Safer Care Victoria

Implementing a sepsis bundle of care in emergency departments and urgent care centres

Change package

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Contents

Introduction

This change package contains guidance and resources to help emergency departments (EDs) and urgent care centres (UCCs) to implement a sepsis bundle of care. Many patients are admitted via EDs and UCCs – providing the opportunity to recognise and manage sepsis early (through administration of antibiotics and fluid resuscitation) and help improve patient outcomes.

Sepsis is a medical emergency and occurs when the body has an extreme response to an infection. It can lead to organ failure and death if not treated promptly. The in-hospital mortality rate is estimated to be about 25 per cent globally.[1]

ABOUT THIS CHANGE PACKAGE

This change package incorporates the successes and lessons from SCV's sepsis bundle of care project, as well as the separate but connected Better Care Victoria (BCV) whole-of-hospital sepsis scaling collaboration. In 2016 and 2017, our Emergency Care Clinical Network offered the sepsis bundle of care project to Victorian emergency departments EDs. In 2018, the project was expanded to include UCCs to facilitate the recognition, treatment and appropriate referral of sepsis within regional and rural areas.

The document includes:

- a step-by-step guide to implementing the sepsis pathway (with project timeline)
- examples of measures to track
- quality improvement tools, such as driver diagram and plan-do-study-act (PDSA) templates.

Additional resources are available at www.bettersafercare.vic.gov.au/clinical-guidance/emergency/sepsis including:

- the sepsis pathway, adapted for the emergency setting and originally developed by the Royal Melbourne Hospital and Peter MacCallum Cancer
- a data collection tool
- a run chart template
- lanyard/poster examples.

WHY IMPLEMENT THE SEPSIS BUNDLE OF CARE?

As sepsis is time critical, it is imperative that frontline clinicians have awareness and knowledge to recognise sepsis and initiate appropriate care.

Sepsis bundles of care and clinical sepsis pathways guide appropriate recognition and care and have been shown to improve patient outcomes and reduce costs.[2,3]

The sepsis bundle of care consists of six key actions in 60 minutes:

1. Oxygen administration
2. Two sets of blood cultures
3. Venous blood lactate
4. Fluid resuscitation
5. Intravenous antibiotics
6. Monitoring observations

WHEN TO INITIATE THE PATHWAY

Sepsis pathway initiation is guided by **the presence of infection** and abnormal vital signs. The sepsis recognition criteria are based on the following indicators:

- Poor outcomes (severe sepsis) – quick Sepsis Related Organ Failure (qSOFA) score and lactate level[4,5,6]
- Early warning signs – Systemic Inflammatory Response Syndrome (SIRS)[7,8]

Severe signs

≥ of the following:

- SBP < 100 mmHg
- Altered mental status
- Lactate > 2 mmol/L

Sepsis warning signs

≥ of the following:

- Temperature < 36°C or > 38°C
- Heart rate > 90 per minute
- Respiratory rate > 20 per minute
- WCC < 4 or > 12 x109/L

The Sepsis-3 definitions, published in 2016 by The Sepsis Definitions Task Force, no longer recognise Systemic Inflammatory Response Syndrome (SIRS) criteria as helpful to identify sepsis.[4] The primary focus should always be early recognition and prompt treatment. Therefore, for the ECCN and BCV sepsis projects, both qSOFA **and** SIRS were used to recognise possible sepsis to ensure patients received timely and appropriate care.

NEED HELP OR ADVICE?

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THANK YOU

We acknowledge the previous work done by the Royal Melbourne Hospital and Peter MacCallum Cancer Centre in developing the sepsis pathway, as well as the work of the BCV whole-of-hospital sepsis scaling collaboration. Thank you to SCV's sepsis project subcommittee members: Gabriel Blecher, Catherine Church, Helen Dobson, Ashley Handy, Trish Heinrich, Kate Hoskin, Simon Jemmett, Tash Jennings, Natalie Ladner, Rohan Laging, Alicia Neels, Simone O'Brien, Jeff Robinson and Peter Sloan. A special thank you to Professor Anne-Maree Kelly for her guidance and support.

Implementing a sepsis bundle of care – step-by-step guide

To successfully implement the sepsis pathway into your health service, you will need a project team and a plan. You will also need to understand the current state of practice, gather baseline data or information.

It is reasonable to assign six to 12 months to implement a sepsis pathway. Use the below timeline as a guide to adapt and implement a sepsis pathway at your health service, depending on available resources. Further information on each phase is detailed in the following pages.

