SEPSIS: RECOGNITION AND MANAGEMENT OF ANTENATAL AND POSTNATAL SEPSIS – CLINICAL GUIDELINE

1. Aim/Purpose of this Guideline

To provide guidance for obstetricians, anaesthetists, midwives and nurses enabling prompt diagnosis and management of sepsis in pregnant and postnatal women.

2. The Guidance

2.1. Introduction

Sepsis during pregnancy and the puerperium (i.e. until 6 weeks postnatally) remains the leading direct cause of maternal death in the UK (CMACE report 2006-2008)\(^1\). 50% of deaths were due to Group A streptococcal infection. Sepsis is a medical emergency and the first hour of diagnosis is crucial in achieving a successful outcome. Each hour of delay in administering broad spectrum intravenous antibiotic is associated with a measurable increase in maternal mortality.

Sepsis is defined as an infection with a systemic inflammatory response.

Severe sepsis presents with acute organ dysfunction or tissue hypoperfusion and has a mortality rate of 20-40%\(^2\).

Septic shock is defined as the persistence of hypoperfusion despite adequate fluid replacement therapy and has a mortality rate of 60%.

Symptoms of sepsis may be less distinctive than in the non-pregnant population and are not necessarily present in all cases; therefore, a high index of suspicion is necessary. Bactereamia can progress rapidly to severe sepsis.

The most common organisms identified in pregnant women dying from sepsis are Group A beta-haemolytic Streptococcus (GAS) and E Coli.

All pregnant and recently delivered women should be informed of the signs and symptoms of genital tract infection and how to prevent its transmission\(^3\).

2.2. Risk factors for maternal sepsis in pregnancy and the puerperium

- Obesity
- Impaired glucose tolerance/diabetes
- Impaired immunity/immunosuppressant medication
- Anaemia
- Vaginal discharge
- History of pelvic infection
- History of group B streptococcal infection
- Amniocentesis and other invasive procedures
- Cervical cerclage
- Prolonged spontaneous rupture of membranes
- Vaginal trauma, caesarean section, wound haematoma
- Retained products of conception
- Group A streptococcus infection in close contacts/family members
- Black or other minority ethnic group origin

2.3. Clinical features suggestive of sepsis
- Fever or rigors
- Diarrhoea or vomiting – may indicate exotoxin production associated with early toxic shock
- Rash, generalized rash
- Abdominal/pelvic pain and tenderness
- Offensive vaginal discharge
- Productive cough
- Urinary symptoms
- General – non specific signs such as lethargy, reduced appetite
- Breast engorgement/redness
- Wound infection,
- Delay in uterine involution, heavy lochia (post natally)

Genital tract sepsis may present with constant severe abdominal pain and tenderness unrelieved by simple oral analgesia. Severe infection may also be associated with pre term labour. Toxic shock syndrome caused by staphylococcal or streptococcal exotoxins can produce symptoms including diarrhoea, nausea and vomiting.

2.4. Clinical signs suggestive of sepsis Includes one or more of the following:
- Pyrexia
- Hypothermia
- Tachycardia
- Tachypnoea,
- Hypoxia
- Hypotension
- Oliguria
- Impaired consciousness and failure to respond to treatment

These signs, including pyrexia may not always be present and are not necessarily related to the severity of sepsis

2.5. Recognition of sepsis
Maternity Early Obstetric Warning Scoring system (MEOWS) is an essential tool for assessing a woman’s clinical condition.
If infection is suspected, the named midwife must commence a MEOWS chart irrespective of location.

If MEOWS IS 4 or more complete the Sepsis Screening Tool in Appendix 3 and transfer to Delivery Suite if in the community.

Follow the Sepsis screening tool sticker and if sepsis is diagnosed then manage as 2.6
2.6. Investigations & Management of Sepsis
The following care bundle ‘Sepsis 6’ (BUFALO) should be applied immediately to achieve administration of antibiotics in the first hour of admission. This has been shown to significantly improve survival rates.

