

Adult Sepsis Recognition and Management

Primary Health Care Facilities NT Health Guideline

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If your patient has febrile neutropenia and suspected sepsis or septic shock please use the [TEHS Adult Febrile Neutropenia Guideline](#) and [ASH Febrile Neutropenia Initial Management Pathway](#).

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1. Introduction

The Third International Consensus Definitions for Sepsis and Septic Shock (Sepsis-3):

Sepsis is life-threatening organ dysfunction due to a dysregulated host response to infection.

Septic shock is a subset of sepsis in which underlying circulatory and cellular/metabolic abnormalities are profound enough to substantially increase mortality.

Sepsis is a time-critical medical emergency that arises when the body has a dysregulated response to an infection. This results in damage to the body's own tissues and organs, which can lead to septic shock and organ failure. Sepsis can be triggered by infections caused by bacteria, viruses, fungi, and parasites. Bacterial infections are the most common triggers.

Early recognition of sepsis is important in all health care settings. Majority of sepsis arises in the community, therefore the first point of contact with health care workers in primary care, ambulance services or emergency departments (ED) is a critical setting for the early detection of sepsis. Early recognition in non-acute and pre-hospital settings has been associated to faster treatment and improving outcomes. Literature suggests sepsis improvement program, which includes screening and management tools can significantly decrease the time to recognise and manage sepsis, resulting in better survival rates.

In the Northern Territory (NT), sepsis is five times more common compared to other Australian temperate climates, and is commonly seen in Aboriginal and Torres Strait Islander populations. The common themes of sepsis related deaths in the NT includes: patients of a young age, fit build, and delayed sepsis recognition, diagnosis and administration of appropriate antibiotics.

2. Purpose

This guideline is intended to:

- Provide guidance for best practice for sepsis recognition and management,
- Where sepsis is suspected, empower staff to escalate care to clinicians experienced in recognising and managing sepsis,
- Engage senior medical staff in sepsis recognition and management of patients,
- Support the provision of education and information to patient and carers.

Recommendations in this guideline are not intended to replace a clinician's good clinical judgement when presented with a patient with unique characteristics, and is not intended to set a standard for clinical care.

The guideline should be used in conjunction with the Remote Early Warning Score (REWS) and Adult Sepsis Recognition and Management Pathway for Primary Health Care Facilities (Appendix A).

3. Partnering with Consumers

The patient and/or caregiver should be involved in all the clinical decision-making and the care planning process. Prior to evacuation and on return to community, care planning should involve discussions regarding the future healthcare that may be required post acute care including information on how to access services post-discharge.

The patient and/or caregiver should be provided with the sepsis consumer resources and relevant clinical information regarding the treatment they have had or may receive. Goals of care and prognosis should be discussed and their wishes should be incorporated into the treatment and end-of-life care planning as appropriate.

4. Sepsis Recognition

Lack of recognition prevents timely therapy. Sepsis screening is associated with earlier treatment

Early recognition and prompt treatment of sepsis through a formalised screening effort is necessary to reduce mortality risk. Sepsis may not be obvious in every patient, it may be non-specific and subtle. Patients may exhibit different physiological abnormalities, therefore a diagnosis should be based on clinical judgment and may be supported by relevant investigations. It is important to pay attention to patient risk factors and increase your suspicion of sepsis in these patients. Concerns expressed by the patient and/or caregivers, particularly changes to their mental status are also an important consideration in clinical assessment.

In the Top End, sepsis can occur due to melioidosis, especially in the wet season. Consider melioidosis in all patients presenting with sepsis or septic shock. Please refer to the [TEHS Melioidosis Guideline](#) for diagnosis and management of melioidosis.

