

Current State of Sepsis Care: Reliably Implementing Best Practices



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Disclosure statement

**I have no actual or potential conflict of interest
in relation to this program/presentation.**

Overview-Objectives

1. Summarize the four-tier process for effective sepsis program development, implementation and evaluation
2. Examine the evidence for the sepsis bundles and share proven strategies to resolve barriers in implementation and measurement of core measures
3. Identify gaps between the evidence and your hospital's sepsis program

Sepsis Survivors



Sepsis Awareness

study done by Sepsis Alliance annually

- Sepsis awareness has significantly increased at 58% over 55% in 2016.
 - This means more than 7 million more adults are aware of sepsis in 2017 compared to 2016
 - Those under 45 are significantly more likely to have heard the term sepsis than over (62% vs. 53%)
- Almost one-quarter of Americans believe that sepsis only happens in hospitals (23%)
- An alarming 39% of Americans believe that sepsis is contagious
- Nearly three-quarters of Americans say they can identify the symptoms of someone having a stroke, whereas less than 1% can correctly identify all of the most common sepsis symptoms
- More Americans have never heard of sepsis (27%) than Ebola (5%), a nearly non-existent condition in the U.S.
- Nearly 58 million adults believe if you are healthy, an infection isn't anything you need to worry about (24%)

Sepsis is an Epidemic

- Affects >1 million Americans per year
- 3rd leading cause of death in the US
- Sepsis occurs in just 10% of U.S. hospital patients, but it contributes to as many as half of all hospital deaths
- US spends \$24 billion per year to treat

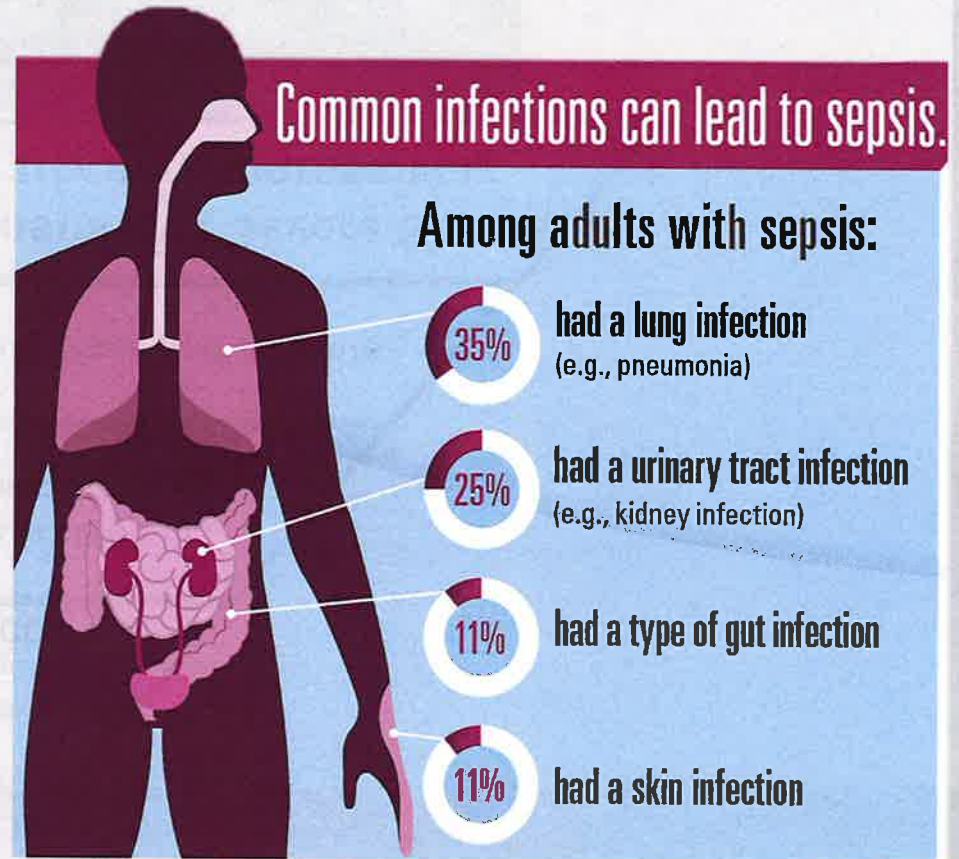
- **700 people die each day from sepsis in the U.S.**
- **Every 2 minutes someone dies of sepsis in U.S.**