B- Blood Cultures (before the administration of any antibiotics), full septic screen (MSU/HVS/ Placental swab/ Methicillin-Resistant Staphylococcus Aureus (MRSA) and throat swabs as indicated). Contact Consultant microbiologist through switchboard.

U- Measure accurate urine output. Consider catheterisation, and commence fluid balance chart.

F- Administer IV fluid challenge. If systolic blood pressure <90, give 20ml/kg Hartmanns or 0.9% saline stat. If patient is not hypotensive administer at least 500ml Hartmanns or 0.9% saline. Beware that pregnant women may be particularly susceptible to fluid overload and pulmonary oedema because of alterations in fluid dynamics. There is a fine balance between maintaining circulation and risking lung damage.

A- Administer broad spectrum IV antibiotics as per Trust Antibiotic Guideline within one hour of recognition of severe sepsis, irrespective of renal dysfunction.

L- Measure serum lactate. Serum lactate >2mmol/l is indicative of tissue hypoperfusion and severe sepsis. Arterial blood gas measurement will also assess for hypoxia.

O- Administer high flow oxygen.

In addition
- Blood should be taken for FBC, CRP, U&Es and LFTs.
- An INR should be taken if a coagulopathy is suspected.
- Consider imaging as indicated.
- Discuss the case with Registrar and make a plan for regular review and assessment.
- Regular, frequent observations as stipulated on the MEOWS chart.
- Stop non-steroidal medicines as these are contraindicated in sepsis.
- VTE risk assessment and pharmacological thromboprophylaxis as appropriate.

Continuing management involves continued supportive therapy, removing the septic focus and administration of blood products if required.

2.7. Deteriorating Septic Patient
In severe or rapidly deteriorating cases including hypotension and/or a serum lactate >4mmol/l and where there is sign of end organ dysfunction
- Registrar needs to be in immediate attendance
- On call Anaesthetic Registrar needs to be in immediate attendance
- The on-call Consultant Obstetrician, Consultant Obstetric Anesthetist (ITU
Consultant for out of hours) should be involved
- Refer the woman to the HDU outreach team
- Advice from the Consultant Microbiologist should be urgently sought

In the event of that the woman is not responding to initial fluid resuscitation, refer to the Severely Ill Woman Guideline.
- Apply vaspressors to maintain mean arterial pressure (MAP) $>65$mmHg
In the event of persistent hypotension despite fluid resuscitation (septic shock) and/or lactate $>2$mmol/l:
  - Achieve a central venous pressure (CVP) of $\geq 8$mmHg
  - Achieve central venous oxygen saturation (ScvO2) of $\geq 70\%$ or mixed venous oxygen saturation (ScvO2) $\geq 65\%$.

### 2.8. Critical Care Unit

The decision to transfer to the Critical Care Unit care should be decided by the Critical Care Team in conjunction with the Obstetric Consultant and Obstetric Anaesthetist.

Indications for transfer to Critical Care Unit include:

<table>
<thead>
<tr>
<th>System</th>
<th>Indication</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cardiovascular</td>
<td>Hypotension or raised serum lactate persisting despite fluid resuscitation, suggesting the need for inotrope support</td>
</tr>
<tr>
<td>Respiratory</td>
<td>Pulmonary oedema, Mechanical Ventilation, Airway protection</td>
</tr>
<tr>
<td>Renal</td>
<td>Renal dialysis</td>
</tr>
<tr>
<td>Neurological</td>
<td>Significantly decreased conscious level</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>Multi-organ failure, Uncorrected acidosis, Hypothermia</td>
</tr>
</tbody>
</table>

Intravenous immunoglobulin (IVIG) is recommended for severe invasive streptococcal or staphylococcal infection if other therapies have failed. This must be discussed with the on-call Microbiology Consultant.