4.1 Could it be Sepsis?

Screening for Sepsis should occur in all patients who have signs or symptoms of infection

[Figure 1](#) outlines the features to assist in recognition of signs and symptoms of infection. If a patient meets these features it does not indicate a definitive sepsis or septic shock diagnosis, but should be considered if a patient has symptoms or signs of an infection, combined with risk factors, abnormal vitals or other signs of compensated shock (new altered mental state, lactate level greater than 2) or markers of a severe infection (petechiae suggestive of meningococcal infections and unexplained severe strong pain to suggest necrotising fasciitis, septic joints, acute abdominal sepsis). The pathway empowers clinicians to escalate to senior medical officer(s) to determine the cause of clinical deterioration on the background of a suspected infection



Figure 1: Signs and Symptoms of Infection

Could it be sepsis?	
Consider sepsis in all patients with signs/symptoms of an infection and abnormal vital signs. Presentation can vary between patients and at times may not be obvious.	
RECOGNISE	Are there signs/symptoms that are consistent with an infection? <ul style="list-style-type: none"> <input type="checkbox"/> Fever, rigors, myalgia, chills <input type="checkbox"/> Neurological: confusion, neck stiffness, headache <input type="checkbox"/> Skin: cellulitis, increased pain and infected wounds, tenderness out of proportion <input type="checkbox"/> Respiratory: cough, sputum, breathlessness <input type="checkbox"/> Abdomen: severe pain, tenderness <input type="checkbox"/> Genitourinary: dysuria, frequency, discharge <input type="checkbox"/> Intravenous (IV) line and dialysis access: redness, pain swelling, discharge <input type="checkbox"/> Musculoskeletal: swollen, painful, tender, hot joints or limbs, back pain or spinal tenderness
	Increase your suspicion of sepsis in these patients: <ul style="list-style-type: none"> <input type="checkbox"/> Aboriginal and Torres Strait Islander people greater than 45 years, Non-Indigenous people greater than 65years <input type="checkbox"/> Homeless <input type="checkbox"/> Alcohol misuse <input type="checkbox"/> Previous sepsis admission <input type="checkbox"/> Re-presentation <input type="checkbox"/> Worsening of recently treated infection <input type="checkbox"/> Recent surgery or invasive procedure <input type="checkbox"/> Chronic illnesses: diabetes, renal failure, haemodialysis, cirrhosis <input type="checkbox"/> Bacteraemia risk: prosthetic valves, IV drug use, cardiac implantable electronic device, indwelling medical devices <input type="checkbox"/> Immunocompromised: HIV, cancer or immunosuppressive therapy <input type="checkbox"/> Patient on beta-blockers <input type="checkbox"/> Recent trauma including minor trauma

4.2 Signs that may Suggest Septic Shock and Rapid Deterioration

Warm, flushed skin may be present in the early phases of sepsis. As sepsis progresses to shock, the skin may become cool due to redirection of blood flow to core organs. Additional signs of hypoperfusion include tachycardia, altered consciousness, restlessness, and oliguria or anuria.

Figure 2: Physiological Indicators of Septic Shock and Sepsis

PLUS any of the following criteria:	
<input type="checkbox"/> REWS greater than 5 <input type="checkbox"/> A drop in systolic blood pressure (SBP) of 40 mmHg compared to usual SBP <input type="checkbox"/> An isolated vital sign in the red zone of the REWS	<input type="checkbox"/> REWS of 3 or more <input type="checkbox"/> Increasing REWS <input type="checkbox"/> Increasing respiratory rate of 25/minute <input type="checkbox"/> Lactate greater than 2 mmol/L <input type="checkbox"/> New altered mental status <input type="checkbox"/> White cell count greater than $12.0 \times 10^9/L$ or less than $4.0 \times 10^9/L$, where POCT is available <input type="checkbox"/> Petechiae <input type="checkbox"/> Unexplained severe/strong pain <input type="checkbox"/> Clinical/patient/caregiver concern
	
Patient may have septic shock	Patient may have sepsis or have other causes for deterioration

5. Sepsis Response and Escalation

Early response to suspected sepsis or septic shock through appropriate escalation to senior medical officer or medical retrieval service as outlined in CARPA is crucial to ensure early initiation of appropriate treatment and evacuation. The following response and escalation process should occur if patients meet the warning signs of deterioration. Northern Territory police watch houses should follow local procedures for the escalation and transport for the deteriorating patient.

