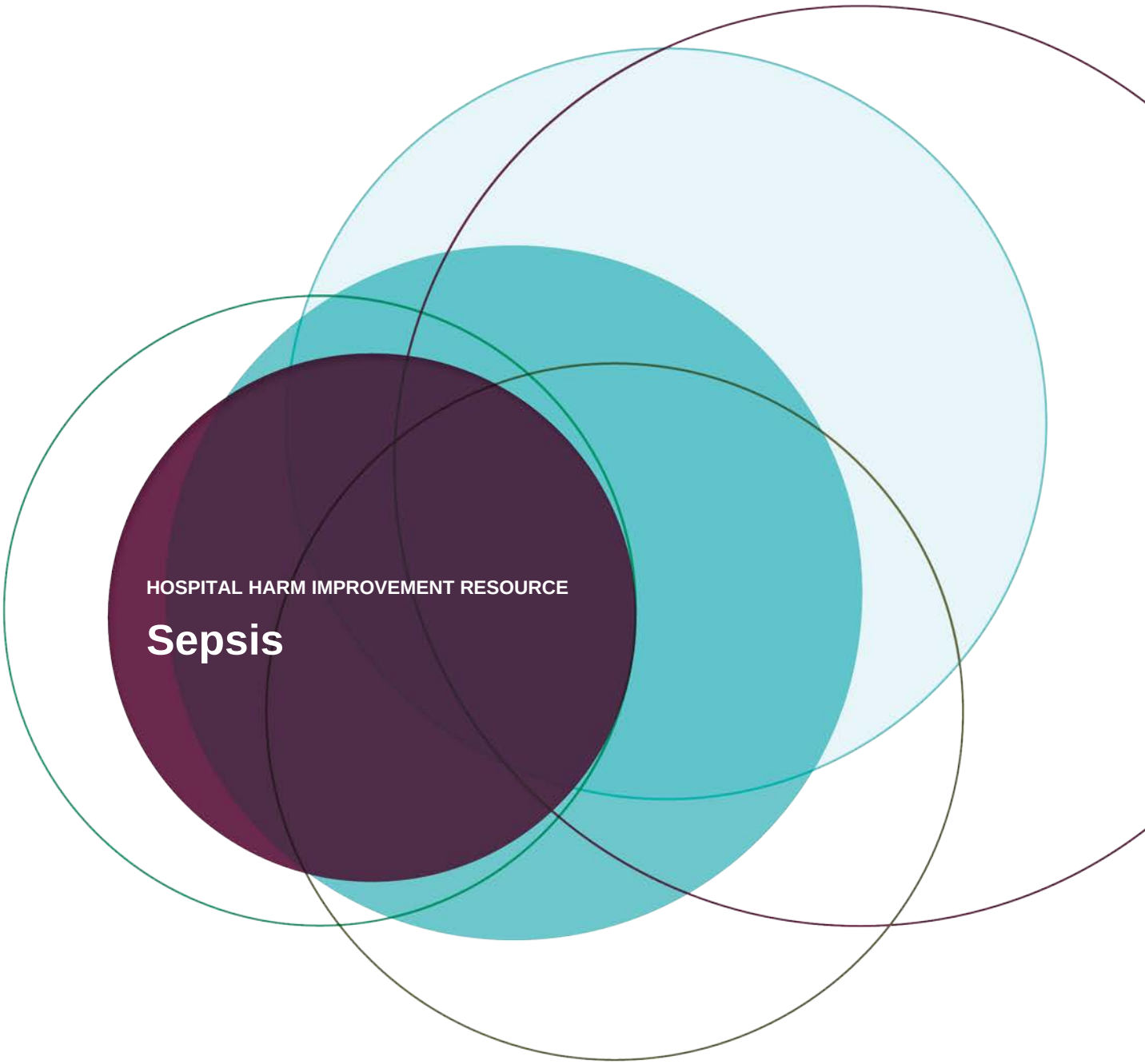

HOSPITAL HARM IMPROVEMENT RESOURCE

Sepsis

cpsi icsp
Canadian Patient Safety Institute
Institut canadien pour la sécurité des patients

Canadian Institute for Health Information
Institut canadien d'information sur la santé

ACKNOWLEDGEMENTS

The Canadian Institute for Health Information and the Canadian Patient Safety Institute have collaborated on a body of work to address gaps in measuring harm and to support patient safety improvement efforts in Canadian hospitals.