Suggested project timeline and phases

Activity	1	2	3	4	5	6	7	8	9	10	11	12
PLAN*												
1. Build a team and establish governance	•											
2. Define the problem and develop a project aim	•											
3. Define project measures	•											
4. Collect initial measures		•	•									
5. Identify changes required for implementation (including tools and resources to support the changes)			•	•	•							
6. Develop a communication and education strategy				•	•							
7. Complete project plan and submit to executive sponsor/senior leadership team					•							
PILOT#												
8. Pilot the sepsis pathway and test changes						•	•	•				
IMPLEMENT												
9. Embed the changes into standard practice									•	•	•	
SUSTAINABILITY												
10. Sustain and spread the changes											•	→

* Document steps 1-7 on the project plan (see **Appendix 1**)

Use the Plan-Do-Study-Act template to guide testing (see **Appendix 5**)

1. BUILD A TEAM AND ESTABLISH GOVERNANCE

Build a team

You will need to build a team to help deliver the project. The project team should be multidisciplinary and include all relevant stakeholders.

Consider the following members to include in your team:

- ED or UCC/acute nurse
- ED physician, nurse practitioner or local GP
- executive sponsor
- local champions
- quality or clinical governance representative
- infection prevention/control nurse
- consumer representative
- improvement advisor (if available)
- infectious diseases physician (if available)
- pharmacist (if available)
- local pathology representative (if available)
- local ambulance representative (if available).

As a **minimum**, have a nursing and medical representative on your team.

It can be challenging embarking on project work if you have a clinical caseload. Consider the addition of clinical and non-clinical staff to your team to distribute the workload and ensure the project can be delivered successfully.

Each team member should have defined roles and responsibilities.

Project lead

Nominate a project lead, who can coordinate the project timeline and team. It is beneficial if the project lead has an interest in sepsis or has experience with quality improvement initiatives.

Executive sponsor

The role of the executive sponsor is to:

- ensure the project's goals align with the health service priorities
- provide support and advocate for the project at an executive level
- assist with project accountability
- manage significant issues.

Local champions

Identify champions across multiple disciplines (nursing, medical, pharmacy) and levels of seniority (senior leaders, frontline clinicians). You may like to make them identifiable, with a special t-shirt or a badge.

Local champions can facilitate the successful implementation of the sepsis bundle, including:

- promoting the use of the sepsis pathway
- providing education at the point of care
- addressing issues efficiently
- feeding back to the project team.

2. DEFINE THE PROBLEM AND DEVELOP A PROJECT AIM

(Adapted from the Institute of Healthcare Improvement (IHI) Quality Improvement project charter.)

What are you trying to accomplish? Start by defining the:

- problem
- project description
- rationale
- expected benefits and outcomes
- aim statement.

Problem

Identify the current issues or problems related to sepsis management that you hope to improve.

For example:

- a lack of consistent practice
- no sepsis policy or guideline available
- poor staff understanding and awareness of sepsis.

Project description

Outline what you intend to achieve by completing this project. Consider your long-term vision and short-term project goals.

For example:

- Implement a standardised pathway for managing sepsis
- Improve staff knowledge
- Increase staff capability in managing sepsis.

Rationale

Explain why it is important that your health service embarks on this project. Include baseline data if available.

For example: There is poor recognition and management of sepsis within our health service, as evidenced by our in-hospital mortality rate of 25 per cent.

Expected outcome and benefits

Describe the expected outcome and benefits this project will have on patients, staff, the health service and community. Also outline how you intend to collect information on the actual outcomes and benefits.

For example:

- We expect staff confidence in managing sepsis will increase, which will be measured by collecting staff stories.
- We expect length of stay will decrease, which will be measured by collecting length of stay pre and post implementation of the sepsis bundle of care.

Aim statement

Develop a project aim that outlines the outcomes you are hoping to achieve. The project aim should be:

- specific
- measurable
- achievable
- relevant
- time bound.

For example: 80 per cent of patients who fit sepsis criteria in the emergency department will be managed according to the sepsis bundle of care by December 2019.

3. DEFINE PROJECT MEASURES

Collecting data from multiple measures will help you assess whether the change you have made is an improvement. When defining your project measures, ensure you provide an operational definition so that it is clear about what data to collect. Also identify the numerator and denominator.

Choose measures from the following three categories to provide an overview of the impact on the system of changes you are making:

- **Outcome measure(s)** measure the impact of the project on the health system (e.g. sepsis-related mortality rate).
- **Process measures(s)** measure a step in the system that can contribute to a positive impact (e.g. time to administration of intravenous antibiotics, proportion of patients who have lactate measured, proportion of patients who had two sets of blood cultures collected).
- **Balancing measure(s)** measure unintended consequences of the project (e.g. monthly antibiotic use, total length of stay).

See **Appendix 2** for example project measures.

Consult key stakeholders and discuss with your project team before defining your final measures. Consider the time required to collect each data point and whether ethics is required (check with your health service, you may need to submit a low risk ethics application).

4. COLLECT INITIAL MEASURES

To show improvement, you will need to collect data before and after the implementation process. Prior to any project implementation or education, collect baseline data from the previous six months.