Figure 3: Sepsis Response and Escalation

RESPOND AND ESCALATE	PLUS any of the following criteria:	
	<input type="checkbox"/> REWS greater than 5 <input type="checkbox"/> A drop in systolic blood pressure (SBP) of 40 mmHg compared to usual SBP <input type="checkbox"/> An isolated vital sign in the red zone of the REWS	<input type="checkbox"/> REWS of 3 or more <input type="checkbox"/> Increasing REWS <input type="checkbox"/> Increasing respiratory rate of 25/minute <input type="checkbox"/> Lactate greater than 2 mmol/L <input type="checkbox"/> New altered mental status <input type="checkbox"/> White cell count greater than $12.0 \times 10^9/L$ or less than $4.0 \times 10^9/L$, where POCT is available <input type="checkbox"/> Petechiae <input type="checkbox"/> Unexplained severe/strong pain <input type="checkbox"/> Clinical/patient/caregiver concern
	↓	↓
	Patient may have septic shock	Patient may have sepsis or have other causes for deterioration
	Top End, East Arnhem & Big Rivers: Urgent escalation to on-site Rural Medical Practitioner (RMP) or Duty Medical Officer (DMO) on 8999 8666 . Central & Barkly: Urgent escalation to Medical Retrieval and Consultation Centre (MRaCC) on 1800 167 222 .	Notify DMO, onsite RMP or MRaCC.
	If sepsis suspected by a senior medical officer, commence the SEPSIS BUNDLE . Consider alternate diagnoses and simultaneous investigation and treatment for differential diagnoses.	
	If sepsis is not suspected now , document the provisional diagnosis in the medical records. Re-evaluate as clinically indicated. If patient deteriorates, re-screen by using this pathway. <input type="checkbox"/> If to be discharged home give patient sepsis recognition education.	

6. Sepsis Management

6.1 Commence Sepsis Resuscitation Bundle

“The culture is one of assuming least injury/illness rather than actively excluding the greatest illness/injury, this is particularly dangerous in a high morbidity cross cultural environment.” Dr Didier Palmer, Executive Director RDPH.

Due to the remote setting of patients, sepsis requires early transfer to a hospital facility. Early involvement of the DMO or MRaCC to allow this process to occur is essential. Evacuation is a key component of the management plan for acutely unwell remote patients.

Clinical judgement is required to balance the risk of over treatment/investigation. It may be more appropriate to collect targeted cultures and investigations within 2 to 3 hours for those patients with vague presentations and who not meet the screening criteria for septic shock or sepsis.

Initial sepsis management consists of undertaking key actions in the sepsis bundle, including assessment of airway, breathing and circulation as per advanced life support (ALS) principles. This pathway supports appropriate treatment is initiated **as soon as possible** after recognition or strong suspicion and within 60 minutes for both sepsis and septic shock. Evidence suggests that a delay in the first dose of antibiotics beyond 60 minutes of presentation has been associated with increased in-hospital mortality. For patients with febrile neutropenia and features of sepsis or septic shock, it is recommended to initiate antibiotics **within 30 minutes** of sepsis recognition. Please refer to your local guideline and pathway for Febrile Neutropenia management if applicable.

NT Police watch houses may be limited in their capacity to implement the 6 item sepsis resuscitation bundle. Early escalation is vital in this setting to ensure rapid transport to a tertiary setting.

Table 1: Sepsis Management: Sepsis Resuscitation Bundle

Actions	Details
1. Consider oxygen therapy if needed	<ul style="list-style-type: none"> Target saturations greater than 95% (88 to 92% for chronic obstructive pulmonary disease).
2. Establish intravenous (IV) access	<ul style="list-style-type: none"> If IV access is unsuccessful after two attempts, consider intraosseous (IO) or central venous catheter (CVC). Do not delay antibiotics.
3. Collect blood cultures and lactate. Other cultures and investigations as clinically indicated. Aim to collect cultures prior to antibiotics	<ul style="list-style-type: none"> Collect two sets of blood cultures. Each set must be collected from a separate site. . If concern about central venous access device bloodstream infection refer to "Central Venous Access Device Blood Sample Collection NT Procedure". Blood cultures should be obtained prior to initiating antimicrobial therapy. At times the risk/benefit ratio favours rapid administration of antimicrobials if it is not logistically possible to obtain a full set of cultures promptly. Lactate can be obtained from venous blood gas, point of care testing. Lactate is a useful marker of the severity of sepsis and sepsis is more likely to be present if lactate is greater than 2 mmol/L. Other investigations can include: <ul style="list-style-type: none"> Blood tests: blood glucose level, coagulation studies (PT, APTT), UEC, FBC, LFT, CRP Other cultures as clinically indicated: sputum, urine (and urinalysis) and wound cultures, joint aspirates, melioid rectal and throat swabs. Other cultures/investigations may include lumbar puncture or abdominal paracentesis (ascetic tap), if indicated. CXR and other radiology as clinically indicated. Send culture pathology with the patient to the hospital.