The Hospital Harm Improvement Resource was developed by the Canadian Patient Safety Institute to complement the Hospital Harm measure developed by the Canadian Institute for Health Information. It links measurement and improvement by providing evidence-informed resources that will support patient safety improvement efforts.

The Canadian Patient Safety Institute acknowledges and appreciates the key contributions of Dr. Denny Laporta, MD FRCPC CSPQ for the review and approval of this Improvement Resource.

DISCHARGE ABSTRACT DATABASE (DAD) CODES INCLUDED IN THIS CLINICAL CATEGORY:

B17: Sepsis		
Concept	Sepsis identified during a hospital stay, excluding neonatal sepsis.	
Notes	This clinical group includes an episode of sepsis that developed in hospital; however, the infection which led to sepsis might have been acquired in the community or hospital.	
Selection Criteria	A40.– A41.– B37.7 R57.2 R65.1	Identified as diagnosis type (2) **OR** Identified as diagnosis type (3) **AND** T80.2, T81.4, T82.6, T82.7–, T83.5, T83.6, T84.5–, T84.6–, T84.7, T85.7 or T88.0 as diagnosis type (2) **AND** Y60–Y84 **in the same diagnosis cluster** **OR** Identified as diagnosis type (3) **AND** O03.0, O03.5, O04.0, O04.5, O05.0, O05.5, O07.3 or O08.0– as diagnosis type (2) **on the same abstract** **OR** Identified as diagnosis type (3) **AND** O98.502 or O98.802 as diagnosis type (M), (1), (2), (W), (X) or (Y) **on the same abstract**
	O85.002	Identified as diagnosis type (M), (1), (2), (W), (X) or (Y)
	R57.2	Identified as diagnosis type (3) **AND** T81.1 as diagnosis type (2) **AND** Y60–Y84 **in the same diagnosis cluster**
	Exclusions: 1. Abstracts with a length of stay less than 1 year 2. Abstracts with a length of stay less than 2 days 3. Abstracts with a most responsible diagnosis of palliative care (ICD-10-CA: Z51:5) 4. Abstracts where sepsis is also identified as a pre-admit condition are excluded from the numerator: • Abstracts with sepsis codes (ICD-10-CA: A40.–, A41.–, B37.7, R65.1, R57.2) or the associated post-procedural complication codes (ICD-10-CA: T80.2, T81.1, T81.4, T82.6, T82.7–, T83.5, T83.6, T84.5–, T84.6–, T84.7, T85.7, T88.0) identified as pre-admit [type (M), (1), (W), (X) or (Y)] • Abstract with sepsis in obstetric patients where the puerperal sepsis code or the associated obstetric infection code is identified as pre-admit [ICD-10-CA: O85.004, O85.009, O98.501, O98.503, O98.504, O98.509, O98.801, O98.803, O98.804, O98.809 — any diagnosis type **or** O03.0, O03.5, O04.0,	

	O04.5, O05.0, O05.5, O07.3, O08.0 as type (M), (1), (W), (X) or (Y)] As an exception, sepsis is not considered as a pre-admit condition when the above codes identified as type (M), (W), (X) or (Y) also appear as type (2) or within a post-admit sepsis coding scenario (sepsis code as type (2); sepsis code as type (3) or an associated infection code as type (2) in sepsis as post-procedural or obstetric complications).
Codes	**Code Description**
A40.–	Streptococcal sepsis
A41.–	Other sepsis
B37.7	Candidal sepsis
O03.0	Spontaneous abortion, incomplete, complicated by genital tract and pelvic infection
O03.5	Spontaneous abortion, complete or unspecified, complicated by genital tract and pelvic infection
O04.0	Medical abortion, incomplete, complicated by genital tract and pelvic infection
O04.5	Medical abortion, complete or unspecified, complicated by genital tract and pelvic infection
O05.0	Other abortion, incomplete, complicated by genital tract and pelvic infection
O05.5	Other abortion, complete or unspecified, complicated by genital tract and pelvic infection
O07.3	Failed attempted abortion, complicated
O08.0–	Complications following abortion and ectopic and molar pregnancy; genital tract and pelvic infection
O85.002	Puerperal sepsis, delivered with mention of postpartum complication
O98.502	Other viral diseases complicating pregnancy, childbirth and the puerperium; delivered with mention of postpartum complication
O98.802	Other maternal infectious and parasitic diseases complicating pregnancy, childbirth and the puerperium; delivered with mention of postpartum complication
R57.2	Septic shock
R65.1	Systemic inflammatory response syndrome of infectious origin with acute organ failure
Additional Codes	
Inclusions	
T80.2	Infections following infusion, transfusion and therapeutic injection
T81.4	Infection following a procedure, not elsewhere classified
T81.1	Shock during or resulting from a procedure, not elsewhere classified