1. Sands KE, Bates DW, Lanken PN, et al. Epidemiology of sepsis syndrome in 8 academic medical centers. *JAMA* 1997;278:234-40.
2. National Vital Statistics Reports. 2005.
3. Angus DC, Linde-Zwirble WT, Lidicker J, et al. Epidemiology of severe sepsis in the United States: analysis of incidence, outcome and associated costs of care. *Crit Care Med* 2001;29:1303-10.
4. AHRQ: accessed 06/27/2016
<http://www.healthcarefinancenews.com/news/septicemia-newborn-care-top-list-most-expensive-treatments-agency-healthcare-research-and>
5. Novosad SA, et al. *MMWR*, 2016;65(33):864-869



Sepsis: CDC Vital Signs

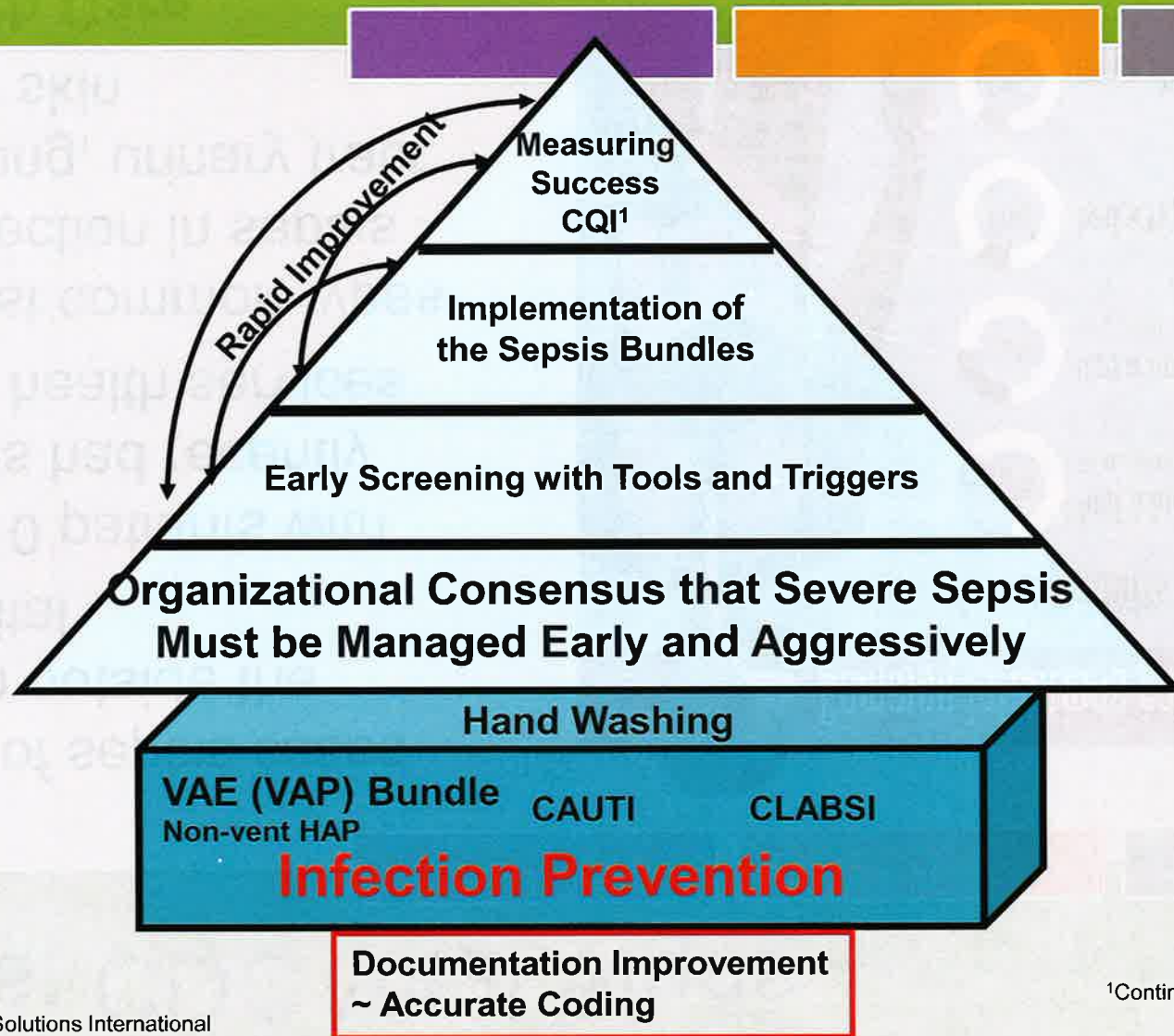
- 80% of sepsis cases begin outside the hospital
- 7 in 10 patients with sepsis had recently used health services
- 4 most common types of infection in sepsis are lung, urinary tract, gut & skin
- **Health Care Providers: Think Sepsis & Act Fast**