Actions	Details
4. Administer intravenous (IV) antibiotics (consider possible source)	<ul style="list-style-type: none"> If source unknown, use undifferentiated sepsis/septic shock antibiotic regimen. If source known, use empirical antibiotic regimen. Nursing staff should be informed of urgent need to administer antibiotics and they should be administered in order of shortest to longest administration time as outlined in the Australian Injectable Drugs Handbook. If a abscess, septic arthritis or necrotising fasciitis is suspected, DMO or MRaCC to notify relevant surgical doctor for advice. Note necrotising fasciitis is a surgical emergency.
5. Assess fluid and consider fluid resuscitation	<ul style="list-style-type: none"> If SBP less than 100 mmHg or lactate greater than 2 mmol/L, commence 250 to 500 mL 0.9% sodium chloride or Hartmann's (up to 30 mL/kg). Use smaller volumes in renal or cardiac patients. Fluid volume should be based on patient's weight, cardiac function, comorbidities, current volume status and haemodynamics. Assess after each bolus for signs of fluid overload. If no clinical response, consider inotropes early in consultation with CareFlight or MRaCC. <p>If vasopressors required, consider Metaraminol 0.5mg to 1mg (1mL to 2mL) as per Metaraminol Administration PHC Remote Protocol or Adrenaline 1 to 10 mcg/kg/hr as per Adrenaline Infusion PHC Remote Guideline.</p>
6. Monitor signs of deterioration and urine output	<ul style="list-style-type: none"> Patients with sepsis or septic shock should be closely monitored, due to high risk of clinical deterioration. While waiting for retrieval service monitor vital signs every 15 minutes and urine output every 60 minutes. If warranted, consider IDC insertion.

7. Re-assess and Monitor

Close monitoring of observations through repeating REWS is recommended for patients with suspected or confirmed sepsis due to high risk of clinical deterioration. Repeat observations and REWS calculation should adhere to the appropriate endorsed CARPA Guidelines.

Medical officers may request targeted vital signs based on the individual context and this should be clearly documented in the medical records in accordance with the observation chart in recognising and responding to clinical deterioration procedure. Figure 4 is a snapshot of the process outlined on the pathway ([Appendix A](#)).

Figure 4: Re-assess and Monitor

RE-ASSESS & MONITOR	Re-assess and monitor observations. Aim for the following: <ul style="list-style-type: none"> <input type="checkbox"/> Targeted vital signs as per medical consultation <input type="checkbox"/> Urine output greater than 0.5 mL/kg/hour <input type="checkbox"/> Lactate less than 2 mmol/L
	Escalate for a medical review if patient meets any of the following: <ul style="list-style-type: none"> <input type="checkbox"/> Targets not achieved <input type="checkbox"/> Urine output less than 0.5 mL/kg/hour <input type="checkbox"/> Lactate not trending down <input type="checkbox"/> New altered mental state <input type="checkbox"/> Clinician/patient/caregiver concerns

7.1 Upon medical review, medical officer(s) should consider the following:

- Source of infection should be re-reviewed and determined as soon as possible. Appropriate investigations and/or referral to determine the source of infection should be undertaken as a matter of urgency,
- Ensure appropriate antibiotic regimen for source control.
- Discuss with medical retrieval service officer and/or other specialists such as infectious disease, ICU physicians or surgeons as appropriate, and
- Consider expediting retrieval if possible.