T82.6	Infection and inflammatory reaction due to cardiac valve prosthesis
T82.7	Infection and inflammatory reaction due to other cardiac and vascular devices, implants and grafts
T83.5	Infection and inflammatory reaction due to prosthetic device, implant and graft in urinary system
T83.6	Infection and inflammatory reaction due to prosthetic device, implant and graft in genital tract
T84.5–	Infection and inflammatory reaction due to internal joint prosthesis
T84.6–	Infection and inflammatory reaction due to internal fixation device (any site)
T84.7	Infection and inflammatory reaction due to other internal orthopedic prosthetic devices, implants and grafts
T85.7	Infection and inflammatory reaction due to other internal prosthetic devices, implants and grafts
T88.0	Infection following immunization
Y60–Y84	Complications of medical and surgical care (refer to Appendix 6)
Exclusions	
O85.004	Puerperal sepsis, postpartum condition or complication
O85.009	Puerperal sepsis, unspecified as to episode of care, or not applicable
O98.501	Other viral diseases complicating pregnancy, childbirth and the puerperium; delivered with or without mention of antepartum condition
O98.503	Other viral diseases complicating pregnancy, childbirth and the puerperium; antepartum condition or complication
O98.504	Other viral diseases complicating pregnancy, childbirth and the puerperium; postpartum condition or complication
O98.509	Other viral diseases complicating pregnancy, childbirth and the puerperium; unspecified as to episode of care, or not applicable
O98.801	Other maternal infectious and parasitic diseases complicating pregnancy, childbirth and the puerperium; delivered with or without mention of antepartum condition
O98.803	Other maternal infectious and parasitic diseases complicating pregnancy, childbirth and the puerperium; antepartum condition or complication
O98.804	Other maternal infectious and parasitic diseases complicating pregnancy, childbirth and the puerperium; postpartum condition or complication
O98.809	Other maternal infectious and parasitic diseases complicating pregnancy, childbirth and the puerperium; unspecified as to episode of care, or not applicable
Z51.5	Palliative care

For the descriptions of external cause codes of complications of medical or surgical care (Y60–Y84), please refer to the technical notes: Hospital Harm Indicator: Appendices to Indicator Library.

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OVERVIEW

Recently, sepsis has been redefined as: *"life-threatening organ dysfunction caused by dysregulated host response to infection*" (Singer, 2016). It affects neonatal, pediatric, and adult patients worldwide. Differentiated from an uncomplicated infection by virtue of the dysregulated host response and acute organ dysfunction, sepsis can present as or progress to septic shock, recently redefined as: *"a subset of sepsis in which particularly profound circulatory, cellular and metabolic abnormalities are associated with a greater risk of mortality than with sepsis alone."* (Singer, 2016)

For patient identification, organ dysfunction can be represented by an increase in the Sequential Organ Failure Assessment (SOFA) score (Vincent, 1996) of two points or more, which is associated with an in-hospital mortality greater than 10 per cent. Patients with septic shock can be identified by a vasopressor requirement to maintain a mean arterial pressure of 65 mm Hg or greater AND serum lactate level greater than 2 mmol/L in the absence of hypovolemia (i.e. after adequate fluid resuscitation). This combination is associated with hospital mortality rates greater than 40 per cent (Singer, 2016).

These recent modifications were made in order to better integrate the definitions with evolving concepts of this syndrome. Pending future reports, the definitions and diagnostic criteria for pediatric and neonatal sepsis should be considered similar to adult definitions, inclusive of age-specific cut-off values (Goldstein, 2005; Dellinger, 2013). Maternal sepsis refers to sepsis occurring during pregnancy, childbirth and the puerperium. It encompasses a complicated clinical scenario due to the presence of an additional patient (the fetus) and significant pregnancy-related alterations in cardiorespiratory, immunological and metabolic functions.