<https://www.cdc.gov/vitalsigns/sepsis/August 2016>

Sepsis Practice Collaborative Model

4 Tier Process for Program Implementation



Tier I: Organizational Consensus and Support

Milestones and Checklist

1. Define Sepsis Program Goal and aligned with organizational goals
2. Identify Executive sponsor
3. Collect Baseline Data—essential step
4. Develop sepsis team(do we have all the right people here?) and schedule monthly(minimum) meeting for at least 6 months
5. Identify nursing and **physician champions** in ED and ICU and ensure champions attend team meeting
 - Create a sepsis coordinator position to oversee program
6. Begin to define action plan and timeline for program development and implementation

Impact of Sepsis Coordinator

HCA added sepsis coordinators to all facilities
(FTE was based upon sepsis volume)

- Severe sepsis/septic shock mortality dropped from 22% to 15%
- Bundle compliance improved to 61%
- Other key elements initiated were order sets, sepsis alerts, routine screening, sepsis champions and community outreach

Role of the Sepsis Coordinator

- Facilitates implementation/evaluation of the Sepsis program including all systems necessary for the multidisciplinary approach throughout the continuum of care.
- Makes regular rounds on sepsis patients to evaluate appropriateness of orders, treatment plans, nursing intervention, physician documentation and compliance with the Sepsis bundle
- Utilizes currently available reports to identify sepsis cases and facilitates data collection process and assesses and analyzes outcomes.
- Collaborates with frontline staff to identify on-going care concerns related to sepsis care
- Collaborates with leadership and colleagues in identifying sepsis quality of care issues

Role of the Sepsis Coordinator

- Determines baseline compliance with physician documentation and compliance with the Sepsis bundle.
- Provides real time/detailed feedback to all clinical providers and departments and scheduled updates to the Sepsis Collaborative Team and work groups.
- Assist the rapid response team and other hospital staff, when necessary, if dealing with a patient situation
- Conducts sepsis organizational tracers to identify quality and safety issues.
- Analyze data to identify trends and issues, also use improvement tools to assist with problem solving and action planning.
- Provides formal and informal education to medical and clinical staff.
- Maintains knowledge of current trends and developments in the sepsis management, fields of quality, and safety.