8. Referral to Higher Level of Care

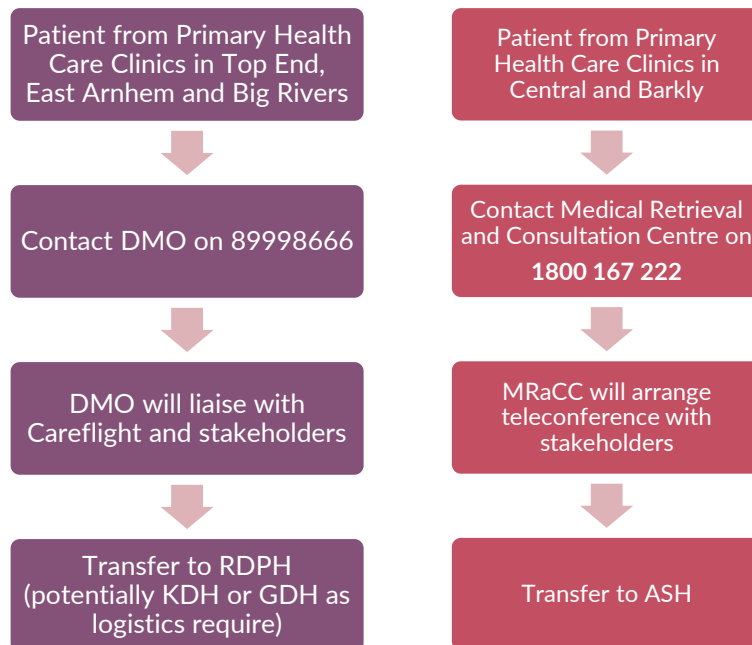
Patients managed in remote clinics or the community after being diagnosed with sepsis are at risk of deterioration. Urgent referral to a tertiary hospital should be prioritised. Prior to retrieval, consideration of an escort for those patients whose disposition is likely intensive care units needs to occur. Ensure appropriate nursing staff and retrieval team composition is allocated to care for the patient so they can be closely monitored.

[ISOBAR](#) or [ISBAR](#) and sepsis pathway should be used to communicate critical information upon handover to ensure the right information is provided to the receiving team to continue to provide care for the patient. Ensure all culture pathology are provided to the retrieval team.

Figure 5: Referral to Higher Level of Care

HANDOVER	Prepare for Transfer:
	<input type="checkbox"/> Follow local transfer procedure
	<input type="checkbox"/> Discuss management plan with patient and/or caregiver and arrange an escort if required
	<input type="checkbox"/> Use ISOBAR/ISBAR to handover to receiving team
	<input type="checkbox"/> Handover culture pathology to the retrieval team
	<input type="checkbox"/> Handover sepsis pathway to the retrieval team

Figure 6: Process of Referral to Higher Level of Care for Remote Primary Health Care Clinics



9. Ongoing Management Plan in Primary Health Care Setting While Awaiting Retrieval

The components of ongoing care of patients with sepsis will vary depending on the source of infection as well as the severity of a patient's illness, underlying illnesses and/or immunosuppression.

Critical information and sepsis management plan should be clearly documented in the patient's medical record to ensure communication of the care plan to clinicians involved in the ongoing care of the patient. Refer to [The Clinical Record Documentation NT Hospitals Policy](#) that outlines the requirements for clinical documentation. The management plan should be communicated at handover and to the senior doctor, medical retrieval team and the patient and/or caregiver.

In addition to regular documentation, documentation should include:

- Likely source of infection
- Any further investigation plans
- Frequency of observations and monitoring
- Fluid balance
- Medications that are withheld such as anti-hypertensive and/or diuretic medications
- Antibiotic regimen as per CARPA and in consultation with retrieval specialists/IFD
- Consultation with relevant specialists e.g. infectious diseases or intensive care teams

10. Care Planning on Return to Home or to Community from Hospital

Sepsis can have long-lasting effects including reduced psychological and cognitive functioning. Discuss the cognitive and psychological effects that may occur after diagnosis and treatment for sepsis, including fatigue and anxiety. Ensure follow-up requirements have been discussed with the patient and carers and ensure this is reflected in the electronic health record/recall management system.

Discharge documentation from acute care services must include;

- A formal diagnosis of sepsis
- A referral to the usual primary care provider with a plan for any follow-up requirements,
- Details of the senior clinician or care coordinator where appropriate.
- Contact details for follow up requirements such as Allied Health, Outpatients or Community Clinic etc.