IMPLICATIONS

Sepsis is a growing health concern in Canada as well as in the rest of the world (CIHI, 2009; Adhikari, 2010). In Western countries, the incidence of sepsis in adults and children continues to rise despite a significantly decreased, but still unacceptably high, mortality rate of 20 to 30 per cent (Annane, 2003; Dombrovskiy, 2007; Angus. 2001, 2013; Friedman, 1998; Stevenson, 2014; Lagu, 2012; Kaukonen, 2015).

Despite advances in the understanding of the pathophysiology of sepsis, of provider training, better surveillance, monitoring and prompt initiation of therapy, there is still much room for improvement as sepsis remains one of the most deadly emergency department arrival or hospital-acquired conditions (Donald, 2015). Similar to other time-sensitive disorders such as polytrauma, acute myocardial infarction, or stroke, the speed and appropriateness of therapy administered in the initial hours after sepsis develops are likely to influence outcome. These features suggest the opportunity for earlier recognition and management of sepsis in improving the outcomes of these patients (Liu, 2014), which, unfortunately, is often not the case. Indeed, in two studies, timely initiation and completion of adequate sepsis management were only between 40 to 58 per cent and 10 to 43 per cent respectively (Mikkelsen, 2010; Ferrer, 2008).

Similar observations have been made for pediatric and maternal sepsis (*Safer Healthcare Now!* Sepsis, 2015).

Sepsis can be prevented in two ways:

1. Treating infections early and appropriately before they develop into sepsis.
2. Identifying, mitigating or preventing risk factors related either to the patient or as a result of care delivered to them.

Examples of risk factors are:

- Age (higher risk in infants and elderly persons than in other age groups).
- Chronic diseases with/without severe organ dysfunction.
- Immunodeficiency.
- Immunosuppressive agents.
- Inappropriate use of antibiotics.
- The presence of implanted medical devices (intravascular or other).
- Prematurity.
- Infection is more likely to occur when the normal anatomy is altered by a process – benign or malignant - that either obstructs a normal passage (e.g. calculous cholecystitis, prostatitis) or breaks and enters a previously sterile system (e.g. skin breakdown by trauma, dermatological conditions).
- Patients unable to communicate their symptoms often present later in their illness (i.e. often with sepsis).

Risk factors for the development of maternal sepsis also include factors affecting the pregnancy itself (home birth in unhygienic conditions, low socioeconomic status, history of pelvic infection or of group B streptococcal infection, poor nutrition, diabetes, anemia, primiparity, prolonged rupture of membranes, prolonged labor), multiple pregnancy, pregnancy-related genital manipulation/procedures, multiple (>5) vaginal examinations in labor, cervical cerclage, amniocentesis, artificial reproductive techniques, obstetrical manoeuvres, unassisted vaginal delivery, caesarean section, preeclampsia and postpartum hemorrhage.

Healthcare-associated infections (HAIs) can lead to sepsis and its deleterious outcomes (Riley 2012). HAIs represent the most common complication affecting hospitalized patients today, with currently five to 10 per cent of patients in acute care hospitals acquiring one or more infections. Catheter-associated urinary tract infections (CAUTI), central line-associated bloodstream infections (CLABSI), surgical site infections (SSI), and ventilator-associated pneumonia (VAP) account for the vast majority of all HAIs. Each year about 8,000 Canadians die from hospital-acquired infections; and 220,000 others get infected (Zoutman, 2003). Failure to comply with evidence-based infection preventive practices for HAIs increases the incidence of hospital-acquired sepsis.

GOAL

To decrease the morbidity and mortality from sepsis and to prevent nosocomial sepsis in the hospitalized pediatric and adult population.

IMPORTANCE TO PATIENTS AND FAMILIES

Sepsis is a life-threatening condition that arises when the body's response to an infection injures its own tissues and organs. It is a healthcare condition that can affect newborn, children and adults alike, and can lead to serious illness and even death. Earlier recognition and appropriate treatment of sepsis have much improved over the last decade, but the best strategy remains to prevent infection altogether. Proper preventive practices for specific procedures, interventions and operations can decrease the incidence of infections and sepsis in the hospital setting.

Patient Stories

- Surviving Sepsis: A Human Factors Approach

  PatientStories.org and the Winchester and Eastleigh Healthcare NHS Trust in the UK have created Surviving Sepsis: A Human Factors Approach, a short film documenting their innovative human factors approach to identify and manage sepsis (PatientStories.org, 2013).