### 2.9. Monitoring of the fetus and delivery of the baby

The effects of maternal sepsis on fetal wellbeing include the direct effect of infection in the fetus, the effect of maternal illness/shock and the effect of maternal treatment. The risk of neonatal encephalopathy and cerebral palsy is increased in the presence of intrauterine infection.

In a critically ill pregnant woman the birth of the baby may be considered if it would be beneficial to the mother or the baby or to both. A decision on the timing and mode
of birth should be made by a senior Obstetrician following discussion with the woman if her condition allows.

If preterm delivery is anticipated, cautious consideration should be given to the use of antenatal corticosteroids for fetal lung maturity in a woman with sepsis. Consider the use of Magnesium Sulphate for neural protection for gestations < 34 weeks. (See Management of Threatened and Established Pre-term Labour Guideline).

During the intrapartum period, **continuous CTG is recommended in the presence or absence of maternal pyrexia (defined as temperature of >38°C once or 37.5°C on two occasions 2 hours apart).**

Changes in CTG such as changes in baseline variability or new onset decelerations must prompt reassessment of maternal mean arterial pressure, hypoxia and acidaemia. Electronic fetal monitoring is however NOT a sensitive predictor for early onset neonatal sepsis.

Epidural/spinal anaesthesia should be avoided in women with sepsis and a general anaesthetic will usually be required for caesarean section.

**3.0 Sources of sepsis in the puerperium**
All women who are unwell in the puerperium should be assessed clinically, and admission considered. Women may present with sepsis which is not deriving from the genital tract.

**3.0.1. Mastitis**
Mastitis must never be overlooked, as it can lead to breast abscesses, necrotising fasciitis and toxic shock syndrome. Admission to hospital is indicated if a woman with mastitis is clinically unwell, if there is no response to oral antibiotics with 48 hours, if mastitis recurs or if there are very severe or unusual symptoms.

**3.0.2. Urinary tract infections**
Acute pyelonephritis should be treated aggressively. The Extended Streptococcal Beta Lactamase (ESBL) producing coliforms are resistant to cephalosporins and co-amoxiclav, therefore Microbiology should be contacted for advice.

**3.0.3. Pneumonia**
Severe pneumonia should be managed in consultation with a respiratory physician and a medical microbiologist. Haemoptysis may be a feature of pneumococcal pneumonia. Severe haemoptysis and low peripheral white cell count suggest Panton-Valentine Leukocidin (PVL) associated staphylococcal necrotising pneumonia, which has a mortality rate of more than 70% in young, fit people. A sputum sample should be sent to the laboratory.

**3.0.4. Skin and soft tissue infection**
Any woman with suspected bacterial sepsis must be carefully examined for skin and soft tissue infection, particularly looking at IV cannulae or injection sites, drain sites, caesarean or episiotomy wounds. Swabs
should be taken of any discharge. Drains, vascular access devices or other indwelling devices should be removed as soon as possible. Skin and soft tissue infections are particularly associated with toxic shock syndromes. Recurrent abscess formation, including labial abscesses, is a feature of PVL-producing staphylococcus. Septicaemic seeding of streptococci from a uterine focus may give rise to a secondary focus in a limb, stimulating a venous thrombosis. Early necrotising fasciitis occurs deep in the tissues; therefore in early necrotising fasciitis there may be no skin changes. As the process ascends to skin blisters and obvious necrosis will occur. The cardinal feature of necrotising fasciitis is agonising pain, typically necessitating increasing amounts of strong analgesia. Women with suspected thrombosis who are systemically unwell with any features of sepsis should be examined carefully.

3.0.5. Gastroenteritis
Salmonella and Campylobacter rarely cause severe systemic infection and should be managed symptomatically unless features of bacteraemia is present. Diarrhoea and vomiting may however be a feature of toxic shock syndrome.

3.0.6. Pharyngitis & Sore Throat
Most cases of pharyngitis and sore throats are viral, but approximately 10% of cases in adults are attributable to GAS. Take a throat swab and if three of the four Centor criteria are present (fever, tonsillar exudate, no cough, tender anterior cervical lymphadenopathy) treat with antibiotics if appropriate.