Quality Assurance		
	Method	Responsibility
Implementation	<p>Document will be available for all staff via the PGC.</p> <p>Primary Health Network, Remote Health Atlas and Remote Area Health Corps sites kept updated.</p> <p>Education supporting this guideline is available via MyLearning.</p>	<p>PGC Administrators</p> <p>Sepsis Nurse Management Consultant</p> <p>All relevant clinical employees.</p>
Review	Document will be reviewed within a period of 1 year or as changes in practice occur.	Preventing and Controlling Healthcare associated infection Committee, Director Safety and Quality
Evaluation	Compliance with PHC paediatric sepsis pathway will be audited as per the required audit scheduled.	Preventing and Controlling Healthcare associated infection Committee, Director Safety and Quality
Compliance	Adverse events will be recorded in the patient's notes and Riskman	All Staff




Key Associated Documents	
Key Legislation, By-Laws, Standards, Delegations, Aligned & Supporting Documents	<p>Australian Commission on Safety and Quality in Health Care (2021). National Safety and Quality Health Service Standards. Retrieved from The NSQHS Standards Australian Commission on Safety and Quality in Health Care</p> <p>Antimicrobial Stewardship Clinical Care Standard</p> <p>NSW Government: Clinical Excellence Commission (2019). Northern Territory Sepsis Management Review July 2019.</p>
References	<ol style="list-style-type: none"> 1. Rhodes A et al. Surviving Sepsis Campaign: International Guidelines for Management of Sepsis and Septic Shock. Critical Care Medicine Journal; 2016 [cited 2021 February 1]. Available from: https://journals.lww.com/ccmjjournal/Fulltext/2017/03000/Surviving_Sepsis_Campaign_International.15.aspx 2. Burrell A, McLaws ML, Fullick M, Sullivan R, Sindhusake D. Sepsis Kills: Early intervention saves lives. Clinical Excellence Commission NSW. Medical Journal of Australia; 2016 [cited 2021 February 1]. Available from: https://www.mja.com.au/journal/2016/204/2/sepsis-kills-early-intervention-saves-lives 3. Davis J, Cheng A, McMillian M, Humphrey A, Stephens D, Anstey N. Sepsis in the tropical Top End of Australia's Northern Territory: disease burden and impact on Indigenous Australians. Medical Journal of Australia; 2011;194:519-524. Available from: https://www.mja.com.au/journal/2011/194/10/sepsis-tropical-top-end-australias-northern-territory-disease-burden-and-impact 4. Singer M, Deutschman C, Seymour C. <i>The Third International Consensus Definitions for Sepsis and Septic Shock (Sepsis-3)</i>. Journal of American Medical Association. 2016 [cited



Key Associated Documents	
	<p>on 2021 February 18]; 315(8): 801-810. Available from: https://jamanetwork.com/journals/jama/fullarticle/2492881</p> <ol style="list-style-type: none"> 5. Gatewood M, Wemple M, Greco S, Kritek P, Durvasula R. A quality improvement project to improve early sepsis care in the emergency department. <i>British Medical Journal; Quality & Safety</i>; 2015 [cited on February 1]; 24 (12), 787–795. Available from: https://pubmed.ncbi.nlm.nih.gov/26251506/ 6. Hayden G, Tuuri R, Scott R, Losek J, Blackshaw A, Schoenling A, Nietert P, Hall, G. Triage sepsis alert and sepsis protocol lower times to fluids and antibiotics in the. <i>American Journal of Emergency Medicine</i>; 2016 [cited on 2021 February 1]; 34(1), 1–9. Available from: https://pubmed.ncbi.nlm.nih.gov/26386734/ 7. Ferrer R, Martin-Loeches I, Phillips G, Osborn T, Townsend S, Dellinger P, Artigas A, Schorr C, Levy M. Empiric Antibiotic Treatment Reduces Mortality in Severe Sepsis and Septic Shock From the First Hour: Results From a Guideline-Based Performance Improvement Program. <i>Critical Care Medicine Journal</i>; 2013 [cited on 2021 February 1]. Available from: https://pubmed.ncbi.nlm.nih.gov/24717459/ 8. Australian Commission for National Safety and Quality in Health Service Standards. Antimicrobial Stewardship Clinical Care Standard. Australian Commission; 2020 [cited on 2021 February 1]. 9. NSW Clinical Excellence Commission. Northern Territory Sepsis Management Review July 2019. NSW Clinical Excellence Commission; 2019. 10. Australian Sepsis Network. Sepsis Epidemiology. 2020 [cited 2021 February 1]. Available from: https://www.australiansepsisnetwork.net.au/healthcare-providers/sepsis-epidemiology