- Julie's Story

  This short documentary accompanies "Julie's Story". In 2008, Julie Carman was involved in a road traffic accident whilst on a cycling holiday. She suffered injuries to her face, jaw and legs but made a good initial recovery and expected to be back at work within three months. Three years later she was still having treatment having experienced two further emergency admissions to hospital due to acute cellulitis and sepsis. In this short film, Julie explains how a series of "everyday" communication failures conspired to create delays in her receiving effective treatment (PatientStories.org, 2013).

EVIDENCE-INFORMED PRACTICES

Screening

Screening for sepsis improves early identification, and when combined with a management approach, as part of a performance improvement process, it decreases sepsis-related mortality (Levy, 2010, 2014; Schorr, 2009; Black, 2012; Moore, 2009; Rivers, 2008).

Quick SOFA (qSOFA)

In the emergency department or general hospital ward settings, adult patients with suspected infection can be rapidly identified as being more likely to have poor outcomes typical of sepsis if they have at least two of the three criteria from the qSOFA score (respiratory rate of 22/min or greater, altered mentation, or systolic blood pressure of 100 mm Hg or less).

Prevention Bundles for Healthcare Associated Infections

Prevention of UTI – Non-Catheter-Associated Urinary Tract Infection Bundle

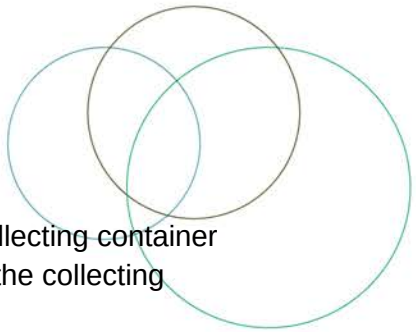
(Saskatchewan 2013)

1. Ensure proper hydration and nutrition.
2. Provide good perineal hygiene.
3. Promote healthy voiding habits.

Prevention of CAUTIs

(APIC 2014, Meddings 2014, IHI 2011, Gould 2010, Lo 2014)

1. CAUTI Risk Assessment:
    a. Assess whether an effective organizational program exists.
    b. Assess population at risk.
    c. Assess baseline data.
2. Measurement/Surveillance: Surveillance and reporting program in place with standardized definitions.
3. Insertion: Use appropriate technique for catheter insertion -
    a. Only trained persons to insert and maintain catheter.
    b. Insert urinary catheters only when necessary for patient care and leave in place only as long as indications remain.
    c. Consider other methods for bladder management, such as intermittent catheterization, where appropriate.
    d. Practice good hand hygiene and routine IPAC practices.
    e. Use aseptic technique and sterile equipment for catheter insertion.
    f. Use sterile gloves, drape, and sponges; a sterile or antiseptic solution for cleaning the urethral meatus; and a sterile single-use packet of lubricant jelly for insertion.
    g. Use as small a catheter as possible consistent with proper drainage, to minimize urethral trauma.
4. Maintenance: Ensure appropriate maintenance of indwelling catheters -
    a. Properly secure indwelling catheters after insertion to prevent movement and urethral traction.
    b. Maintain a sterile, continuously closed drainage system.
    c. Replace the catheter and the collecting system using aseptic technique when breaks in aseptic technique, disconnection, or leakage occur.
    d. For examination of fresh urine, collect a small sample by aspirating urine from the needleless sampling port with a sterile syringe/cannula adaptor after cleansing the port with disinfectant. Obtain larger volumes of urine for special analyses aseptically from the drainage bag.
    e. Maintain unobstructed urine flow:
        i. Keep the collecting bag below the level of the bladder at all times; do not place the bag on the floor.



ii. Keep catheter and collecting tube free from kinking.
iii. Empty the collecting bag regularly using a separate collecting container for each patient. Avoid touching the draining spigot to the collecting container.

f. Employ routine hygiene; cleaning the meatal area with antiseptic solutions is unnecessary.
g. Do not change indwelling catheters or urinary drainage bags at arbitrarily fixed intervals.

5. Removal: Review urinary catheter necessity daily against pre-specified criteria -
   a. Urinary catheter reminders.
   b. Urinary catheter automatic stop orders.
   c. Medical directives for nurse-guided urinary catheter removal.

6. Post-catheter care:
   a. Develop a protocol for management of postoperative urinary retention, including nurse-directed use of intermittent catheterization and use of bladder scanners.

