BC Sepsis Network

Comparison of 2012 and 2017 Emergency Department Sepsis Guidelines

Emergency Department Guidelines

2012 Guidelines	2017 Guidelines	Changes & Rationale
All patients with 2/4 SIRS (HR>90, RR>20, temperature ≥38 ^{o} C or <36^{o} C, altered level of consciousness) and suspected infection and one of the following will be triaged as a CTAS =2 • Looks unwell • Age > 65 • Recent surgery Immunocompromised (AIDS, Chemotherapy, neutropenia, asplenia, transplant, chronic steroids) • Chronic illness (diabetes, renal failure, hepatic failure, cancer, alcoholism, IV drug use)	**All patients with two out of four SIRS (HR > 90, RR > 20, temperature ≥ 38 ^{o} C or < 36^{o} C, altered mental state) and suspected infection and one of the following risk factors should be considered at risk of sepsis:** • Looks unwell • Age > 65 years • Recent surgery • Immunocompromised (AIDS, Chemotherapy, neutropenia, asplenia, transplant, chronic steroids) • Chronic illness (diabetes, renal failure, hepatic failure, cancer, alcoholism, IV drug use)	**X** CTAS recommendation removed *The Current Canadian Emergency Department Triage and Acuity Scale is adequate to prioritize patients with Sepsis and Septic Shock. Not required to be restated in the sepsis guidelines.*
All patients with 2/4 SIRS and suspected infection (with above risk factor) • ABG venous lactate measurement within 30 minutes of presentation to triage should be taken with initial blood draw and this will require access to a ABG machine with rapid turnaround time (approximately 30 minutes) • If initial lactate is elevated have a repeat venous lactate measurement drawn in next 2-4 hrs	**All patients with two out of four SIRS and suspected infection (with above risk factor):** • ABG venous lactate measurement within 30 minutes of presentation to triage should be taken with initial blood draw. *This will require access to an ABG machine (or other rapid lactate testing device) with rapid turnaround time (approximately 30 minutes)* • If initial lactate is elevated have a repeat venous lactate measurement drawn in next 2-4 hrs	*No changes*

BC Sepsis Network

Comparison of 2012 and 2017 Emergency Department Sepsis Guidelines

If systolic blood pressure is < 90 mmHg at presentation CTAS =1 • Antibiotics within 1 hr • Culture before antibiotics • Second liter of crystalloid started within 1 hr	**If at presentation systolic blood pressure is < 90 mmHg or patient presents with two out of three qSOFA (altered mental state, respiratory rate > 20/min, systolic blood pressure < 100 mmHg):** • Broad spectrum IV antibiotics within 1 hour • Blood culture before IV antibiotics • Complete crystalloid fluid bolus (30 cc/kg) within first 3 hours (balanced crystalloid preferred)	**X** CTAS recommendation removed *The Current Canadian Emergency Department Triage and Acuity Scale is adequate to prioritize patients with Sepsis and Septic Shock. Not required to be restated in the sepsis guidelines.* **X** "Second liter of crystalloid started within 1h" replaced with: **+** "Complete crystalloid fluid bolus (30 cc/kg) within first 3 hours (balanced crystalloid preferred)" *Wording to be more congruent with the Surviving Sepsis Guidelines 2016.*[i] **+** qSOFA criteria added *Sepsis 3 definitions have added qSOFA to identify ED patients at high risk of death.*[ii] *These patients should receive aggressive expedited treatment.*
If initial lactate result is ≥4 mmol/L • Antibiotics within 1 hr of measurement of elevated lactate • Culture before antibiotics • Second liter of crystalloid started with 1 hr of measurement of elevated lactate	**If initial lactate result is ≥ 4 mmol/L:** • Broad spectrum IV antibiotics within 1 hr of measurement of elevated lactate • Blood culture before IV antibiotics • Complete crystalloid fluid bolus (30 cc/kg) within first 3 hours (balanced crystalloid preferred)	**X** "Second liter of crystalloid started within 1h" replaced with: **+** "Complete crystalloid fluid bolus (30 cc/kg) within first 3 hours (balanced crystalloid preferred)" *To be more congruent with the Surviving Sepsis Guidelines 2016.*
If systolic blood pressure > 90 at presentation and initial lactate is < 4 mmol/L but patient is admitted to the hospital and received IV antibiotics • Antibiotics within 3 hrs • Culture before antibiotics	**If systolic blood pressure > 90 mmHg at presentation and initial lactate is < 4 mmol/L but patient is admitted to the hospital and received IV antibiotics:** o Broad spectrum IV antibiotics within 3 hrs o Blood culture before IV antibiotics	*No changes*