Liaise with your health information department to identify patient cases of sepsis.

Emergency departments

Use Victorian Admitted Episodes Dataset (VAED) discharge codes to identify patients presenting via ED.

For a comprehensive list of ICD-10 AM codes used to define sepsis, refer to: Sundararajan V, MacIsaac CM, Presneill JJ, Cade JD, Visvanathan. Epidemiology of sepsis in Victoria Australia. Crit Care Med. 2005; 33:71-80.

Urgent care centres

Use local coding processes if available or identify patients by screening presenting complaints. Consider screening for the following key words:

- sepsis or septic shock
- urosepsis or urinary tract infection
- pneumonia
- infection.

Inclusion criteria

Use the sepsis recognition criteria to identify patient cases to include in your baseline data:

1. Known or suspected infection

and

2. Abnormal vital signs
   - ≥ 2 of the following: systolic blood pressure < 100 mmHg, altered mental status, lactate > 2 mmol/L

and/or

   - ≥ 2 of the following: temperature < 36 ˚C or > 38 ˚C, heart rate > 90 per minute, respiratory rate > 20 per minute, white cell count < 4 or > 12 x 10^9/L

If you are unsure, consult the medical project lead for advice.

Aim to collect up to 30 patients, or as many patients as you can.

Download our example data collection spreadsheet.

5. IDENTIFY CHANGES REQUIRED FOR IMPLEMENTATION

To implement the sepsis bundle of care into your ED or UCC you will need to identify what changes need to occur.

A **driver diagram** is a useful tool that can be used to determine what contributes to the achievement of your project aim. It is a visual display of the relationship between the project aim, the primary and secondary drivers and specific change ideas.

Driver diagram structure

Aim	Primary driver	Secondary driver	Change idea
		Secondary driver	Change idea
	Primary driver	Secondary driver	Change idea

The main components of a driver diagram are:

- **Aim**: a clear goal or objective describing the desired outcome, it should be specific, measurable and time-bound
- **Primary driver**: components or factors that contribute directly to achieving the aim
- **Secondary driver**: actions or interventions that are required to achieve the primary drive
- **Specific change ideas**: ideas and concepts to test that will support or achieve the secondary driver.

Complete the driver diagram with the entire project team. It is beneficial if a range of stakeholders review the drivers and change ideas to ensure the whole system is considered and that the project is a success.

New tools and resources may be required to enact the specific changes ideas identified.

See **Appendix 3** for an example driver diagram and specific change ideas.

See **Appendix 3** for a driver diagram example.

To learn more about driver diagrams, go to the IHI website.

6. DEVELOP A COMMUNICATION AND EDUCATION STRATEGY

To ensure project success you will need to raise awareness and engage key stakeholder groups early.

It can be challenging to keep stakeholders well informed about the project in a busy hospital environment. It is best that you use multiple methods of communication and education to capture as many people as possible.

Be creative!

Some ideas include:

- using your local champions to spread the word and be present at the point of care to provide one-on-one education when required
- sending emails or hospital newsletter
- creating a slogan or catchy project title
- holding a project launch (morning or afternoon tea)
- setting a standing agenda item at regular meetings
- using double staffing time or staff huddles to project short, regular updates
- creating a project board in the ED/UCC to display educational information and project updates
- conducting a quiz before and after an education session – download our educational presentations
- distributing information to rural general practitioners (for UCC) – see **Appendix 4**
- creating posters and lanyards - download our examples
- developing new guidelines or policies.

Download the ED and UCC sepsis pathway.

7. COMPLETE PROJECT PLAN AND SUBMIT TO EXECUTIVE SPONSOR/SENIOR LEADERSHIP

Collaborate and consult with key stakeholders and members on the project team.

Document your project plan in the template provided (**Appendix 1**) and submit to your executive sponsor and senior leadership (ED/UCC nurse unit manager and medical director) for review. This will ensure your executive sponsor/senior leadership are well informed, can offer advice or support and advocate for the project at an executive level.

Request feedback and amend the project plan accordingly. Ensure you have documented endorsement of your project plan from executive and senior leadership.

Set the project up for success by completing a sustainability plan at the start of the project. The following tools and resources can help you plan for sustainability:

- Health Quality Ontario sustainability planner (www.hqontario.ca)
- NHS sustainability model and guide (www.improvement.nhs.uk)

8. PILOT THE SEPSIS PATHWAY AND TEST CHANGES

To pilot means to test on a small scale, with one real or simulated patient.

Benefits of testing include:

- learning how to adapt the change to the local setting
- understanding and overcoming potential barriers or challenges
- involving key stakeholders so they become invested early
- reducing resistance upon implementation.

We recommend using Plan-Do-Study-Act (PDSA) cycles to test the sepsis pathway and other identified change ideas (from the driver diagram). PDSA cycles allow you to test and adapt the changes in multiple phases so that you can turn an idea into a change that results in improvement.