Prevention of Central Line-Associated Bloodstream Infections (CLABSI)

(*Safer Healthcare Now!* Central Line-Associated Bloodstream Infection, 2012)

- Central Line Insertion Bundle:
  1. Hand hygiene.
  2. Maximal barrier precautions.
  3. Chlorhexidine skin antisepsis.
  4. Optimal catheter type and site selection.
- Central Line Care Bundle
  1. Daily review of line necessity, with prompt removal of unnecessary lines.
  2. Aseptic lumen access.
  3. Catheter site and tubing care.

Prevention of Ventilator-Associated Pneumonia

(*Safer Healthcare Now!* Ventilator-Associated Pneumonia, 2012)

1. Elevation of the head of the bed to 45° when possible, otherwise attempt to maintain the head of the bed greater than 30° should be considered.
2. Daily evaluation of readiness for extubation.
3. The utilization of endotracheal tubes with subglottic secretion drainage.
4. Oral care and decontamination with Chlorhexidine.
5. Initiation of safe enteral nutrition within 24-48h of ICU admission.

Prevention of Surgical Site Infection

(*Safer Healthcare Now!* Surgical Site Infection, 2014)

1. Prophylactic antimicrobial coverage:
    a. Appropriate use of prophylactic antibiotics.
    b. Antiseptic use.
    c. Decolonization.
    d. Antiseptic Coated Suture.
2. Appropriate hair removal.
3. Maintenance of perioperative glucose control.
4. Perioperative normothermia.

Surviving Sepsis - 3-hour and 6-hour bundles (2015 update)

To be completed within 3 hours of time of presentation:*

1. Measure lactate level.
2. Obtain blood cultures prior to administration of antibiotics.
3. Administer broad spectrum antibiotics.[1]
4. Administer 30ml/kg crystalloid for hypotension or lactate ≥4mmol/L.

To be completed within 6 hours of time of presentation:*

5. Apply vasopressors[2] (for hypotension that does not respond to initial fluid resuscitation) to maintain a mean arterial pressure (MAP) ≥ 65mmHg.
6. In the event of persistent hypotension after initial fluid administration (MAP < 65 mm Hg) or if initial lactate was ≥ 4 mmol/L, reassess volume status and tissue perfusion and document findings.[3]
7. Re-measure lactate if initial lactate elevated.

*Time of presentation" is defined as the time of triage in the emergency department or, if presenting from another care venue, from the earliest chart annotation consistent with all elements of sepsis ascertained through chart review.

[1] Administer antibiotics as soon as possible, preferably within the first hour of recognition of septic illness

[2] Norepinephrine is the first-choice vasopressor to maintain mean arterial pressure ≥= 65 mm Hg

[3] Document reassessment of volume status and tissue perfusion with:

Either:

- Repeat focused exam (after initial fluid resuscitation) by licensed independent practitioner including vital signs, cardiopulmonary, capillary refill, pulse, and skin findings.

OR/ two of the following:

- Measure CVP.
- Measure ScvO2.
- Bedside cardiovascular ultrasound.
- Dynamic assessment of fluid responsiveness with passive leg raise or fluid challenge.

Additional Evidence-Based Components of Care

The reader is referred to the Surviving Sepsis Campaign 2012 (Dellinger, 2013) for other practice interventions that complement the initial management of sepsis such as specific aspects of resuscitation fluids, antimicrobials, source and infection control, hemodynamic support and adjunctive therapies and other supportive therapies (Dellinger, 2013).

Specific Considerations for Pediatric and Maternal Sepsis

Please refer to Surviving Sepsis Campaign 2012 (Dellinger, 2013) and the Canadian Patient Safety Institute's *Safer Healthcare Now!* Sepsis Getting Started Kit (*Safer Healthcare Now!*, Sepsis, 2015).

Other Recommendations

- Do not wait for intensive care unit transfer to initiate resuscitation measures.
- Seek infection source identification and control early according to the clinical situation.
- Reassess antimicrobial therapy daily for de-escalation, when appropriate.

MEASURES

Vital to quality improvement is measurement, and this applies specifically to implementation of interventions. The chosen measures will help to determine whether an impact is being made (primary outcome), whether the intervention is actually being carried out (process measures), and whether any unintended consequences ensue (balancing measures).