3.0.7. Infection related to regional anaesthesia
Spinal abscess is a very rare complication of regional anaesthesia in Obstetric patients. It is vital to consider the diagnosis, investigate and treat in a timely manner as permanent spinal cord or cauda equina damage may result if neural compression is prolonged.

3.1. Recognition and management of sepsis in the puerperium
The sepsis screening tool and ‘Sepsis 6’ pathway should be followed (see sections 2.3, 2.6.).

All healthcare professionals should be aware of the symptoms and signs of maternal sepsis and suspicion should trigger urgent referral to secondary care. Sepsis in the puerperium may have an insidious onset but then a fulminating course.

Sepsis should be carefully considered in all recently delivered women who feel unwell and have pyrexia or hypothermia. Complete a full MEOWS assessment as appropriate and if MEOWS is =>4 with suspected infection refer to the on-call Registrar.

If retained products of conception are suspected e.g. undue abdominal discomfort requiring analgesia, offensive lochia, tender uterus refer to the Emergency Gynaecology Unit (EGU) 01872-252686 to arrange an ultra sound scan (USS).
Non-steroidal anti-inflammatory drugs (NSAIDS) should be avoided for pain relief in cases of sepsis as they impede the ability of polymorphs to fight GAS infection.

A history of recent sore throat or prolonged close contact with family members with known streptococcal infections (pharyngitis, impetigo, cellulitis) has been implicated in cases of GAS sepsis.

IV drug misuse carries a high risk of staphylococcal and streptococcal sepsis as well as generalised immunosuppression of chronic disease, endocarditis and blood-borne viruses.

Early presentation of sepsis (less than 12 hours post delivery) needs urgent referral to Delivery Suite. It is more likely to be caused by streptococcal infection, particularly GAS. Prior carriage of infection with multi-resistant organisms such as Extended Spectrum Beta-Lactamase (ESBL), vancomycin resistant enterococci and MRSA should be noted on admission as empirical antibiotic choice will be affected.

Diarrhoea, particularly if offensive or developing after any antimicrobial therapy should be sent for C difficile toxin testing.

3.2. Infection Control
The woman should be isolated in a single room with en suite facilities to reduce the risk of transmission of infection.

Healthcare workers should wear personal protective equipment including gloves and aprons when in contact with the woman, equipment and their immediate surroundings.

3.3. Neonatal issues
The baby is especially at risk of streptococcal and staphylococcal infection during birth and breastfeeding. The umbilical area should be examined and a paediatrician consulted in the event of sepsis in the puerperium.

If either the mother or the baby is infected with invasive GAS in the postpartum period, both should be treated with antibiotics. Inform the on-call neonatal team if the mother is septic post-partum.

3.4. Prophylaxis of family/staff
Close household contacts should be warned about the symptoms of GAS infection and told to seek medical attention should symptoms develop. Asymptomatic contacts may warrant prophylaxis. Consult the Consultant for Communicable Disease/Local Health Protection Unit for advice.

2. Monitoring compliance and effectiveness

<table>
<thead>
<tr>
<th>Element to be monitored</th>
<th>• Implementation of Sepsis Screening Tool</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• Percentage of women with severe sepsis who had “Sepsis 6 care pathway” implemented within 1 hour.</td>
</tr>
<tr>
<td></td>
<td>• Number of women admitted to hospital within 6 weeks of delivery for sepsis</td>
</tr>
<tr>
<td><strong>Rate of wound infection after caesarean section</strong></td>
<td></td>
</tr>
<tr>
<td>-----------------------------------------------</td>
<td></td>
</tr>
<tr>
<td><strong>Lead</strong></td>
<td>Who will lead on this aspect of monitoring?</td>
</tr>
<tr>
<td><strong>Tool</strong></td>
<td>What tool will be used to monitor/check/observe/asses/inspect/authenticate that everything is working according to this key element from the approved policy?</td>
</tr>
<tr>
<td><strong>Frequency</strong></td>
<td>How often is the need to monitor each element?</td>
</tr>
<tr>
<td><strong>Reporting arrangements</strong></td>
<td>Who or what committees will the completed report be sent to.</td>
</tr>
<tr>
<td><strong>Acting on recommendations and Lead(s)</strong></td>
<td>Which committee, department or lead will undertake subsequent recommendations and action planning for any or all deficiencies and recommendations within reasonable timeframes?</td>
</tr>
<tr>
<td><strong>Change in practice and lessons to be shared</strong></td>
<td>How will system or practice changes be implemented the lessons learned, and how will these be shared.</td>
</tr>
</tbody>
</table>

