Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Sepsis (Adult)

qSOFA – 2 or more of the following:
RR > 22
altered mental status (GCS<15)
SBP < 100

Consider sepsis EARLY in *any* patient with suspected infection.

Does pt meet criteria for sepsis or septic shock?

No

Reassess after initial evaluation:
Consider
• fever, leukocytosis, hypotension?
• unexplained altered mental status?
• tachypnea? especially if lungs CTA and SaO_2 WNL?
• unexplained organ dysfunction?
• clinical concern during ongoing care?

Yes

Airway stable?

No

ET intubation with target tidal volume 6 mL/kg for pts without ARDS

Yes

Large bore IV x2.
LABS INCLUDING LACTATE & BLOOD CULTURES.
START FLUID RESUSCITATION immediately: Give 1 L NS or LR bolus with target at least 30 mL/kg within 1-3 hours.

START EMPIRIC ANTIBIOTICS (see guidelines) within 1 hour of recognition of sepsis/septic shock.

REASSESS FREQUENTLY
Assess for adequacy of fluid resuscitation or complications from fluid therapy.

Monitor vital signs, UOP, shock index (HR/SBP > 0.7), mental status, and clinical exam.

Use more than one method to assess resuscitation adequacy and use dynamic variables if possible.

CONSIDER CONSULT/TRANSFER if unstable or not improving and **ACTIVATE MEDEVAC EARLY** if needed.

Is MAP > 65 after 3L of IVF or is patient having complications from volume therapy?

Yes

START NOREPINEPHRINE or other vasopressor (see guidelines) and **TITRATE** fluids and pressors to **MAP >65.**

Place a central line ASAP but do NOT delay pressors — a well-secured large bore peripheral IV may be used to initiate pressors.

Consider intubation to facilitate appropriate volume resuscitation.

Consider hydrocortisone (see guidelines) *only* for septic shock not responsive to adequate fluid resuscitation and vasopressors.

No

If initial lactate is > 2:

RECHECK LACTATE 1-2 hours after starting resuscitation.

GUIDE RESUSCITATION TO NORMALIZE LACTATE.
Primary goal should be to achieve a relative lactate clearance of at least 10% in 1-2 hours.

Lactate > 4 may indicate hypoperfusion and the need for aggressive/continued fluid resuscitation.

GET SOURCE CONTROL and obtain additional cultures PRN.

Continue to reassess frequently while awaiting admission or transfer.

Village Management
• Aggressive hydration. PO if you can't get an IV, and the patient is alert enough to drink.
• Supplemental oxygen via nasal cannula.
• Consider Ceftriaxone 2 grams IM.
• Activate medevac.
• Consider VTC.

SEPSIS 3 & ACEP NOTES

4-6 L of total IVF is often needed during the first 6 hours. After 2 L of NS consider switch to LR. Remember that if the patient fails to respond after the first 2-3 L, pressors should be considered.

In patients with concern for fluid overload (Hx CHF or renal or liver failure) or complications from fluid resuscitation, use less total fluid or smaller boluses with more frequent reassessment of volume status, but **DO NOT DELAY FLUID AND VASOPRESSOR TREATMENT.**

Persistence of elevated lactate, even in the absence of hypotension, is associated with poor outcomes.

CRP and procalcitonin may be elevated but cannot effectively guide ED sepsis care — CHECK (and RECHECK) LACTATE.

In the absence of extenuating circumstances (MI, severe hypoxia, acute blood loss, etc.) transfusion is no longer recommended unless Hgb < 7.

Consider insulin if 2 consecutive blood glucose levels are > 180.

Sodium bicarbonate is not recommended to improve hemodynamics or decrease vasopressor requirements in patients with hypoperfusion-induced lactic acidemia with pH≥7.15.

This guideline is designed for the general use of most patients but may need to be adapted to meet the special needs of a specific patient as determined by the medical practitioner. Approved by MSEC 7/12/17.
If comments about this guideline, please contact Tara_Lathrop@ykhc.org.

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Clinical Guideline

Sepsis Antibiotics (Adult)

Empiric Antibiotic Recommendations by Source of Infection

If possible, first dose of antibiotics should be administered as a 30 minute infusion to reduce time to therapeutic concentration.

Unknown Source

Vancomycin[1] 25-30 mg/kg loading dose followed by 20 mg/kg Q8-12h. Max dose 2 grams.
OR
Linezolid 600 mg IV Q12h.

AND

Piperacillin-tazobactam[3] 4.5 grams IV Q8h.
OR
If in shock: **Cefepime** 2 grams IV Q8h.

AND

Gentamicin[2] 7 mg/kg IV Q24h. Consult pharmacy for max dosing.
OR
Levofloxacin 750 mg IV Q24h.

Community-Acquired Pneumonia

Ceftriaxone 1 gram IV Q24h. (2 grams if >80 kg.)
OR
Ampicillin-sulbactam 3 grams IV Q6h.

AND

Levofloxacin 750 mg IV Q24h.
OR
Azithromycin 500 mg PO/IV Q24h.

