

Saving Sepsis Patients Protocol & Practice

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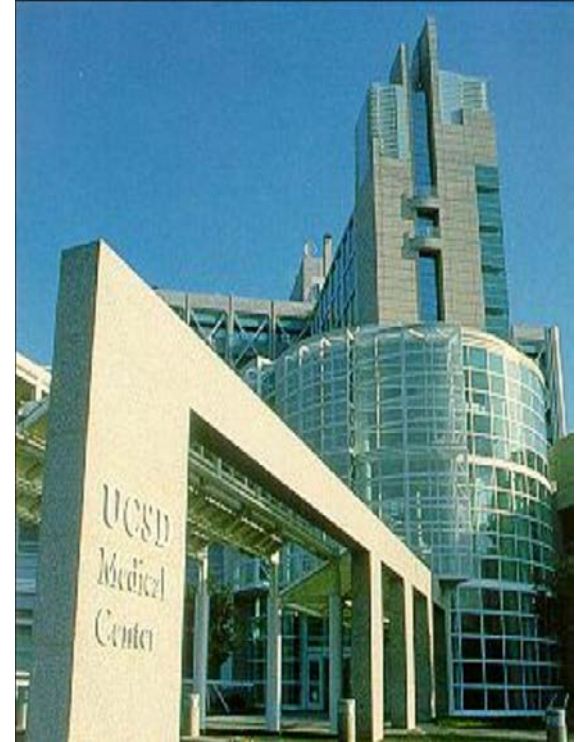
UC San Diego Health Systems

Overview

- About UC San Diego
- Protocol & Process
- Dashboards
- UC System-wide Collaborative

UC San Diego Health Systems

- 2 campuses
 - Hillcrest (357 beds)
 - Thornton/SCVC (173 beds)





- Quaternary care
- “County hospital”
- Training program
 - Medical students
 - 775 intern, resident and fellow trainees
 - Additional 100+ trainees in non-ACGME accredited fellowships

Process prior to SEP-1

- ED only
- Code sepsis activated on triage by RN
- Aggressive fluids, cultures and lactate, and broad-spectrum antibiotics
- Multiple nurse champions
- Each case individually reviewed by Critical Care MD with feedback for missed cases, missed opportunities as well as successful cases

MULTI-DISCIPLINARY COMMITTEE

SEP-1

CMO/CNO

Infectious Diseases MD

Coding specialists

Performance Improvement and Patient

Safety analysts

EMERGENCY ROOM

ED MDs

CNS

ED RN champions

Pharmacists

Information Technology

INPATIENT

Hospitalists

Critical Care MD

CNS

Critical Care RN

Pharmacists

IT

1. Improve recognition of Severe Sepsis & Septic Shock

- Nursing education
- Physician education

Screensavers

CODE SEPSIS

Two SIRS criteria and NEW suspected infection?

- Call CODE SEPSIS: x6111!
- Use Epic Sepsis orderset
- Bolus 30 ml/kg
- Blood cultures and lactate
- Antibiotics ASAP

SIRS criteria = T >38.3 or < 36, HR >90, RR >20 or WBC >12K, <4K or >10% bands

UC San Diego Health

GO GREEN FOR SEPSIS

Early Recognition

- New suspected infection
- Plus (+) 2 SIRS Criteria:
 - Temp > 38.3°C or < 36°C
 - HR > 90 bpm
 - RR > 20
- Leukocytosis > 12
- Leukopenia < 4
- > 10% bands

Call Code Sepsis

- All employees within acute care facilities
- x6111

Treat

- Draw lactate and blood cultures
- Administer IV fluid bolus ASAP
- Administer antibiotics within 1 hour
- Repeat lactate at 3 hours

Handouts, posters, slideshows

2. Create systems to make compliance easy

- Simplified ED and inpatient specific order-sets
- Changed the definition of abnormal lactate to comply with SEP-1
- Automated repeat lactates
- Emergency standing orders for rapid response RNs
- Automatic reminders for physician reassessment
- “dot-phrases” to ensure exam/documentation complies with SEP-1

Order-set:

Order Sets



Add



Advanced

IP GEN Code Sepsis Orders

▼ Suggestions

IP CRD Cardiology Pre-Operative Orders for Day of Procedure

IP CRD Electrophysiology Pre-Operative Orders for Day of Procedure

IP CRD PACU Post-Left Heart Catheterization Orders

IP CRD PACU Post-Right Heart Catheterization Orders

IP GEN Code Sepsis Orders

IMPORTANT: This order set is to be used for patients who meet criteria for severe sepsis only.