Definitions, Acronyms and Alternative Search Terms	
Term	Description

National Safety and Quality Health Service Standards							
							
Clinical Governance	Partnering with Consumers	Preventing and Controlling Healthcare Associated Infection	Medication Safety	Comprehensive Care	Communicating for Safety	Blood Management	Recognising & Responding to Acute Deterioration
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Appendix A: Adult Sepsis Pathway for Primary Health Care Facilities

 NORTHERN TERRITORY GOVERNMENT		DEPARTMENT OF HEALTH		Principal name: Other name(s): D.O.B: HRN: Sex:	Patient Label
PRIMARY HEALTH CARE ADULT SEPSIS PATHWAY		Address must be documented if patient details handwritten			
<p>Sepsis is a time-critical MEDICAL EMERGENCY.</p> <p>Clinical pathways never replace clinical judgment. Use this pathway for patients 13 years or over, in conjunction with CARPA manual and Remote Early Warning Score (REWS).</p>					
Sepsis screening on <input type="text" value="DD / MM / YY"/> at <input type="text" value="HH : MM"/> Name: <input type="text" value="Clinician"/>					
<p>Could it be sepsis?</p> <p>Consider sepsis in all patients with signs/symptoms of an infection and abnormal vital signs. Presentation can vary between patients and at times may not be obvious.</p>					
RECOGNISE	Are there signs/symptoms that are consistent with an infection?		Increase your suspicion of sepsis in these patients:		
	<input type="checkbox"/> Fever, rigors, myalgia, chills <input type="checkbox"/> Neurological: confusion, neck stiffness, headache <input type="checkbox"/> Skin: cellulitis, increased pain, infected wounds, tenderness out of proportion <input type="checkbox"/> Respiratory: cough, sputum, breathlessness <input type="checkbox"/> Abdomen: severe pain, tenderness <input type="checkbox"/> Genitourinary: dysuria, frequency, discharge <input type="checkbox"/> Intravenous (IV) line and dialysis access: redness, pain, swelling, discharge <input type="checkbox"/> Musculoskeletal: swollen, painful, tender, hot joints or limbs, back pain or spinal tenderness		<input type="checkbox"/> Aboriginal and Torres Strait Islander people greater than 45 years, non-Indigenous people greater than 65 years <input type="checkbox"/> Homeless <input type="checkbox"/> Alcohol misuse <input type="checkbox"/> Previous sepsis admission <input type="checkbox"/> Re-presentation <input type="checkbox"/> Worsening of recently treated infection <input type="checkbox"/> Recent surgery or invasive procedure <input type="checkbox"/> Chronic illnesses: diabetes, renal failure, haemodialysis, cirrhosis <input type="checkbox"/> Bacteraemia risk: prosthetic valves, IV drug use, cardiac implantable electronic device, indwelling medical devices <input type="checkbox"/> Immunocompromised: HIV, cancer or immunosuppressive therapy <input type="checkbox"/> Patient on beta-blockers <input type="checkbox"/> Recent trauma including minor trauma		
	<p>PLUS any of the following criteria:</p>				
	<input type="checkbox"/> REWS greater than 5 <input type="checkbox"/> A drop in systolic blood pressure (SBP) of 40 mmHg compared to usual SBP <input type="checkbox"/> An isolated vital sign in the red zone of the REWS		<input type="checkbox"/> REWS of 3 or more <input type="checkbox"/> Increasing REWS <input type="checkbox"/> Increasing respiratory rate of 25/minute <input type="checkbox"/> Lactate greater than 2 mmol/L <input type="checkbox"/> New altered mental status <input type="checkbox"/> White cell count greater than $12.0 \times 10^9/L$ or less than $4.0 \times 10^9/L$, where POCT is available <input type="checkbox"/> Petechiae <input type="checkbox"/> Unexplained severe/strong pain <input type="checkbox"/> Clinician/patient/caregiver concerns		
RESPOND & ESCALATE					
	Patient may have septic shock		Patient may have sepsis or have other causes for deterioration		
	Top End, East Arnhem & Big Rivers: Urgent escalation to on-site Rural Medical Practitioners (RMP) or Duty Medical Officer (DMO) on 8999 8666 .		Notify DMO, onsite RMP or MRaCC		
	Central & Barkly: Urgent escalation to Medical Retrieval and Consultation Centre (MRaCC) on 1800 167 222 .				
If sepsis suspected by a senior medical officer, commence the SEPSIS BUNDLE . Consider alternate diagnoses and simultaneous investigation and treatment for differential diagnoses.					
If sepsis is not suspected now , document the provisional diagnosis in the medical record. Re-evaluate as clinically indicated. If patient deteriorates, re-screen by using this pathway.					
<input type="checkbox"/> If to be discharged home, give patient sepsis recognition education.					