Below are some recommended measures to use, as appropriate, to track your progress. In selecting your measures, consider the following:

- Whenever possible, use measures you are already collecting for other programs.
- Evaluate your choice of measures in terms of the usefulness of the final results and the resources required to obtain them; try to maximize the former while minimizing the latter.
- Try to include both process and outcome measures in your measurement scheme.
- You may use different measures or modify the measures described below to make them more appropriate and/or useful to your particular setting. However, be aware that modifying measures may limit the comparability of your results to others.

- Posting your measure results within your hospital is a great way to keep your teams motivated and aware of progress. Try to include measures that your team will find meaningful and exciting (IHI, 2011).

For more information on measuring for improvement, contact the Canadian Patient Safety Institute Central Measurement Team at measurement@cpsi-icsp.ca

Outcome Measure

1. Rate of Hospital-acquired Infections: Urinary Tract Infection (Catheter-Associated, Non-Catheter-Associated), Central Line Associated Bloodstream Infection, Surgical Site Infection in Clean and Clean-Contaminated patients, Ventilator-Associated Pneumonia (*Safer Healthcare Now!* 2012).
2. Incidence of Sepsis Secondary To: Urinary Tract Infection (Catheter-Associated, Non-Catheter-Associated), Central Line Associated Bloodstream Infection, Surgical Site Infection, Ventilator-Associated Pneumonia.
3. 28 Day In-Mortality Rate from Septic Illness

Process Measures

Screening

(Dellinger 2013)

1. Percentage of Potentially Infected Seriously Ill Patients Screened for Sepsis.

CAUTI

(Gould 2010)

1. Unnecessary Urinary Catheters or Unnecessary Catheter Days.
2. Per cent Appropriate Insertion of Urinary Catheters.
3. Compliance with Urinary Catheter Insertion and Maintenance Bundles.

CLABSI

(*Safer Healthcare Now!* 2012)

1. Compliance with Central Line-Associated Insertion and Maintenance (Care) Bundle.

VAP

(*Safer Healthcare Now!* 2012)

1. Compliance with VAP Bundle Compliance (Adult, Pediatric).

SSI

(*Safer Healthcare Now!* 2014)

1. Percentage of clean and clean-contaminated surgical patients with:
    a. Pre-op wash with soap or antiseptic agent.
    b. Appropriate intra-op skin cleansing on intact skin.
    c. Appropriate selection of prophylactic antibiotic.

d. 2 grams of Cefazolin administered as prophylactic antibiotic (adults).
e. Timely prophylactic antibiotic administration.
f. Appropriate prophylactic antibiotic re-dosing.
g. Appropriate prophylactic antibiotic discontinuation.
h. Normothermia within 15 minutes of end of surgery or on arrival in PACU.

2. Percentage of Clean And Clean-Contaminated Caesarean Section Patients With Timely Prophylactic Antibiotic Administration for C-Section.
3. Percentage of Preoperative Surgical Patients With Appropriate Hair Removal.
4. Percentage of All Diabetic Or Surgical Patients At Risk of High Blood Glucose With Controlled Post-Operative Serum Glucose POD 0, 1, and 2.

Sepsis

(Dellinger, 2013; *Safer Healthcare Now!* 2015)

1. Compliance with 3 and 6 hour (modified) Sepsis Bundles.
2. Percentage of Patients with Septic Illness Who Received IV Antibiotics within 3 Hours of Time of Presentation.
3. Percentage of Patients having Blood Cultures Taken Before IV Antibiotics Were Initiated.
4. Percentage of Patients with Septic Illness having Appropriate Fluid Challenge for Hypotension or Lactatemia within the Appropriate Time.
5. Percentage of Patients with Appropriate Initial Lactate Measurement.
6. Percentage of Patients with Appropriate Repeat Lactate Measurement.
7. Percentage of patients with Hypotension or Hypoperfusion who Received Adequate and Timely Fluid Resuscitation.
8. Percentage of Fluid-Resuscitated Patients with Sepsis Who Received a Timely Repeat Lactate Measurement.
9. Percentage of Patients with Sepsis-Related Hypotension Refractory to Fluid Resuscitation Who Received Timely Administration of Vasopressors.

Change Concepts

A number of “change concepts” for improving outcomes from sepsis are proposed in the *Safer Healthcare Now!* Sepsis Getting Started Kit (*Safer Healthcare Now!* Sepsis, 2015).

Implementing the Strategies

The Surviving Sepsis Campaign (SSC) partnered with the Institute for Healthcare Improvement to develop an implementation guide (Surviving Sepsis, 2013). It provides how-to guidance regarding teams, establishing process and outcome measures, setting aims, creating a protocol, educating users, and a detailed description of sepsis bundles and other supportive therapies.