Use the PDSA template to guide you to:

- Plan – develop questions and predictions and details of the cycle (who, what, where, when)
- Do – carry out the plan, document problems and unexpected observations, collect data
- Study – analyse and compare data, summarise learnings
- Act – decide on your next steps and any changes to be made

Documentation will help you keep track of the changes you have made and the impact they have had.

Consult your key stakeholders regularly and request feedback about the feasibility of the changes you are making.

PDSA example

	Plan	Do	Study	Act
Sepsis pathway	Implement the sepsis pathway	Collect feedback from staff and any issues with the pathway	Staff unsure how to document if the pathway has been ceased and why	Add section to the pathway, 'pathway ceased at (date/time), for (reason)'
Sepsis quiz (pre and post education)	Develop quiz to assess knowledge of staff pre and post education	Test the quiz on two participants, measure how long it took for participants to complete	The participants identified errors in the questions and inconsistencies between the quiz and the education package	Review quiz, align content in education package with quiz questions

9. EMBED THE CHANGES INTO STANDARD PRACTICE

The implementation phase involves embedding the successful changes from the pilot/testing phase.

Identify a specific launch date to start using the sepsis pathway. Ensure you deliver education and disseminate communication **before** the launch date so that staff are prepared for implementation.

Aim to have a local champion on each shift in the first few weeks of implementation, where possible. The additional support will help encourage use of the sepsis pathway, provide education as needed, manage issues and obtain feedback.

Data collection

Once implementation has begun, start to collect data on your chosen project measures. It is best to track this weekly if you have adequate patient numbers. You may like to display your results and project progress in the department so staff are informed.

We recommend tracking your results on a run chart. Download our example template.

Develop a process of identifying patients. Consider the following:

- Create a log book where staff can place stickers of septic patients.
- Request staff to file the completed sepsis pathways in an allocated area.
- Liaise with medical records or the health information department to identify patients with a sepsis discharge code (request for a fortnightly or monthly list) – this will help to identify 'missed' patients.

10. SUSTAIN AND SPREAD THE CHANGES

The sustainability phase of the project involves sustaining and spreading the changes. Once the change has been sustained within the ED/UCC, consider spreading to other areas of the health service.

Sustainability

Sustainability means holding the gains and continuously improving as required. It is building on the hard work that has already been completed (in planning and implementing). It is a collective responsibility and the greatest impact on patients will result from continuing the project success.

To indicate that your improvements have been sustained, regular periodic audits will be required. We recommend conducting at least monthly audits post implementation to show sustained results. Once changes have been sustained, you can change to three-monthly or six-monthly audits.

Revisit the sustainability planner you completed at the start of the project (step 7). Revise your sustainability plan, if required, based on your experience during the project.

Spread

Spreading the changes will involve the dissemination of successful interventions into other care settings, for example, implementing the sepsis pathway outside of the emergency care setting.

Develop a plan if you intend to spread the sepsis pathway outside the ED or UCC.

Consider:

- agenda or aim
- governance
- communication
- measurement system.

See **Appendix 6** for an initial plan for spread.

Appendix 1: Project plan

1. TEAM AND GOVERNANCE

Project title	
Project start date	
Team members and roles	Project lead
	Nursing and medical representatives
	Consider: quality team or clinical governance team, improvement adviser, pharmacy, infectious diseases, infection prevention/control, pathology, local AV, clinical champions

Approval to implement and use sepsis pathway and empiric antibiotic guide

Committee, group or person required to approve	Next meeting date	Date approved
E.g. Medication safety committee		

Project reporting

Committee or person	Frequency of reporting
E.g. ED/UCC NUM	Monthly

Project team meetings

Meeting	Date
E.g. Meeting 1 – assign roles and responsibilities	

2. PROBLEM AND PROJECT AIM

What are you trying to accomplish?	
Problem	Identify the current issues and problems related to sepsis management
Project description	Outline what you intend to achieve by completing this project
Rationale	Explain why it is important for your health service to undertake this project
Expected outcomes and benefits	Describe expected outcomes and benefits to patients, staff and the community
Aim statement	Outline the outcomes you are hoping to achieve – should be specific, measurable and time-bound

3. PROJECT MEASURES

Refer to **Appendix 2** for examples.

Outcome measure(s)

Measure
Operational definition
Numerator
Denominator

Process measure(s)

Measure
Operational definition
Numerator
Denominator

Balance measure (s)

Measure
Operational definition
Numerator
Denominator

4. INITIAL MEASURES

Download our data collection tool to record baseline data.

5. CHANGES TO IMPLEMENT

Refer to **Appendix 3** for a driver diagram example.