SEVERE SEPSIS Criteria:

A. Suspected source of clinical infection

AND

B. 2 or more SIRS criteria

- i. HR > 90
- ii. Temp >38.3 C (100.9 F) OR <36 C (96.8 F); if immune compromised use Temp > 100.4 F
- iii. Respiration >20 per minute
- iv. WBC > 12,000 OR <4,000 OR 10% bands

AND

C. Organ dysfunction due to sepsis (any one of the following):

- SBP <90 OR MAP<65 OR a SBP decrease of more than 40 mmHg from the last previously recorded SBP considered normal for that patient
- Creatinine >2 OR urine output <0.5 mL/kg/hr for 2 hours
- Bilirubin >2 mg/dL (34.2 mmol/L)
- Platelet count <100,000
- INR >1.5 OR aPTT >60 sec
- Lactate >2 mmol/L (18 mg/dL)

SEPTIC SHOCK Criteria

A. Presence of severe sepsis

AND

1. Tissue hypoperfusion persists in the hour after 30mL/kg IVF

- i. SBP <90 mmHg, OR
- ii. MAP <65, OR
- iii. A decrease in SBP by >40 mmHg from the last previously recorded SBP considered normal for that specific patient

OR

2. Lactate level is >= 4mmol/L

Patient Care

▼ Patient Care Orders

INSERT PERIPHERAL IV

STAT, ONE TIME First occurrence Today at 1600
Place two large bore peripheral IV lines. If such access cannot be established, contact the MD for central line placement.

Weight

STAT, ONE TIME First occurrence Today at 1600

Nursing Misc Order: Patient is a Code Sepsis patient. Please administer all antibiotics simultaneously in parallel.

Routine, ONE TIME First occurrence Today at 1600
Specify: Patient is a Code Sepsis patient. Please administer all antibiotics simultaneously in parallel.

Nursing Misc Order: Contact 1st Call Provider for Reassessment after IV Fluid Bolus Completed

Routine, ONE TIME First occurrence Today at 1600
Specify: Contact 1st Call Provider for Reassessment after IV Fluid Bolus Completed

Record Mixed Venous O2 Saturation - Central Line Patients Only

EVERY 2 HOURS for 3 occurrences

Weight-Based Initial IV Normal Saline Bolus

IMPORTANT: For patients who weigh less than 50 kg, use your best clinical judgment with regard to the amount of fluid bolus needed. An initial bolus of 30 mL/kg of normal saline is generally recommended.

- Patient Weight 51 to 65 KG -- Normal Saline 2000 mL Bolus
IntraVENOUS, ONCE, Administer over 30 Minutes
- Patient Weight 51 to 65 KG -- Lactated Ringers 2000 mL Bolus
IntraVENOUS, ONCE, Administer over 30 Minutes
- Patient Weight 66 to 85 KG -- Normal Saline 2500 mL Bolus
IntraVENOUS, ONCE, Administer over 30 Minutes
- Patient Weight 66 to 85 KG -- Lactated Ringers 2500 mL Bolus
IntraVENOUS, ONCE, Administer over 30 Minutes
- Patient Weight Greater Than 85 KG -- Normal Saline 3000 mL Bolus
IntraVENOUS, ONCE, Administer over 60 Minutes
- Patient Weight Greater Than 85 KG -- Lactated Ringers 3000 mL Bolus
IntraVENOUS, ONCE, Administer over 60 Minutes
- Provider Preference Bolus Dose
IntraVENOUS, ONCE, Administer over 30 Minutes
- Nursing Misc Order: IV Fluids Ordered Elsewhere
Routine, ONE TIME

Medications - Antibiotics

Close

IMPORTANT: Hospitalized patients who develop severe sepsis may already have active orders for antibiotics. Individualize antibiotic selections based on the clinical situation, existing or recent antibiotic treatment, microbiology results, etc.

> Antibiotics - Urinary Tract

> Antibiotics - Pneumonia

> Antibiotics - Intra-Abdominal Infection

> Antibiotics - Skin and Soft Tissue

> Antibiotics - Febrile Neutropenia

> Antibiotics - Line-Related Infection or Suspected Bacteremia

> Antibiotics - Meningitis

> Antibiotics - End Stage Liver Disease with Spontaneous Bacterial Peritonitis

> Antibiotics - Unknown Source

Labs

Close

▼ Labs - POC

Lactate, Blood Green Plasma Separator Tube

STAT, EVERY 4 HOURS First occurrence Today at 1600 Last occurrence Today at 2000 for 2 occurrences

P Tube: Green Plasma Separator Tube

Transport to the laboratory immediately on ice.