Slide 12

PJP1

combine slide 14 and 15

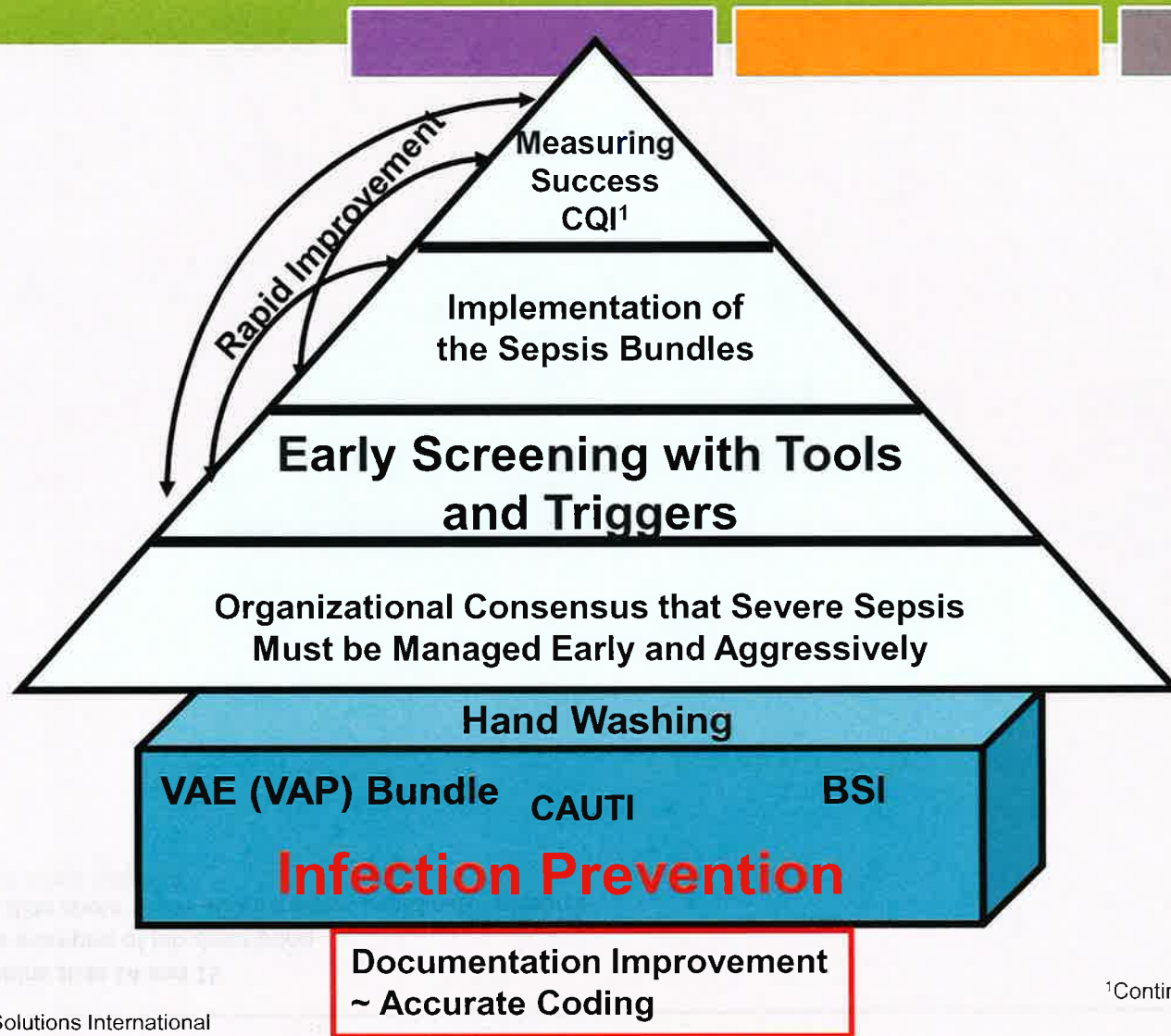
have examples of job description

add slide about sepsis alliance sepsis coordinator resource

Patricia J. Posa, 4/30/2018

Sepsis Practice Collaborative Model

4 Tier Process for Program Implementation



Adapted from: Sepsis Solutions International

¹Continuous Quality Improvement

Tier II: Screening for Severe Sepsis Milestones and Checklist

- Develop screening process for ED, rapid response team, ICU and house wide
 - Routine screening by nursing plus a EMR sepsis alert. Alert alone in not enough
- Develop audit process to evaluate compliance and effectiveness
- Ensure screening process has clear “next steps” defined for nursing staff

If you don't screen you will miss patients
that may have benefited from the interventions

PATIENT CARE UNIT SEVERE SEPSIS SCREENING TOOL



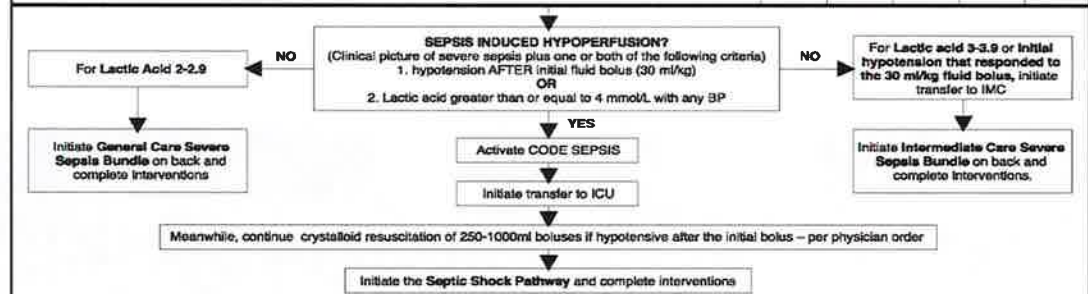
ST. JOSEPH MERCY ANN ARBOR
 ST. JOSEPH MERCY LIVINGSTON
 ST. JOSEPH MERCY SALINE