Specific change ideas identified in driver diagram

Change idea	Drivers	Tools or resources required
E.g. Ensure point-of-care equipment is ready and available in triage	Primary: Increase recognition at triage	Blood pressure machine Pulse oximeter Point of care testing (iSTAT)
	Secondary: Assess patients appropriately in triage	
	Primary:	
	Secondary:	

6. COMMUNICATION AND EDUCATION STRATEGY

What	Who	When
E.g. Staff education	All nursing, medical and pharmacy staff in ED/UCC	Multiple sessions during double-staffing over two weeks

7. EXECUTIVE SPONSOR AND SENIOR LEADERSHIP ENDORSEMENT

☐ Complete sustainability plan (see Health Quality Ontario sustainability planner or NHS sustainability model and guide)

By signing the below, you agree to endorse and support this project according to the plan outlined above.

ED/UCC NUM	Name	
	Signature	Date
ED/UCC director	Name	
	Signature	Date
Executive sponsor	Name	
	Signature	Date

Appendix 2: Example project measures

OUTCOME MEASURE

Sepsis-related mortality

Operational definition

The number of patients who die in hospital from sepsis. This excludes patients who are transferred during an episode of care.

Numerator

The number of patients who die from sepsis within the health service.

Denominator

Total number of patients identified with sepsis within the health service.

PROCESS MEASURES

Recognition at triage

Operational definition

The number of patients who are recognised with sepsis or suspected sepsis at triage. To confirm recognition, triage documentation should include the words or phrases: sepsis, suspected sepsis, possible sepsis.

Numerator

The number of patients recognised at triage, as evidenced by clear documentation.

Denominator

Total number of patients identified with sepsis within the health service.

Time to intravenous antibiotics

Operational definition

The time from triage to administration of intravenous antibiotics, recorded in minutes. This information can be collected from the triage record and medication chart, respectively.

Numerator

The number of minutes from triage to intravenous antibiotic administration.

Denominator

N/A

Time to intravenous fluids

Operational definition

The time from triage to administration of intravenous fluids, recorded in minutes. This information can be collected from the triage record and intravenous fluid chart, respectively. Please note if intravenous fluids were not required for this patient (for example, if they are normotensive and have a normal lactate level < 2 mmol/L).

Numerator

The number of minutes from triage to intravenous fluid administration.

Denominator

N/A

Lactate measurement

Operational definition

The number of patients who have lactate measured. This information can be collected from pathology or should be documented in the patient medical record.

Numerator

The number of patients who have lactate measured.

Denominator

Total number of patients identified with sepsis within the health service.

Blood cultures taken

Operational definition

The number of patients who have two sets of blood cultures taken. This information can be collected from the pathology or microbiology service. Also note if only one blood culture was taken.

Numerator

The number of patients who have two sets of blood cultures taken.

Denominator

Total number of patients identified with sepsis within the health service.

Transfer to higher level care

Operational definition

The number of patients who are transferred to another hospital or an intensive care unit/high dependency unit for higher level care. Document where the patient has been transferred. This information can be collected from the patient's medical record.

Numerator

The number of patients transferred to higher level care.

Denominator

Total number of patients identified with sepsis within the health service.

BALANCING MEASURE

Length of stay

Operational definition

The number of days the patient is admitted to the health service (length of stay). This can be calculated by reviewing the admission and discharges dates for the episode of care. Note if the patient has been transferred to another health service.

Numerator

The number of days the patient was admitted to the health service.

Denominator

N/A

Appendix 3: Example driver diagram

Outcome	Primary driver	Secondary driver	Specific change ideas to test
To improve the recognition and management of sepsis for adults presenting to the ED/UCC and achieve 80 per cent compliance with all elements of the care bundle by June 2021	Increase recognition of sepsis	Assess patients appropriately in triage	Ensure point-of-care equipment is ready and available in triage – i.e. blood pressure machine, pulse oximeter, iSTAT
		Design a triage recognition tool	Make triage tool available and visible for triage nurses, education and raise awareness of the tool
		Increase the use of 'sepsis' or 'suspected sepsis' terminology in triage assessment documentation	Add note to triage tool to document 'sepsis' and 'suspected sepsis'
		Align observation chart with sepsis recognition criteria	Add prompts to the observation chart to 'think sepsis'
	Implement the sepsis bundle of care	Increase use of sepsis pathway	Trial sepsis pathway with real or simulated patient
		Measure lactate	Purchase point-of-care testing machine (iSTAT) to enable the measurement of lactate in ED/UCC
		Obtain blood cultures prior to the administration of antibiotics	Ensure all ED/UCC have completed blood culture sampling competency
		Administer intravenous antibiotics within 1 hour of presentation	Ensure the recommended antibiotics are available in the ED/UCC Develop antibiotic administration cheat sheet for unfamiliar antibiotics* Consult pharmacy and involve in alert process to reduce time to administration
		Administer intravenous fluids within 1 hour for patients with hypotension or raised lactate	Ensure all ED/UCC are competent in intravenous cannulation Develop standing orders to use when the local doctor is not available*
		Have all equipment readily accessible	Make a 'sepsis trolley' which includes copies of the sepsis pathway, blood culture bottles, pre-printed pathology slips*, equipment for cannulation, blood culture sampling, etc
	Increase health service knowledge and awareness of sepsis	Education on sepsis recognition and management	Multiple education sessions at double staffing time Use real-life sepsis case study presentations Use clinical champions to promote the sepsis pathway and offer support at the point of care
		Visibility and transparency of poor clinical outcome and patient experience	Regular communication to clinical team using run chart to track progress/compliance, feedback during handover and meetings