These and other suggestions can also be found in the Sepsis Getting Started Kits from *Safer Health Care Now*! (*Safer Healthcare Now!,* Sepsis, 2015) and from the British Columbia Patient Safety and Quality Council (BC Patient Safety and Quality Council, 2012).

Standards and Required Organizational Practices

Accreditation Canada Required Organizational Practice

- None that apply directly to sepsis.

Accreditation Canada Standards

Critical Care Standards require the:

- Use of a protocol to achieve glycemic control.
- Implementation of the *Safer Healthcare Now!* VAP bundle for clients on ventilators (High priority criteria).
- Implementation of the *Safer Healthcare Now!* CL bundle for clients requiring a central line (High priority criteria).
    - Perioperative Services and Invasive Procedures Standards require that prophylactic antibiotics are administered by the right person at the right time (High priority criteria).

Hand-Hygiene Compliance: Requires the evaluation of compliance with accepted hand-hygiene practices.

Global Patient Safety Alerts

Global Patient Safety Alerts provides access and the opportunity to learn from other organizations about specific patient safety incidents including alerts, advisories, recommendations and solutions for improving care and preventing incidents. Learning from the experience of other organizations can accelerate improvement.

Recommended search terms:

- Sepsis
- Severe sepsis
- Septic shock

SUCCESS STORIES

World Sepsis Declaration!

The World Sepsis Declaration is a call to action: To reduce sepsis incidence by 20 per cent by 2020. Internationally, over 4,200 organizations and individuals have signed this declaration to show their support. This includes organizations and individuals from across Canada. The pledge supports increasing awareness, implementing best practice, and tracking the positive impact of sepsis care and management.

Additional Sepsis Stories (YouTube)

- Anyone Can Get Sepsis
- The Turning Point – Surviving Sepsis
- RSF Sepsis A Hidden Crisis Exposed

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SEPSIS RESOURCES

Professional Associations and Helpful Websites

- BC Patient Safety and Quality Council: Sepsis
  - To increase awareness about sepsis, in 2015 the British Columbia Sepsis Network created lanyards and information tags to highlight the signs of sepsis.
- Centers for Disease Control and Prevention: Sepsis
- Global Sepsis Alliance
- Infection Prevention and Control Canada
- *Safer Healthcare Now!* Sepsis
- Sepsis Trust
  - Tool kits include guidelines and suggested standards for the Emergency Department, General and Acute Medical Wards, and Pediatrics.
- Surviving Sepsis
  - Educational resource from Sepsis Trust (UK) built around early recognition and immediate management of sepsis – using “Sepsis Six” - for healthcare professionals.
- National Health Service (UK) Basic information for patients and lay public
  - Sepsis
  - Septic shock
  - World Sepsis Day

Sepsis Clinical Practice Guidelines

BC Patient Safety and Quality Council. *BC sepsis guideline algorithm*. BC Sepsis Network; 2013. https://bcpsqc.ca//documents/2013/09/algorithm-only-sept-11-2013.pdf

BC Patient Safety and Quality Council. *Sepsis Guide: Improving care for sepsis. A ‘Getting Started Kit’ for sepsis improvement in emergency departments.* BC Sepsis Network; 2012. https://bcpsqc.ca//documents/2012/12/Sepsis-Sepsis-Guide.pdf

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Safer Healthcare Now! Prevent central line-associated bloodstream infections (CLABSI): Getting Started Kit. 2012. http://www.patientsafetyinstitute.ca/en/toolsResources/Pages/CLI-resources-Getting-Started-Kit.aspx

Safer Healthcare Now! Prevent sepsis: Getting Started Kit. Canadian Patient Safety Institute: 2015. http://www.patientsafetyinstitute.ca/en/Topic/Pages/Sepsis.aspx

Safer Healthcare Now! Prevent surgical site infections (SSI): Getting Started Kit. 2014. http://www.patientsafetyinstitute.ca/en/toolsresources/pages/ssi-resources-getting-started-kit.aspx

Safer Healthcare Now! Prevention of ventilator-associated pneumonia (VAP): Getting Started Kit. http://www.patientsafetyinstitute.ca/en/toolsResources/Pages/VAP-resources-Getting-Started-Kit.aspx

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Additional Sepsis Prevention Resources

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