Patient Units Severe Sepsis Screening Tool

Severe Sepsis = Infection + SIRS + Organ Dysfunction

Directions: The screening tool is for use in identifying patients with severe sepsis. Screen each patient upon admission, once per shift and PRN with change in condition.

	DATE:				
	TIME:				
I. SIRS-Systemic Inflammatory Response Syndrome (two or more of the following):					
Temperature greater than or equal to 100.4°F or less than or equal to 96.8°F					
Heart Rate greater than 90 beats/minute					
Respiratory Rate greater than 20 breaths per minute					
WBC greater than or equal to 12,000/mm ³ or less than or equal to 4,000/mm ³ or greater than 0.5 K/L bands					
Blood glucose greater than 140 mg/dL in non-diabetic patient					
Negative screen for severe sepsis (Please initial)					
If check two of the above, move to II					
II. Infection (one or more of following):					
Suspected or documented infection					
Antibiotic Therapy (not prophylaxis)					
If check none of above - Negative screen for severe sepsis (Please initial) - answer infection question NO in I-View					
If check one of the above - answer Infection question YES in I-View, call physician for serum lactic acid order and move to III					
III. Organ Dysfunction (change from baseline) (one or more of the following within 3 days of new infection)					
Respiratory: SaO ₂ less than 90% OR increasing O ₂ requirements					
Cardiovascular: SBP less than 90mmHg OR 40mmHg less than baseline OR MAP less than 65mmHg					
Renal: urine output less than 0.5ml/kg/hr; creatinine increase of greater than 0.5mg/dl from baseline					
CNS: altered consciousness (unrelated to primary neuro pathology) Glasgow Coma Score less than or equal to 12					
Hematologic: platelets less than 100,000; INR greater than 1.5					
Hepatic: Serum total bilirubin greater than or equal to 4mg/dl					
Metabolic: Serum lactic acid greater than or equal to 2mmol/L					
Negative screen for severe sepsis (Please initial)					
If check one in section III or a severe sepsis alert fires, patient has screened positive for severe sepsis					
1. Call rapid response team					
2. Call physician, physician assistant or nurse practitioner and implement urgent measures protocol.					
3. Initiate or ensure IV access (2 large bore IV's if no central access)					
4. Obtain a venous blood gas (peripheral draw), serum lactic acid, CBC (if it has been greater than 12 hrs since last test), two sets of blood cultures (if greater than 24 hours since last set)					
5. If patient is hypotensive: Give crystalloid (NS) fluid bolus - 30ml/kg over one hour or as fast as possible until hypotension resolved, unless known EF is less than 35% or active treatment for heart failure.					



RN Signature, Initial Date & Time:

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P1

question if keep the screening examples on this and the next 2 slides

Pat, 4/29/2018

Electronic Routine Screening

Sepsis Screening Tool

The purpose of this tool is to facilitate **EARLY RECOGNITION & TREATMENT OF SEPSIS**
THIS TOOL DOES NOT REPLACE CLINICAL JUDGEMENT

SIRS/Organ Dysfunction/Sepsis Screening Tool Retrieval

Note:
 Blood sugar > or = 140 is SIRS criteria for a non-diabetic patient

SIRS
 Temperature Celsius 38.6 (09/20/2017 07:00)
 38.3 (09/20/2017 05:00)
 Pulse Rate 89 (09/20/2017 07:00)

Retrieval Script includes;
SIRS, Organ Dysfunction and Sepsis Screening Tool

Sepsis Screen

Systemic
 Inflammatory
 Response

- No criteria identified
- Resp rate greater than 20/min
- Temp less than 36 C or greater than 38.3 C