EXAMPLE OF SPECIFIC CHANGE IDEAS

Add prompts to the observation chart to 'think sepsis'

Benalla Health updated their observations charts so that the review criteria for respiratory rate, blood pressure and temperature aligned with sepsis recognition criteria.

Observations that fit the following criteria prompt a clinical review:

- respiratory rate > 20 breaths/min
- systolic blood pressure < 100 mmHg
- temperature < 36 ˚C or > 38 ˚C

Respiratory Rate (breaths/min)	Write ≥ 30
	25 – 30
	20 – 24
	14 - 19
	9 – 13
	< 8

Blood Pressure – BP (mmHg) ↑ ↓	Write > 200
	190
	180
	170
	160
	150
	140
	130
	120
	110
	100
	90
	Write ≤ 89
	70
	60

Criteria is for Systolic triggers only

Write usual BP here: _____/_____

If systolic BP ≥ 200 or ≤ 80 write value in box

Temperature (°C) If temp ≥ 38.6 or ≤ 35 write value in box	Write ≥ 38.6
	38.1 – 38.5
	37.6 – 38.0
	36.1 – 37.5
	35.1 – 36.0
	Write ≤ 35

The following directions are then provided to 'Think Sepsis, Act Fast':

Escalate to Hospital Coordinator Review on ext 14356

- Think Sepsis - Act FAST
- RASS > + 3 or any change in behaviour /cognition/confusion
- RASS is - 4
- Ongoing deterioration despite recent interventions
- Patient & or family/carer/visitor concerns (PACE)

30 minutely

- HITH patient → Urgent Care Centre Review OR

Notify Nurse in Charge Review

any observation in the orange area

- Think Sepsis - Act FAST
- RASS > + 1 or any change in behaviour /cognition/confusion
- RASS is ≤ - 2
- If BGL < 4 or > 12
- Ongoing deterioration despite recent interventions
- Patient & or family/carer/visitor concerns (PACE)

hourly

- If observations remain in reportable limits
- HITH patient → Inform nurse team leader

Develop standing orders to use when the local doctor is not available

Rochester and Elmore District Health Service developed standing orders to provide intravenous fluid resuscitation if a doctor was unavailable.

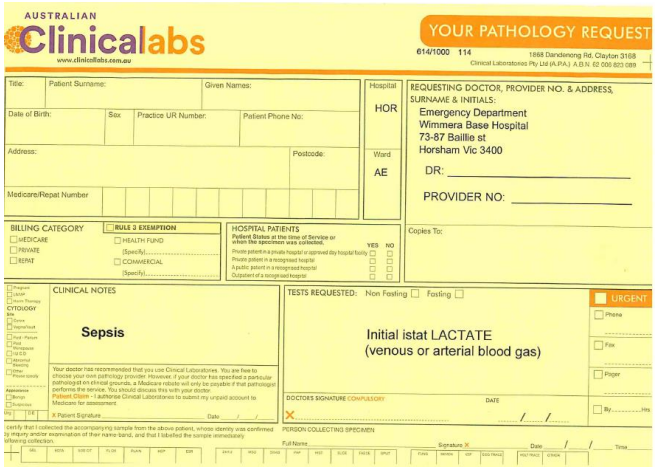
Please note: any standing orders **must** undergo local health service governance approval.

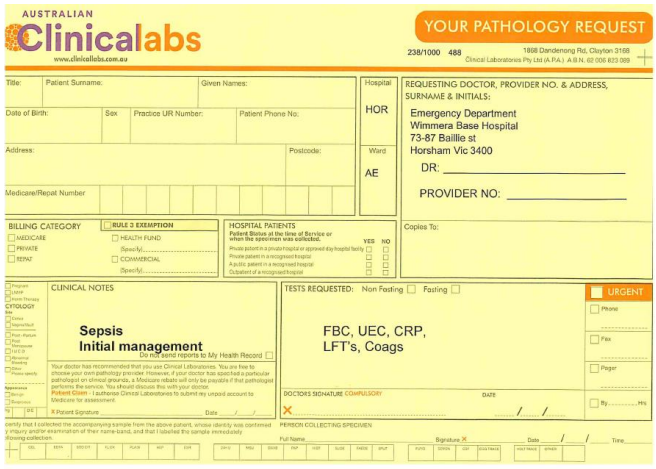
APPLICATION OF STANDING ORDER	
Areas where standing order applicable	When a medical officer is not immediately available to attend an adult septic patient on the REDHS site and a Registered Nurse is in attendance who has maintained Advanced Life Support competency.
Areas where standing order not applicable	When a medical officer is present or for children (under 18 years of age).
Reference to other Standing Orders:	Standing Orders – Usage at REDHS policy
Other Relevant Standing Orders of Interest:	Anaphylaxis, Cardiac Arrest
External Links	https://www.australiansepsisnetwork.net.au