Blood Culture X2

Blood Culture Routine Blood Culture Set

P Routine, ONCE First occurrence Today at 1600, Not recommended, >3 blood cultures sets drawn per 24 hours

Blood Culture Routine Blood Culture Set

P Routine, ONCE First occurrence Today at 1600, Not recommended, >3 blood cultures sets drawn per 24 hours

Urinalysis with Culture Reflex, when indicated

STAT, ONCE First occurrence Today at 1600

P Must collect red/yellow urinalysis tube AND gray top culture tube. Culture will be added by reflex if ANY of these conditions are met: urine WBC >5, positive leukocyte esterase, OR positive urine nitrite. Add-on cultures will be rejected if reflex criteria are not met, unless approved by laboratory director.

Basic Metabolic Panel, Blood Green Plasma Separator Tube

STAT, ONCE First occurrence Today at 1600

Tube: Green Plasma Separator Tube

Liver Panel, Blood Green Plasma Separator Tube

STAT, ONCE First occurrence Today at 1600

Tube: Green Plasma Separator Tube

Phosphorus, Blood Green Plasma Separator Tube

STAT, ONCE First occurrence Today at 1600

Tube: Green Plasma Separator Tube

Magnesium, Blood Green Plasma Separator Tube

STAT, ONCE First occurrence Today at 1600

Tube: Green Plasma Separator Tube

CPK, Blood

STAT, ONCE

LDH, Blood

STAT, ONCE

CBC w/Diff Lavender

STAT, ONCE First occurrence Today at 1600

Tube: Lavender

ABG Panel, Arterial

STAT, ONCE

Venous Blood Gas Panel

STAT, ONCE

Prothrombin Time, Blood

STAT, ONCE

aPTT, Blood

STAT, ONCE

Type & Screen

STAT, ONCE

Nursing flowsheets

MD Code Sepsis Initiation		
Sepsis Order Set Entered		
Suspected Source of Infection		
Code Sepsis Labs (Time Lab Acquired)		
Blood Cx Set #		
Blood CX (time acquired)		
Tubes Collected		
Initial Lactate (time acquired)		
Repeat Lactate (time acquired)		
Urine CX (time acquired)		
Code Sepsis MD Reassessment		
Focused Exam		
Rapid Response Completion		
Patient Transported		

Improving documentation of reassessment

The screenshot displays a software interface for medical documentation. At the top, there are fields for 'Type: Progress Notes', 'Service: Pulmonary / Crit', 'Date of Service: 10/13/2016', and '1559'. Below these are checkboxes for 'Cosign Required' and a 'Case ID' field. A rich text editor toolbar is visible, featuring options for font face (Arial), size (11), bold, italic, underline, strikethrough, text color, and 100% zoom. A 'Bookmark' icon is also present. The main content area shows a table with two columns: 'Abbrev' and 'Expansion'. The table contains one entry: 'SEPSISREAS...' under 'Abbrev' and 'SEPSIS: REPEAT VOLUME STATUS & TISSUE PERFUSION ASSESSMENT' under 'Expansion'. At the bottom of the table area, there are buttons for 'Refresh (Ctrl+F11)' and 'Close (Esc)'. The overall interface is clean and professional, designed for clinical use.

Type: Progress Notes Service: Pulmonary / Crit Date of Service: 10/13/2016 1559 Bookmark

Cosign Required Case ID:

Arial 11 B I U S A 100% Insert SmartText

.sep

Abbrev	Expansion
SEPSISREAS...	SEPSIS: REPEAT VOLUME STATUS & TISSUE PERFUSION ASSESSMENT

Refresh (Ctrl+F11) Close (Esc)

Pend Share Sign Cancel

Type: Service: Date of Service:

Cosign Required Case ID:

B I U



REPEAT VOLUME STATUS & TISSUE PERFUSION ASSESSMENT

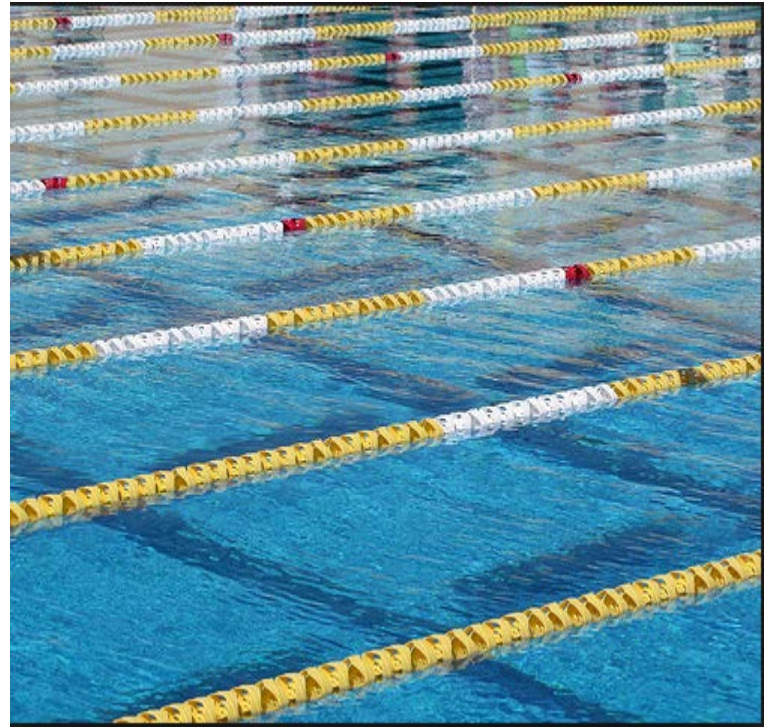
MENTAL STATUS: {MENTAL STATUS:14125}
 VITAL SIGNS: BP 103/54 Pulse 90 Temp 97.7 °F (36.5 °C) Resp 25 Ht 6' 2" (1.88 m) Wt 100 kg (220 lb 7.4 oz)
 SpO2 97% BMI 28.31 kg/m2
 CARDIAC EXAM: {HEART EXAM:5510::"S1, S2 normal, no murmur, click, rub or gallop, regular rate and rhythm", "chest is clear without rales or wheezing", "no pedal edema", "no JVD", "no hepatosplenomegaly"}
 PULMONARY EXAM: {LUNGS BRIEF EXAM:120434}
 CAPILLARY REFILL: brisk and normal {YES:13081}
 PERIPHERAL PULSE EVALUATION: radial {PULSE CHOICE RIGHT/LEFT:14150}
 SKIN: {SKIN NORMAL BRIEF:120982}

Lab Results		
Component	Value	Date/Time
LACTATE	1.6	10/13/2016 07:44 AM
LACTATE	1.8	10/13/2016 02:45 AM
LACTATE	1.6	10/12/2016 11:29 PM

If initial lactate greater than 2 mmol/L, ensure repeat drawn within 6 hours.

3. Simplify process

- Build on established systems
 - Inpatient RRT response
 - Code Sepsis in ED



UCSD and Rapid Response

Roles & Responsibilities

Responsible Party	Primary RN	RRT RN	Primary MD	Pharm D	Comments
Steps in Go Green					
IV Access	X				
Weight in Kg	X				
SIRS criteria observed	X				
Start Sepsis flow sheet documentation in epic	X				
Time PRIMARY MD notified	X				
Time sepsis code called	X				
Start Sepsis checklist		X			
Time Code Team arrived		X			
Initiate Sepsis order set			X		
Time Protocol initiated		X			
CXR if indicated			X		
Time BC# 1 drawn (initial)		X			
Time BC# 2 drawn (initial)		X			
Time Lactate drawn (initial) (rainbow) + ABG? or VBG? CBC? Chem?		X			
START 500CC BOLUS (Time and amount (30 ml/kg) of Bolus fluids given; within 30 min), UNTIL ORDER RECEIVED FROM MD)		X			
Focused Exam after fluid resuscitation			X		
Facilitate ABX Selection (broad spectrum or approved combo)				X	
Facilitate ABX delivery at the bedside	X			X	
Time of FIRST vital signs; including B/P (within 1 hour of bolus)	X				
Vasopressors (if HTN persists within 1 hour of bolus).		X			
Time of SECOND vital signs including B/P (after 2 nd bolus within 1 hour of completion)		X			
Time repeat Lactate #1 (3hrs)	X				
Time Repeat Lactate #2 (6hrs)	X				
Tissue perfusion assessment within 6 hours			X		
Complete Sepsis checklist	X	X			

DATE:
 PRIMARY RN:
 PRIMARY MD:
 LOCATION (circle one): HILLCREST/LA JOLLA

NAME
 MR#
 DOB
 ROOM:

Green Means Go!