Temp <36 C (96.8 °F) or Temp > 38.3 (101 °F)

Severe Sepsis Screen

Organ
 Dysfunction
 Screen

- No criteria identified
- Lactic acid greater than 2 mMol/L within 12 hrs
- Systolic blood pressure (SBP) less than 90 mmHg
- Mean Blood Pressure (MAP) less than 65 mmHg
- Systolic blood pressure (SBP) decrease of 40 mmHg from baseline
- Acute respiratory failure: BIPAP or Mechanical Ventilation
- Creatinine increase more than 0.5 mg/dL within past 72 hrs
- Creatinine greater than 2 mg/dL in past 72 hrs not chronic kidney dx
- Bilirubin greater than 2 mg/dL within past 72 hrs
- Platelet count less than 100,000 K/uL within past 72 hrs
- aPTT greater than 60 sec in past 72 hrs without anticoagulants
- INR greater than 1.5 within past 72 hrs without anticoagulants

Positive **SEVERE** Sepsis Screen Occurs when one selection is chosen once one Organ Dysfunction is identified.

Automatically defaults to a Positive **SEVERE** Sepsis Screen.

SEVERE Sepsis Screen is activated

Negative S occurs when positive screen is not met.

Negative **SEVERE** Sepsis Screen – occurs when criteria for positive screen is not met.

A POSITIVE Sepsis Screen Result plus 1 or more signs of Organ Dysfunction = Positive SEVERE Sepsis

Severe Sepsis Screening Result

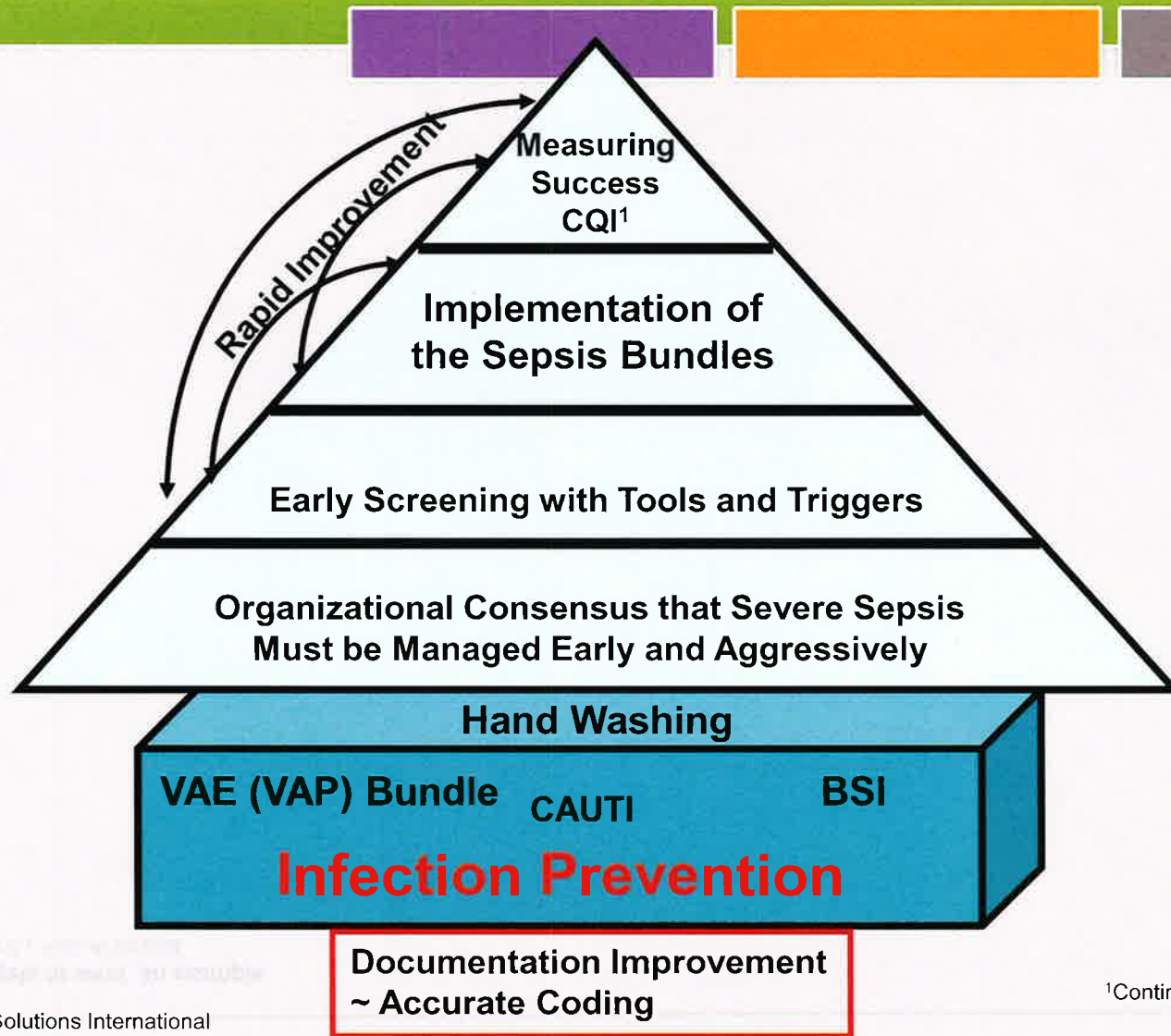
- Negative SEVERE Sepsis Screen
- Positive SEVERE Sepsis Screen