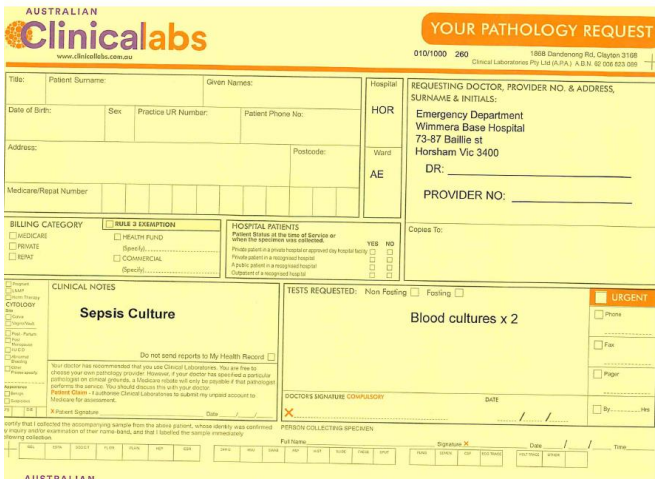
STANDING ORDER	
Background	Sepsis is time critical. Early recognition and management can significantly improve patient mortality and outcomes. Many patients with sepsis are admitted via UCC, which provides the opportunity for early intervention including pharmacology treatment and fluid resuscitation.
Purpose and scope	To provide a regulated framework for Registered Nurses who meet the requirements (as per above) to initiate drug therapy for patients with sepsis as defined below.
Precautions	
DRUG	**NORMAL SALINE**
Clinical Condition and circumstances for use	ADULT • If patient hypotensive (SBP<100mmHg) • If the patients doctor or on-call doctor is not immediately available on the phone to provide intravenous orders
Limitations	
Site of care considerations	Nil
Contra-indications	Possible pulmonary oedema & a history of cardiac dysfunction
Monitoring requirements	30 minute observations & fluid balance for 2 hours then hourly for 4 hours. Assess for deterioration as per Adult Sepsis Pathway.
Procedure	Give 1st rapid bolus of 500ml 0.9% Normal Saline. If no response to initial fluid resuscitation with ongoing hypotension repeat fluid bolus. Give 2nd rapid bolus of 500ml 0.9% Normal Saline (caution if signs of pulmonary oedema, history of cardiac dysfunction or in elderly patients.
Documentation	Generic Emergency Care Patient Record MR/265 Adult Sepsis Pathway MR/007
Dosage	Give 1st rapid bolus of 500ml 0.9% Normal Saline. If no improvement, give 2nd rapid bolus of 500ml 0.9% Normal Saline
Adverse effects	Hypervolemia & cardiac dysfunction
Management of Complications	As per Visiting Medical Officer Orders
General	

Pre-printed pathology request slips

Wimmera Health Care Group developed pre-printed pathology request slips and attached them to the sepsis pathway as a prompt. This helped to save time and ensure all relevant tests were ordered, and in a timely fashion.







Appendix 4: Information for rural GPs

WHY IS SEPSIS AN EMERGENCY?

Sepsis kills about 5000 patients each year in Australia.

There is good evidence that early intervention improves outcomes, in particular that it reduces mortality. For example, the Royal Melbourne Hospital whole-of-hospital sepsis project resulted in a 50 per cent reduction in mortality. And Safer Care Victoria's sepsis project in 24 emergency departments showed a 25 per cent relative reduction in mortality.

At **(insert health service name),** we are committed to minimising mortality and morbidity from sepsis and have instituted an adult sepsis pathway in the Urgent Care Centre (UCC) to support this.

WHAT MAKES A DIFFERENCE?

Early recognition of sepsis followed by six key actions:

1. Oxygen administration
2. Two sets of blood cultures
3. Venous blood lactate (if available)
4. Early IV fluid resuscitation (within 1 hour)
5. Early IV antibiotics (within 1 hour)
6. Monitoring observations and fluid balance

WHAT CAN YOU DO TO IMPROVE OUTCOMES FROM SEPSIS?

