

Reducing Sepsis Mortality: The Journey Continues

Sepsis Screening and the Electronic Health Record

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Sepsis Report and Screening in Epic It Takes a Village:

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Date:

July 1, 2009

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The Build Process: The KISS Principle...

■ Evidence Based Practice Review

- One can gather only so many examples of a screen...
- Paper screening doesn't always translates well to electronic

■ Need to keep it simple

- Least amount of clicks
- Least amount of screen flips

■ Test, Test, Test, Test...

- Very important to have nursing staff assist in the build and testing



The Build Process: The KISS Principle

- **Start small**
 - Small group work on the build
 - Larger group vet the work
- **Test some more**
 - Take test findings back to larger group...very important to have staff test and report
- **Eventually you have to jump!**

Sepsis Report (sample)

SEPSIS REPORT

ED Enc Summ SEPSIS REPORT Profile Facesheet Report: SEPSIS REPORT

Date/Time Range: Select Date/Time Range

SEPSIS REPORT

ET N F 48888 1884 (71 year old F) PNMEDA-8228-P (Adm: 6/24/09) PCP: Lawrence Wolfe

Treatment Team

Provider	Role	From	To	Phone	Pager
Huang, Jane I.	Admitting Provider			510-525-8980	
White, Christopher Dawson	Attending Provider	06/24/09 1851	06/24/09 2304	650-696-5500	
Khamnehei, Niloufar	Attending Provider	06/25/09 0700	N/A	650-570-1789	650-570-1789

SEPSIS SCREEN PART 1 OF 2: SIRS CRITERIA

SIRS CRITERIA DEFINITION

Notify/call Physician or Rapid Response Team when 2 or more New SIRS Criteria are met. Continue screening for Severe Sepsis (Acute Organ Dysfunction).

Sepsis may be present if 2 or more New SIRS Criteria are met and a potential source of infection is found.

SIRS Criteria

- **Temp** greater than 38.0 C (100.4 F) or less than 36.0 C (96.8 F)
- **Resp Rate** greater than 20
- **Pulse** greater than 90
- **New mental status** change
- **Blood glucose** greater than 120 mg/dl
- **WBC** greater than 12000 or less than 4000 or **Bands (immature neutrophils)** greater than 10%.

Sepsis Report (sample) Cont.

SEPSIS REPORT

ED Enc Summ | SEPSIS REPORT | Profile | Facesheet | Report: SEPSIS REPORT

Date/Time Range: [Select Date/Time Range](#)

Vitals (last day)

Date/Time	Temp	Resp	Pulse	BP	Who
06/26/09 0115	94.6 °F (34.8 °C)	15	--	--	HS
06/26/09 0100	94.6 °F (34.8 °C)	14	--	129/83 mmHg	HS
06/26/09 0045	94.6 °F (34.8 °C)	14	--	--	HS
06/26/09 0030	94.8 °F (34.9 °C)	14	--	120/78 mmHg	HS
06/26/09 0015	94.8 °F (34.9 °C)	14	--	113/74 mmHg	HS
06/26/09 0000	94.8 °F (34.9 °C)	14	--	113/74 mmHg	HS

Review for new mental status changes (last day)

Date/Time	Level of Consciousness	Who
06/25/09 2300	unresponsive	CM
06/25/09 2000	unresponsive	CM
06/25/09 1600	unresponsive	AM
06/25/09 1200	unresponsive	AM
06/25/09 0800	unresponsive	AM
06/25/09 0600	unresponsive	LK
06/25/09 0434	unresponsive	LK
06/25/09 0200	unresponsive	LK

Glucose (POC)

No lab values to display

Glucose (Lab)

	6/23/2009	6/23/2009	6/23/2009	6/23/2009	6/24/2009	6/24/2009	6/25/2009	6/25/2009
Glucose	135 (H)	106 (H)	105 (H)	151 (H)	105 (H)	110 (H)	112 (H)	163 (H)

WBC

	6/22/2009	6/23/2009	6/24/2009	6/25/2009
WBC	13.7 (H)	36.3 (HH)	23.5 (H)	14.1 (H)

Bands

	6/23/2009
Bands	31 (H)

Sepsis Report (sample) Cont.

SEPSIS REPORT

ED Enc Summ | SEPSIS REPORT | Profile | Facesheet | Report: SEPSIS REPORT

Date/Time Range:

SEPSIS SCREEN PART 2 OF 2: INFECTION RISK AND IDENTIFICATION

INFECTION RISK AND IDENTIFICATION

Notify/call Physician and/or Rapid Response Team of New potential source(s) of infection. Please review:

- **Current** Medical Problems, Indwelling Devices
- **Past** Medical/Surgical History
- **Recent** Microbiology Results.

Sepsis may be present if 2 or more New SIRS Criteria are met and a potential/actual source of infection is suspected. Continue Sepsis Screening to determine presence of Severe Sepsis (Acute Organ Dysfunction).

Problem List

Problem	Noted	Resolved
PNEUMONIA, ORGANISM UNSPEC [486]	6/26/2009 by ZINK, JOSEPHTEST	No

Medical History

Past Medical History	Date	Comments
MALIG MELANOM FACE NEC/NOS [172.3]		

Surgical History

Past Surgical History	Last Occurrence	Comments
APPENDECTOMY [44950]		

Microbiology Results (Last 2 weeks)

Procedure	Component	Value	Units	Flag	Date/Time
Culture, MRSA Screen [109243425]					Collection: 06/23 0434
Order Status: Completed					Resulted: 06/25 1010
Specimen Source: Nasal					
	SPECIMEN DESCRIPTION	Nasal	(none)	(none)	
	CULTURE SPECIAL REQUESTS	None	(none)	(none)	
	CULTURE	No methicillin (oxacillin) resistant Staph aureus isolated	(none)	(none)	
	REPORT STATUS	06/25/2009 Final	(none)	(none)	

Sepsis Report (sample) Cont.

SEPSIS REPORT

ED Enc Summ SEPSIS REPORT Profile Facesheet Report: SEPSIS REPORT

Date/Time Range: [Select Date/Time Range](#)

SEVERE SEPSIS SCREEN (ACUTE ORGAN DYSFUNCTION)

SEVERE SEPSIS SCREEN (ACUTE ORGAN DYSFUNCTION)

Notify/call Physician and/or Rapid Response Team if 1 or more *New* signs of Severe Sepsis (Acute Organ Dysfunction/Tissue Hypoperfusion) exists. Include related SIRS Criteria and potential/actual sources of infection with report. Complete Sepsis Screening Notes.

Severe Sepsis may be present if 1 or more of the following New signs of acute organ dysfunction/tissue hypoperfusion exists below + Signs of Sepsis (2 or more SIRS Criteria with a potential source(s) of infection).

Signs of Severe Sepsis

- **SBP** less than 90 mmHg or 40 mmHg below baseline or **MAP** less than 65 mmHg
- **Vasopressor Support** to maintain adequate blood pressure
- **Respiratory Indicators** new or increased O2 requirements to maintain SpO2 greater than 90% or PF ratio less than 300
- **Low Urine Output** less than 0.5 ml/kg/hr for greater than 2 hrs or **Creatinine** greater than 2.0 mg/dl
- **Lactate** greater than 4.0 mmol/L
- **Low Platelet Count** less than 100000 or **Coagulopathy** INR greater than 1.5 or aPTT greater than 60 seconds
- **Elevated Total Bilirubin** greater than 2 mmol/L

SBP under 90 mmHg or more than 40 mmHg below baseline? MAP less than 65 mmHg? (last day)

Date/Time	BP	MAP (mmHg)	MAP	MAP	Who
06/26/09 0115	--	--	94 mmHg	--	HS
06/26/09 0100	129/83 mmHg	93	89 mmHg	--	HS
06/26/09 0045	--	--	87 mmHg	--	HS
06/26/09 0030	120/78 mmHg	88	84 mmHg	--	HS
06/26/09 0015	113/74 mmHg	84	75 mmHg	--	HS
06/26/09 0000	113/74 mmHg	84	70 mmHg	--	HS
06/25/09 2345	106/66 mmHg	76	74 mmHg	--	HS
06/25/09 2330	114/72 mmHg	82	82 mmHg	--	HS
06/25/09 2315	101/64 mmHg	73	70 mmHg	--	HS
06/25/09 2300	131/80 mmHg	93	111 mmHg	--	HS

Sepsis Report (sample) Cont.

SEPSIS REPORT							
← ED Enc Summ		SEPSIS REPORT		Profile		Facesheet	
Date/Time Range: ←		Select Date/Time Range			→		
Report: SEPSIS REPORT 🔍							
Respiratory: New or increased O2 requirements to maintain O2 sats > 90%? PF Ratio < 300? (last day)							
Date/Time	SpO2	Oxygen Concentration (%)	FiO2 %	Flow (L/min)	PAO2/FiO2 (PF Ratio)	Who	
06/26/09 0115	97 %	30	--	--	--	HS	
06/26/09 0100	97 %	30	--	--	--	HS	
06/26/09 0045	97 %	30	--	--	--	HS	
06/26/09 0030	97 %	30	--	--	--	HS	
Renal: Oliguria? (urine output less than 0.5 ml/kg/hr) (last .5 days)							
Date/Time	Urine	Wt - Scale	Who				
06/26/09 1000	30 ml	56 kg	JZ				
Lactate							
	6/23/2009	6/23/2009					
Lactate	12.6 (H)	3.9 (H)					
Creatinine and BUN							
	6/22/2009	6/23/2009	6/23/2009	6/24/2009	6/24/2009	6/25/2009	6/25/2009
Creatinine	1.6 (H)	1.7 (H)	1.7 (H)	1.7 (H)	2.0 (H)	2.2 (H)	2.1 (H)
BUN	16	20	22	33 (H)	37 (H)	33 (H)	28 (H)
Bilirubin							
	6/22/2009	6/23/2009	6/24/2009	6/25/2009			
Bilirubin	0.2	0.4	1.0	0.7			
Platelets							
	6/22/2009	6/23/2009	6/24/2009	6/25/2009			
Platelets	213	413 (H)	278	228			
INR							
	6/22/2009	6/23/2009	6/24/2009	6/25/2009			
INR	1.8 (H)	1.6 (H)	2.1 (H)	2.1 (H)			
PTT							
	6/23/2009						
PTT	42.3 (H)						

Sepsis Report Cont.

SEPSIS REPORT							
←		ED Enc Summ	SEPSIS REPORT	Prof Exch	Report: SEPSIS REPORT		
Date/Time Range: ←		Select Date/Time Range				→	
Arterial Blood Gas Results (POC)							
	6/23/2009	6/23/2009	6/23/2009	6/23/2009	6/23/2009	6/23/2009	6/23/2009
pH	6.99 (LL)	6.97 (LL)	7.33 (L)	7.52 (H)	7.44	7.40	7.40
PCO2	56.9 (H)	55.3 (H)	39.3	23.8 (L)	28.1 (L)	31.2 (L)	27.2 (L)
PO2	79 (L)	78 (L)	508 (H)	163 (H)	243 (H)	275 (H)	171 (H)
HCO3	13.6 (L)	12.8 (L)	20.6 (L)	19.2 (L)	19.3 (L)	19.6 (L)	17.1 (L)
O2 SAT	86 (L)	85 (L)	100 (H)	100 (H)	100 (H)	100 (H)	100 (H)
Arterial Blood Gas Results (Lab)							
	6/23/2009	6/23/2009	6/23/2009	6/23/2009	6/23/2009	6/23/2009	6/23/2009
pH	-	-	-	-	-	-	-
PCO2	-	-	-	-	-	-	-
PO2	-	-	-	-	-	-	-
HCO3	13.6 (L)	12.8 (L)	20.6 (L)	19.2 (L)	19.3 (L)	19.6 (L)	17.1 (L)
O2 SAT	86 (L)	85 (L)	100 (H)	100 (H)	100 (H)	100 (H)	100 (H)
Sepsis Screening History							
Date/Time	1) 2 or more new SIRS Criteria met?	2) Actual/Potential source(s) of infection identified?	3) 1 or more new signs of severe sepsis	If yes to any 1 of the above 3 questions, action taken:		Additional Note	Who
06/26 1000	Yes	Yes, confirmed source identified	Yes	Called/notified Physician;Called Rapid Response Team		Rec'd new orders for IV NS fluid bolus	.17

Sepsis Screening - docflowsheets

Sepsis Screen Notes

1) 2 or more new SIRS Criteria met?  

Last Filled Value:
No data filed

Row Information:
SIRS Criteria definition:

- Temp over 100.4 F (38 C) or under 96.8 F (36 C).
- Resp Rate over 20.
- Pulse over 90 bpm.
- Change in mental status.
- Blood glucose greater than 120.
- WBC greater than 12000 or less than 4000 or Bands (immature neutrophils) greater than 10%.

2) Actual/Potential source(s) of infection identified?
  

Last Filled Value:
No data filed

Row Information:

- Medical History for Endocarditis, Immunosuppression, Chronic Infection, Indwelling Devices, etc.
- Positive culture results.

3) 1 or more new signs of severe sepsis  

Last Filled Value:
No data filed



Row Information:

- SBP less than 90 mmHg or 40 mmHg below baseline or MAP less than 65 mmHg
- Vasopressor Support to maintain adequate blood pressure
- Respiratory Indicators: new or increased O2 requirements to maintain SpO2 greater than 90% or PaO2/FIO2 ratio less than 300
- Low Urine Output less than 0.5 ml/kg/hour for greater than 2 hours or Creatinine greater than 2.0 mg/dl
- Lactate greater than 4.0 mmol/L
- Platelet Count less than 100000 or Coagulopathy: INR greater than 1.5 or aPTT greater than 60 secs
- Elevated Total Bilirubin greater than 2 mmol/L

If yes to any 1 of the above 3 questions, action taken:
  

Last Filled Value:
No data filed

Sepsis Screen Notes: If positive screen found or suspected, notify treating MD immediately; request Lactate Level, Baseline Labs, Blood Cultures, IV Fluids, Antibiotics, Central Line Placement, CVP, Monitoring, etc.

Additional Note  

Last Filled Value:
No data filed

Screening Policy:

- All ED, Med-Surg, Step-Down, & ICU patients are screened
- Upon triage
- Upon admission
- Every shift (8 hour shift)
 - Within the first two hours of the shift

Next Steps...

- **Evaluate effectiveness of screen**
 - What happens once a patient screens positive??
 - From one screening to the next – which criteria are new??
 - Copying forward is a problem
 - How can we empower nurses to implement EDGT??

Questions?