PJP2

Angela to send an example

Patricia J. Posa, 4/30/2018

Sepsis Practice Collaborative Model 4 Tier Process for Program Implementation



Components of TIER III Milestones and checklist

- Understand current process for caring for septic shock patients
 - 'Go and See' work
 - Baseline data
- Order sets
- Common Barriers/Issues: *identified Gaps from 'Go and See' work*
- Educational plan
- Implementation plan
 - Unit champions
 - Prospective rounding
 - Independent checks

SEP-1

TO BE COMPLETED WITHIN **3 HOURS** OF TIME OF PRESENTATION † :

1. Measure lactate level
2. Obtain blood cultures prior to administration of antibiotics
3. Administer broad spectrum antibiotics
4. Administer 30ml/kg crystalloid for hypotension or lactate ≥ 4 mmol/L

† *“time of presentation” is defined as the time of earliest chart annotation consistent with all elements severe sepsis or septic shock ascertained through chart review.*

Time Zero

- Will always be when the chart annotation suggests signs and symptoms are all present.
- May be from **nursing charting/screens**, lab flow sheets, physician documentation, order sets, anything with a time stamp.
- Will = triage time if all signs and symptoms are present at triage.
- ***It does not require MD documentation of the clock starting and relying on this alone in the ED would likely result in late clock starts.***

Sepsis coding is increasing but is accurate. More aggressive treatment seen from 2003 to 2013

Law A & Klompas M, Infect Control & Hosp Epid, 2015

Slides courtesy of Sean Townsend

SEP-1

TO BE COMPLETED WITHIN **6 HOURS** OF TIME OF PRESENTATION:

5. Apply vasopressors (for hypotension that does not respond to initial fluid resuscitation) to maintain a mean arterial pressure (MAP) ≥ 65 mmHg
6. In the event of persistent hypotension after initial fluid administration (MAP < 65 mm Hg) or if initial lactate was ≥ 4 mmol/L, re-assess volume status and tissue perfusion and document findings according to table 1.
7. Re-measure lactate if initial lactate elevated.

SEP-1

TABLE 1

DOCUMENT REASSESSMENT OF VOLUME STATUS AND TISSUE PERFUSION WITH:

Either

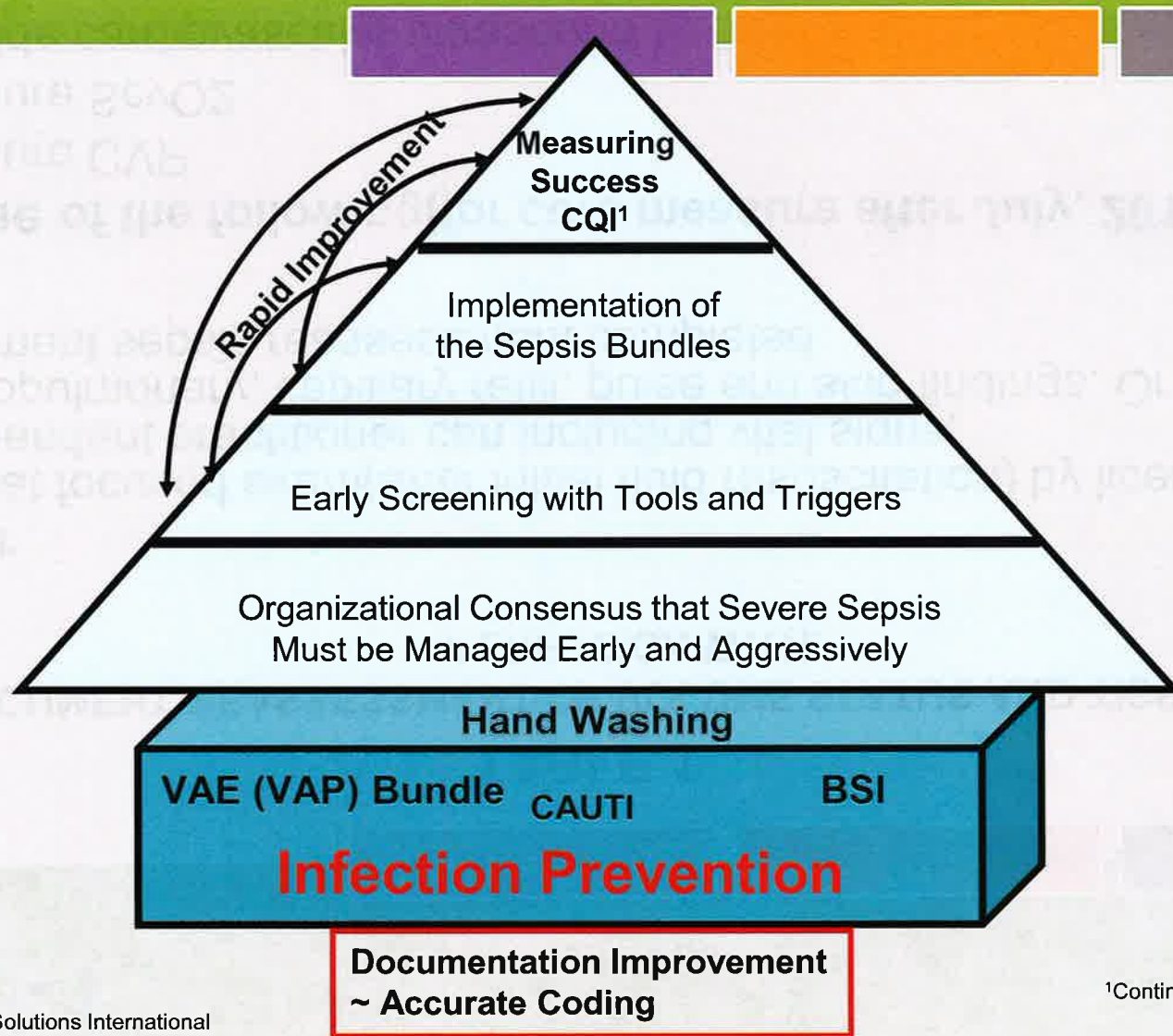
- Repeat focused exam(after initial fluid resuscitation) by licensed independent practitioner can including vital signs, cardiopulmonary, capillary refill, pulse and skin findings. Or document sepsis reassessment completed

Or one of the following(for core measure after July, 2018)

- Measure CVP
- Measure ScvO₂
- Bedside cardiovascular ultrasound
- Dynamic assessment of fluid responsiveness with passive leg raise or fluid challenge

Sepsis Practice Collaborative Model

4 Tier Process for Program Implementation



Adapted from: Sepsis Solutions International

Tier IV: Measurement Milestones and Checklist

- Define outcome and process data elements that will be collected
- Develop and implement a data collection process
- Revise and update goals and action plan as needed
- Execute implementation plan
- Continuous improvement

- Sepsis management is a CMS core measure that started October 1st 2015
- Compliance is All or None—so all measure on the 3 and 6 hour bundles (that the patient qualifies for) need to be met in the appropriate timeframe to be compliant

Public reporting began July 2018 (based on 2017 Q1-3)