Checklists

Inpatient Code Sepsis Bedside Tool	Time
Code Sepsis Called x6111 Time	
Primary MD notified Time	
RRT/Code Team Arrival Time	
Suspected Sepsis Protocol Started (ASAP)	
Weight in Kg	
IV access	
Labs (rainbow + lactate + ABG/VBG)	
Initial lactate drawn (document failed attempts)	
BC #1 (draw before antibiotics given! document failed attempts)	
BC #2 (draw before antibiotics given! document failed attempts)	
CXR if indicated	
Repeat Lactate in 3 hours – Time Due _____	
Repeat Lactate in 6 hours – Time Due _____	
Fluid Bolus 30mL/kg = _____ mL Given as quickly as possible, 30 min or less	
Antibiotics started *ADMINISTER ABX SIMULTANEOUSLY WITHIN 3 HOURS*	
All above data entered in Epic and displaying in Sepsis RN Flowsheet for possible hand-off.	
Remind MD to document reassessment using <u>.sepsisreassess</u> (per order)	

Reassess/update patient and vitals within 1 hour after fluid bolus and update MD on status.

Vital signs must include 2 BP readings within 1 hour after fluid bolus completed.

– consider Stage 2 Sepsis interventions below

Stage 2 Sepsis - PATIENT NOT IMPROVING after 30 ml/kg bolus, consider the following	Time
Additional fluid bolus	
ICU consult	

USE SHOCK INDEX (HR/SBP) = >1 not good

DO NOT FORGET FLUID INTAKE TOTAL mLs IN EPIC

****Inpatient Code Sepsis Bedside Tool is not part of the medical record.
 Please ensure all data is entered in EPIC just like Code Stroke****

Dashboards and reporting

- Collect data
- Analyze data
- Reports

Comparisons reported quarterly

- Hospital
- Wards/unit
- UC wide
- UHC/Vizient

INDICATORS	
1	Overall Sample N
2	Early Management Bundle, Severe Sepsis/Septic Shock: SEP-01 (Sample Population)
	UCSD Total n
3	UCSD Total
4	Hillcrest n
5	Hillcrest
6	La Jolla n
7	La Jolla
8	Other UCs
	Reasons for Non-Compliance
9	Severe Sepsis n
10	Non-Compliant Cases
11	% Non-Compliant Cases
12	Missing Initial Lactate w/in 3 Hrs
13	Missing Blood Culture Before Abx
14	Missing Abx w/in 3 Hrs
15	Missing Correct Abx Selection
16	Missing Repeat Lactate w/in 6 Hrs
17	Septic Shock n
18	Non-Compliant Cases
19	% Non-Compliant Cases
21	Missing Blood Culture Before Abx
22	Missing Repeat Lactate w/in 6 Hrs
23	Missing Crystalloid Fluids
24	Missing Vasopressor
25	Missing Elements of Repeat Volume Status/Tissue Perfusion Assessment
	Missing Complete Assessment of Persistent Hypotension
	Impact of EPIC Sepsis Order Set Usage on SS/SS Bundle Compliance
	Order set usage
	UCSD Total
	Hillcrest n
	Hillcrest
	La Jolla n
	La Jolla
	Mortality O/E, Severe Sepsis/Septic Shock (All Population)
28	UCSD Total n
29	UCSD Total O/E
30	Hillcrest n
31	Hillcrest O/E
32	La Jolla n
33	La Jolla O/E
34	Other UCs O/E
	LOS O/E, Severe Sepsis/Septic Shock (All Population)
35	UCSD Total n
36	UCSD Total O/E
37	Hillcrest n
38	Hillcrest O/E
39	La Jolla n
40	La Jolla O/E
41	Other UCs O/E
	30-Day All-Cause Same Hospital Readmission, Severe Sepsis/Septic Shock (All Population)
42	UCSD Total n
43	UCSD Total %
44	Hillcrest n
45	Hillcrest %
46	La Jolla n
47	La Jolla %
48	Other UCs %

Source of Data: UHC

UC Wide Collaborative

- Weekly phone calls for PIPS team
- Every other week for physician champions
- Shared comparison data