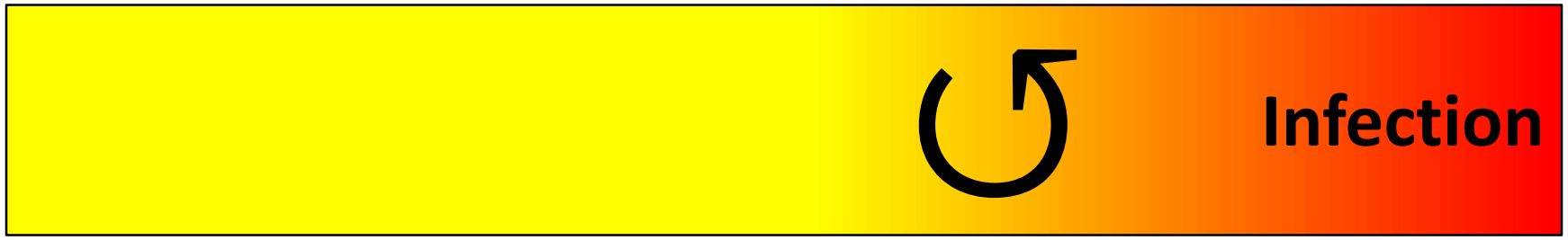


Audience Poll

- CMS COP phase 3 requires facilities to have an antimicrobial stewardship program. What do you think of the state of your facility's antimicrobial stewardship program?
  1. Our facility has a robust program with involvement of consultant pharmacists and medical director.
  2. Our facility is trying to get it together.
  3. All I know about mine is people telling me, I can't use antibiotics
  4. What's that?

But doesn’t this go against our antibiotic stewardship program?

Antibiotic Stewardship



Do not treat with antibiotics

Active monitoring
Supportive Care
Diagnostic Tests
Keep Thinking!!

Start Antibiotics

No signs/sx of infection

My mother burst into tears when I helped her put on her shoes for going outside.

Possible Infection

Mr. Jones has a terrible cough, shortness of breath and leg edema.

Likely Infection

Mrs. Smith has a temperature of 99.4°F and a hot, red leg.

Principles of Antibiotic Stewardship

Treatment for Sepsis


Principles of
Antibiotic
Stewardship

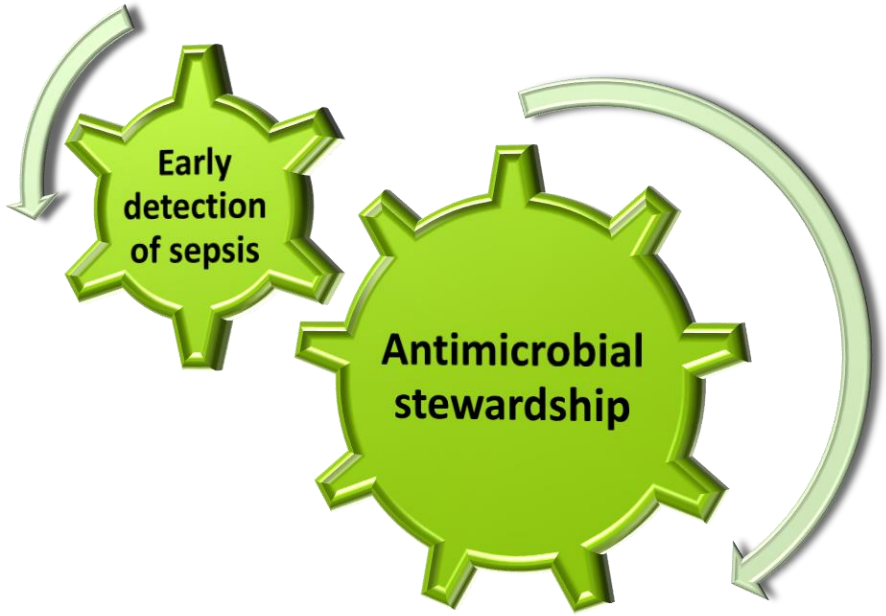

Treatment
for Sepsis


Principles of Antibiotic Stewardship


Treatment for Sepsis


Antibiotic Use Protocols

Mindful approach to treatment of Infections



Always Team Work

Questions: