

SECTION: Adult General Medical Emergencies

PROTOCOL TITLE: Sepsis

REVISED: 06/2017

OVERVIEW:

Sepsis is an illness that affects all parts of the body that can happen in response to an infection and can quickly become life-threatening. Sepsis is a [systemic inflammatory response syndrome](#) or (SIRS) caused by severe [infection](#). In severe cases of sepsis, one or more organs fail. In the worst cases, sepsis causes the blood pressure to drop and the heart to weaken, leading to septic shock. Once this happens, multiple organs may quickly fail and the patient can die. Sepsis is a serious illness that is very difficult to predict, diagnose, and treat. Patients who develop sepsis have an increased risk of complications and death and face higher healthcare costs and longer treatment. The mortality rate can range from 10% to 60%. Early recognition combined with aggressive fluid resuscitation and finding the source of infection are the keys to greatly reducing the mortality rate.

HPI	Signs and Symptoms	Considerations
<ul style="list-style-type: none"> Fever, chills, sweats Recent antibiotic use Cough SOB Rash Headache, neck pain 	<ul style="list-style-type: none"> Restlessness, confusion Weakness, dizziness Weak, rapid pulse Pale, cool, clammy skin Delayed capillary refill Difficulty breathing Hypotension Febrile 	<ul style="list-style-type: none"> Shock Hypovolemic Cardiogenic Septic Neurogenic Anaphylactic Ectopic pregnancy Dysrhythmia Pulmonary embolus

General inclusion criteria	At least two of the following specific findings
<ul style="list-style-type: none"> 18 years old and NOT pregnant History consistent with infection; Signs of hypoperfusion or hypotension 	<ul style="list-style-type: none"> Temperature greater than 38°C (100.4°F) or lower than 36°C (96°F) Pulse greater than 90 Respiratory rate greater than 20/min Suspected or documented infection Known abnormal white blood cell count (>12,000 or <4,000 cells/mm) Hypoperfusion as manifest by one of the following: <ol style="list-style-type: none"> Systolic BP less than 90 or MAP less than 65 If known, Lactate level greater than 4 mmol/L Altered mental status Pulse Ox <94% despite high flow oxygen

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	EMR	EMT	A	I	P
1. Perform general patient management. Obtain patient's temperature, if possible	•	•	•	•	•
2. Identify criteria for sepsis. If meets general inclusion criteria and two or more specific findings, continue with this protocol. If not, refer to appropriate protocol.	•	•	•	•	•
3. Administer oxygen to maintain SPO ₂ 94-99%.	•	•	•	•	•
4. Obtain 12 lead ECG.		•	•	•	•
5. Interpret 12 lead ECG and place on cardiac monitor				•	•
6. Initiate IV of Normal Saline KVO. Establish second IV if time permits.			•	•	•
7. Administer Normal Saline 30 mL / kg bolus.			•	•	•
8. If patient is hypotensive after IV <u>initial</u> fluid bolus, consider <ul style="list-style-type: none"> a. Administration of Norepinephrine Infusion 0.1-0.5 mcg / kg / minute for hypotension. Titrate to MAP > 65 mmHg. b. If Norepinephrine unavailable, consider Dopamine 5 - 20 mcg / kg / min for hypotension that remains after fluid bolus. Titrate to MAP > 65 mmHg. 				•	•
9. If patient is tachycardic and/or hypotensive after initial bolus, administer bolus of Normal Saline 20 ml / kg bolus.			•	•	•
10. Notify receiving hospital of potential of "sepsis alert" patient		•	•	•	•
11. Transport promptly in position of comfort. Reassess as needed.		•	•	•	•

Classes of Shock

Hypovolemic	Distributive	Cardiogenic	Obstructive
Caused by hemorrhage, burns, or dehydration.	Maldistribution of blood, caused by poor vasomotor tone in neurogenic shock, sepsis, anaphylaxis, severe hypoxia, or metabolic shock.	Caused by necrosis of the myocardial tissue, or by arrhythmias.	Caused by impairment of cardiac filling, found in pulmonary embolism, tension pneumothorax, or cardiac tamponade.

PEARLS:

1. Sometimes patients may present with complaints of weakness, malaise, altered mental status, or simply "not eating." The source of infection may be readily apparent (cellulitis), may require extensive testing (intra-abdominal abscess), or may be completely obscure (subacute endocarditis).
2. Up to 15% of infected elderly patients with normal oral temperatures will have an elevated rectal temperature.

Norepinephrine (Levophed™) Dose/Drip Chart (using 10 drop set)						
Based on 4mg NE/250mL NS and ADULT DOSING RANGE starting at 0.1-0.5 mcg/kg/minute. Then, titrate to desired response.						
Weight Range	mcg/min range		mL/min range		drops/min range	
	min	max	min	max	min	max
45 - 50 kg	4.50	25.00	0.28	1.56	3	16
51 - 55 kg	5.10	27.50	0.32	1.72	3	17
56 - 60 kg	5.60	30.00	0.35	1.88	4	19
61 - 65 kg	6.10	32.50	0.38	2.03	4	20
66 - 70 kg	6.60	35.00	0.41	2.19	4	22
71 - 75 kg	7.10	37.50	0.44	2.34	4	23
76 - 80 kg	7.60	40.00	0.48	2.50	5	25
81 - 85 kg	8.10	42.50	0.51	2.66	5	27
86 - 90 kg	8.60	45.00	0.54	2.81	5	28
91 - 95 kg	9.10	47.50	0.57	2.97	6	30
96 - 100 kg	9.60	50.00	0.60	3.13	6	31
101 - 105 kg	10.10	52.50	0.63	3.28	6	33
106 - 110 kg	10.60	55.00	0.66	3.44	7	34
111 - 115 kg	11.10	57.50	0.69	3.59	7	36
116 - 120 kg	11.60	60.00	0.73	3.75	7	38
121 - 125 kg	12.10	62.50	0.76	3.91	8	39
126 - 130 kg	12.60	65.00	0.79	4.06	8	41

PEDIATRIC DOSE RANGE: 0.05-0.1 mcg/kg/minute. Titrate to desired effect.
Maximum dose: 2mcg/kg/minute

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