 NORTHERN TERRITORY GOVERNMENT		DEPARTMENT OF HEALTH		Principal name: Other name(s): D.O.B: HRN: Sex:	Patient Label
PRIMARY HEALTH CARE ADULT SEPSIS PATHWAY		Address must be documented if patient details handwritten			
SEPSIS BUNDLE: 6 KEY ACTIONS IN 60 MINUTES* *If patient at risk of febrile neutropenia with septic shock, administer antibiotics within 30 minutes.					
RESUSCITATE	Ensure management plan aligns with patient's goals of care. If there are any clinically indicated variations in care to the pathway, document this in the patient record.				
	1. Consider oxygen therapy				<input type="checkbox"/>
	2. Establish intravenous (IV) access If unsuccessful, obtain intraosseous (IO).				<input type="checkbox"/>
	3. Perform tests, prioritising blood taken in the following order: blood cultures prior to antibiotics, CG4+ and CHEM8+. Do not delay antibiotics if unable to collect or inadequate sample or analyser issues. Other investigations as indicated: sputum, wound and melioidosis swabs, pathology or stool and urine samples. Send culture pathology with the patient to the hospital.				Blood cultures <input type="checkbox"/> First Lactate <input type="checkbox"/>
	4. Administer IV antibiotics (check allergies) If source unknown, use undifferentiated sepsis/septic shock antibiotic regimen. If source known, use empirical antibiotic regimen. Ensure nursing staff administer antibiotics immediately. If surgical source suspected, MRaCC/DMO to consult surgical team.				<input type="checkbox"/>
	5. Assess fluid state and consider fluid resuscitation If SBP less than 100mmHg or lactate greater than 2mmol/L commence 250 to 500 mL 0.9% sodium chloride or Hartmann's (up to 30mL/kg). Use smaller volumes in renal or cardiac patients. Consider inotropes early in consultation with MRaCC, CareFlight or ED Specialist: Metaraminol 0.5mg to 1mg (1mL to 2mL) IV as per 'Metaraminol Administration PHC Remote Protocol' OR Adrenaline 1 to 10 mcg/kg/hour as per 'Adrenaline Infusion PHC Remote Guideline'				<input type="checkbox"/>
6. Monitor signs of deterioration and urine output While waiting for the retrieval service, monitor vital signs and calculate REWS every 15 to 30 minutes (as per CARPA) and urine output every 60 minutes. If warranted, insert IDC.					<input type="checkbox"/>
					
RE-ASSESS & MONITOR	Re-assess and monitor observations. Aim for the following:				
	<input type="checkbox"/> Targeted vital signs as per medical consultation <input type="checkbox"/> Lactate less than 2 mmol/L <input type="checkbox"/> Urine output greater than 0.5mL/kg/hour				
HANDOVER	Escalate for a medical review if patient meets any of the following:				
	<input type="checkbox"/> Targets are not achieved <input type="checkbox"/> Lactate not trending down <input type="checkbox"/> Urine output less than 0.5mL/kg/hour <input type="checkbox"/> New altered mental state <input type="checkbox"/> Clinician/patient/caregiver concerns				
HANDOVER	Prepare for Transfer:				
	<input type="checkbox"/> Follow local transfer procedure <input type="checkbox"/> Discuss management plan with patient and/or caregiver and arrange an escort if required <input type="checkbox"/> Use ISOBAR/ISBAR to handover to receiving team <input type="checkbox"/> Handover culture pathology to the retrieval team <input type="checkbox"/> Handover sepsis pathway to the retrieval team				