- Be aware of the health service's adult sepsis pathway.
- Encourage UCC staff to notify you early if they suspect sepsis.
- Attend promptly if you can.
- If you cannot attend promptly, provide phone orders for IV fluids and IV antibiotics. Don't wait for blood tests, urine dipsticks or blood cultures. Antibiotic recommendations from an expert panel are included in the sepsis pathway.
- Encourage early referral to Ambulance Retrieval Victoria (ARV) if patients demonstrate ongoing instability or, in your judgement, are likely to require ICU care.
- Encourage close monitoring with escalation to yourself or ARV if clinical deterioration occurs.

LOCAL HEALTH SERVICES AND URGENT CARE CENTRES PARTICIPATING

(Enter list)

Please see attached a copy of the **(insert health service name)** adult sepsis pathway.

For more information contact (enter name, phone number and email address of local project lead).

Appendix 5: PDSA template

PDSA series name		**PDSA cycle number in series**	
Start date		End date	
Objective for PDSA series			
This PDSA cycle will	☐ Collect information	☐ Develop a change	☐ Test a change
	☐ Implement a change		
Confidence	☐ Not confident	☐ Slightly confident	☐ Somewhat confident
	☐ Confident	☐ Very confident	

PLAN

Fill in the sections below as part of planning

What question(s) do you want to answer on this PDSA cycle?			
Briefly describe what you want to achieve in this cycle of the series?	What are we going to do? How long will the test last? Where will it be carried out? Who will carry it out?		
Task to be completed to undertake test	**Who**	**When**	**Where and how**
Prediction	What do you think will happen? Make a prediction for each question		
How will you collect the information/data needed for this cycle?			

DO

Execute the plan

Record your observations and summarise the information/data collected	Include any problems or unexpected events encountered, and any feedback from the participants.

STUDY Complete analysis of information/data			
Compare the information/data collected to your predictions and summarise the learning	What does the information/data show? Was your prediction confirmed? If not, what did you learn?		

ACT Decide the next steps			
Following this test, you will	☐ Abandon idea	☐ Modify and retest	☐ Increase scale of testing
	☐ Move to next cycle	☐ Implement	
What is you plan for the next cycle?			

Appendix 6: Initial plan for spread

Establish an aim
What do you intend to spread?
What is the target? Identify specific and measurable goals (outcome or process measures)
Who is the target population (i.e. acute ward, whole hospital)? Include the number and location of departments, units or hospitals you intend to reach.
What is your timeframe?

Governance
Who will be your executive sponsor?
Who will lead the day-to-day spread? Consider a multidisciplinary team.

Communication
What methods or channels will you use to communicate the plan for spread?
What results and stories from your initial improvement project or pilot will you use to educate and motivate staff?
Will you have to alter your communication or education for different target audiences?
How will adopters be supported (i.e. by previous project members) and how will they receive feedback about progress?

Measurement
Who is responsible for tracking and measuring outcomes?
How often will you measure progress?

PLAN ENDORSEMENT

Executive sponsor	
Name	Position
Signature	Date

Leader (of day-to-day spread)	
Name	Position
Signature	Date

Team members	
Name	Position
Signature	Date
Name	Position
Signature	Date
Name	Position
Signature	Date
Name	Position
Signature	Date
Name	Position
Signature	Date

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PARTICIPATING EMERGENCY DEPARTMENTS AND URGENT CARE CENTRES

2018

Bairnsdale Regional Health Service, Benalla Health, Cabrini Health, Castlemaine Health, Cobram District Health, Djerriwarrh Health Services, East Grampians Health Service, Epworth Geelong, Epworth Richmond, Gippsland Southern Health Service, Goulburn Valley Health, Heathcote Health, John Fawkner Private Hospital, Knox Private Hospital, Kyabram District Health Service, Kyneton District Health, Latrobe Regional Hospital, Lorne Community Hospital, Mansfield District Hospital, Maryborough District Health Service, Nathalia District Hospital, Numurkah District Health Service, Otway Health, Portland District Health, Rochester & Elmore District Health Service, Rural Northwest Health, St John of God Ballarat, St John of God Geelong, Timboon & District Health Service, Werribee Mercy Hospital, West Wimmera Health Service (Nhill), Wimmera Health Care Group

2016 and 2017

Albury Wodonga Health, Alfred Health, Ballarat Health Services, Barwon Health, Bass Coast Health, Bendigo Health, Central Gippsland Health, Eastern Health (Box Hill), , Echuca Regional Health Latrobe Regional Hospital, Mercy Hospital for Women, Monash Health (Casey, Clayton, Dandenong), Northern Health, Peninsula Health (Frankston), Peninsula Private Hospital, South West Healthcare, St Vincent's Hospital, Swan Hill District Health, West Gippsland Hospital, Western District Health Service, Western Health (Sunshine),

Safer Care
Victoria