Comparison of 2012 and 2017 Emergency Department Sepsis Guidelines

Additional Recommendations

2012 Guidelines	2017 Guidelines	Changes & Rationale
Non-measured recommendations • Early investigations to determine infectious source (radiologic, surgical, other cultures i.e. CSF, joint aspiration) • Early source control with appropriate consultation • Early critical care (ICU) consult or contact BC Patient Transfer Network if you have early knowledge that patient will need higher level of care. • Encourage a "culture of lactate" where any nurse or physician is empowered to check a lactate if concerned. Endorse check early and check often (if lactate elevated or patient unwell).	**ADDITIONAL RECOMMENDATIONS** • Early investigations to determine infectious source (radiologic, surgical, other cultures i.e. CSF, joint aspiration) and early source control within 6-12 hours through appropriate consultation and using the least invasive technique. • Consult ICU early (either locally or through the BC Patient Transfer Network) if you have early knowledge that patient will need higher level of care. • Encourage a 'culture of lactate' where any nurse or physician is empowered to check a lactate if concerned. Check early and check often (if lactate elevated or patient unwell). • We suggest guiding resuscitation to normalize lactate in patients with elevated lactate as a marker of tissue hypoperfusion.	+ Guiding resuscitation to normalize lactate in patients with elevated lactate as a marker of tissue hypoperfusion *Wording to be more congruent with the Surviving Sepsis Guidelines 2016.*
If hypotensive despite fluid bolus (30 ml/kg) or lactate fails to improve 10% after 2nd reading (at least 2 hrs after initial) consider: • Placing central venous catheter and arterial catheter, continue fluid resuscitation and initiate norepinephrine or epinephrine to maintain MAP>65. Use inotropes as needed and begin invasive monitoring and quantitative resuscitation (go to EGDT protocol phase II) • Consultation with Critical Case services (ICU) in your facility • BC Patient Transfer Network for critical care consultation/transfer to Intensive Care Unit.	**If hypotensive despite fluid bolus (30 cc/kg) or lactate fails to improve 10% after 2nd reading (at least two hours after initial measurement) we suggest:** • Placing central venous catheter and arterial catheter, continue fluid resuscitation while assessing for fluid responsiveness and initiate norepinephrine or epinephrine (+/- vasopressin 0.03 units/minute as vasopressor sparing agent) to maintain mean arterial pressure of > 65 mmHg. • Using further hemodynamic assessment (such as assessing cardiac function) to determine the type of shock if the physical exam does not lead to a clear diagnosis.	+ (+/- vasopressin 0.03 units/minute as vasopressor sparing agent) to maintain mean arterial pressure of > 65 mmHg. *Wording to be more congruent with the Surviving Sepsis Guidelines 2016. Evidence suggests that vasopressin can add as a norepinephrine sparing agent and may reduce the incidence of renal failure requiring dialyisis.* + Using dobutamine as needed if evidence of sepsis induced myocardial suppression (determined by ECHO, low ScvO2 or physical exam). Continue to assess response.

	• Using dobutamine as needed if evidence of sepsis induced myocardial suppression (determined by ECHO, low ScvO2 or physical exam). Continue to assess response. • Using albumin in addition to crystalloids for initial resuscitation and subsequent intravascular volume replacement in patients with sepsis and septic shock when patients require substantial amounts of crystalloids. • If you are unable to restore hemodynamic stability with fluid resuscitation and vasopressors we suggest adding IV hydrocortisone at a dose of 50 mg IV q6h. • Consultation with critical care services or transfer to ICU (either locally or through BC Patient Transfer Network).	*Wording to be more congruent with the Surviving Sepsis Guidelines 2016.* + Using albumin in addition to crystalloids for initial resuscitation and subsequent intravascular volume replacement in patients with sepsis and septic shock when patients require substantial amounts of crystalloids. *Albumin supplementation in addition to crystalloids during large volume resuscitation has been shown to improve survival.* + If you are unable to restore hemodynamic stability with fluid resuscitation and vasopressors we suggest adding IV hydrocortisone at a dose of 50 mg IV q6h. *Wording to be more congruent with the Surviving Sepsis Guidelines 2016. Intravenous steroids have been shown to improve survival in patients with unresponsive septic shock. Additionally it has been shown to be a vasopressor sparing agent.*

REFERENCES:

[i] Rhodes A, Evans L, Alhazzani W, et al. Surviving Sepsis Campaign: International guidelines for management of severe sepsis and septic shock: 2016. *Crit Care Med* 2017; 45(3).

[ii] Singer M, et al. The third international consensus definitions for sepsis and septic shock (Sepsis-3). *JAMA.* 2016; 315(8): 801-810.