If at risk for aspiration, consider adding:

Metronidazole 500 mg IV Q8h.

Hospital-Acquired Pneumonia or High Risk for Multi-Drug Resistant (MDR) Organisms

Vancomycin[1] 25-30 mg/kg loading dose followed by 20 mg/kg Q8-12h. Max dose 2 grams.
OR
Linezolid 600 mg IV Q12h.

AND

Piperacillin-tazobactam[3] 4.5 grams IV Q6h.
OR
If in shock: **Cefepime** 2 grams IV Q8h.

AND

Levofloxacin 750 mg IV Q24h.
OR
Gentamicin[2] 7 mg/kg IV Q24h. Consult pharmacy for max dosing.

Meningitis

Dexamethasone 10 mg IV prior to antibiotics.

AND

Vancomycin[1] 25-30 mg/kg loading dose followed by 20 mg/kg Q8-12h. Max dose 2 grams.

AND

Ceftriaxone 2 grams IV Q12h.

If >50 years, ADD

Ampicillin 2 grams IV Q6h.

Urinary Tract Infection

Ceftriaxone 1 gram IV Q24h. (2 grams if >80 kg.)

AND consider adding:

Gentamicin[2] 7 mg/kg IV Q24h. Consult pharmacy for max dosing.
OR
Levofloxacin 750 mg IV Q24h.

If urological interventions or MDR risk factors, consider adding:
Piperacillin-tazobactam[3] 3.375 grams IV Q6h.
OR
Cefepime 1 gram IV Q6h.

If at risk of ESBL, ADD:
Meropenem 500 g IV Q8h.

Intra-abdominal or Pelvic Infection

Piperacillin-tazobactam[3] 3.375 grams IV Q6h.

OR

Cefepime 1 gram IV Q6h.
AND
Metronidazole 500 mg IV Q6h.

OR

Ciprofloxacin 400 mg IV Q12h.
AND
Metronidazole 500 mg IV Q8h.

Skin and Soft Tissue or Necrotizing Infections

IF PURULENT:
Vancomycin[1] 25-30 mg/kg loading dose followed by 20 mg/kg Q8-12h. Max dose 2 grams.

IF NON-PURULENT:
Cefazolin 2 grams IV Q8h.
OR
Ceftriaxone 1-2 grams IV Q24h.
OR
Ampicillin-sulbactam 3 grams IV Q6h.

If necrotizing, ADD:

Piperacillin-tazobactam[3] 3.375 grams IV Q6h.
AND
Clindamycin 900 mg IV Q8h.

OR

Ceftriaxone 2 grams IV Q12h.
AND
Metronidazole 500 mg IV Q6h.

Neutropenic Cancer Patients (ANC <500)

Piperacillin-tazobactam[3] 4.5 grams IV Q6-8h.
OR
Cefepime 1 gram IV Q6h.

AND

Vancomycin[1] 25-30 mg/kg loading dose followed by 20 mg/kg Q8-12h. Max dose 2 grams.

If concerned for HSV or VZV, consider adding:

Acyclovir 10 mg/kg Q8h. Consult pharmacy for max dosing.

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[1] Linezolid may be substituted for vancomycin in patients with relative contraindication to vancomycin for high risk for acute kidney injury.
[2] Gentamicin dosing based on ideal body weight.
[3] May substitute ampicillin-sulbactam 3 gram IV Q6h for piperacillin-tazobactam if not concerned for pseudomonas.

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Clinical Guideline

Sepsis Vasoactive Medications (Adult)

Vasopressors

All vasoactive medications should be infused via central line with the exception of dopamine, which can be infused via a peripheral IV at rates less than 10 mcg/kg/minute.

• Norepinephrine 8-12 mcg/min IV initial infusion rate.	First-line vasopressor of choice in sepsis.
• Epinephrine 1-10 mcg/min initially, titrated to effect.	May be added or used in place of norepinephrine to maintain adequate BP.
• Dopamine 2-20 mcg/kg/min.	Second-line option in highly select patients as it causes more tachycardia.
• Phenylephrine 100-180 mcg/min IV initial infusion until stabilized. Titrate to goal of 60-200 mcg/min. (Max dose range 80-360 mcg/min.)	Can be used as salvage therapy for refractive hypotension associated with tachycardia.
• Vasopressin 0.03-0.04 units/min.	May be added to norepinephrine to increase MAP or decrease norepinephrine dose. DO NOT use as a single agent.
• Dobutamine 2-20 mcg/kg/min IV infusion.	May be used for inoptropic support in the presence of severe myocardial dysfunction or hypoperfusion with depressed cardiac output.

Corticosteroids

Corticosteroids should NOT be administered for the treatment of sepsis in the absence of shock. Steroids are beneficial in those experiencing adrenal insufficiency in the presence of septic shot; however ACTH testing is not routinely recommended in adult patients. If hemodynamic stability is not achieved after adequate fluid resuscitation and vasopressor therapy, the use of IV hydrocortisone alone at a dose of 200 mg/day can be considered regardless of adrenal insufficiency status. Hydrocortisone should be tapered when vasopressors are no longer required.