3. **Equality and Diversity**

This document complies with the Royal Cornwall Hospitals NHS Trust service Equality and Diversity statement which can be found in the ‘Equality, Diversity & Human Rights Policy’ or the Equality and Diversity website.

4. **Equality Impact Assessment**

The Initial Equality Impact Assessment Screening Form is at Appendix 2.
### Appendix 1. Governance Information

<table>
<thead>
<tr>
<th>Document Title</th>
<th>SEPSIS: RECOGNITION AND MANAGEMENT OF ANTENATAL AND POSTNATAL SEPSIS – CLINICAL GUIDELINE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date Issued/Approved:</td>
<td>20th May 2016</td>
</tr>
<tr>
<td>Date Valid From:</td>
<td>20th May 2016</td>
</tr>
<tr>
<td>Date Valid To:</td>
<td>20th May 2019</td>
</tr>
</tbody>
</table>
| Directorate / Department responsible (author/owner): | Louise Forster, Obstetric Registrar  
Aylur Rajasri, Obstetric Consultant |
| Contact details: | 01872 252361 |
| Brief summary of contents | Guidance for obstetricians, anaesthetists, midwives and nurses to enable prompt diagnosis and management of sepsis in antenatal and postnatal women. |
| Suggested Keywords: | Sepsis, infection, MEOWS |
| Target Audience | RCHT | PCH | CFT | KCCG |
| Executive Director responsible for Policy: | Medical Director |
| Date revised: | New Guideline |
| This document replaces (exact title of previous version): | New Guideline |
| Approval route (names of committees)/consultation: | Maternity Guidelines Group  
Obs and Gynae Directorate Meeting  
Divisional Board |
| Divisional Manager confirming approval processes | Head of Midwifery |
| Name and Post Title of additional signatories | Not required |
| Signature of Executive Director giving approval | {Original Copy Signed} |
| Publication Location (refer to Policy on Policies – Approvals and Ratification): | Internet & Intranet | ✓ Intranet Only |
| Document Library Folder/Sub Folder | Clinical/Midwifery and Obstetrics |
Links to key external standards | CNST 2.9
---|---
• Surviving Sepsis (2012) International Guidelines for Management of Severe Sepsis and Septic Shock
Training Need Identified? | No

Version Control Table

<table>
<thead>
<tr>
<th>Date</th>
<th>Version No</th>
<th>Summary of Changes</th>
<th>Changes Made by (Name and Job Title)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2nd October 2014</td>
<td>V1.0</td>
<td>Initial Issue</td>
<td>Louise Forster Obstetric Registrar</td>
</tr>
<tr>
<td>20th May 2016</td>
<td>V1.1</td>
<td>Bufalo sticker appendix added</td>
<td>Sarah-Jane Pedler Practice Development Midwife</td>
</tr>
<tr>
<td>4th August 2016</td>
<td>V1.2</td>
<td>Lactate amended to &gt;2 in line with RCHT sepsis guideline</td>
<td>Sarah-Jane Pedler Practice Development Midwife</td>
</tr>
</tbody>
</table>

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This document is to be retained for 10 years from the date of expiry.

This document is only valid on the day of printing

Controlled Document

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## Appendix 2. Initial Equality Impact Assessment Form

<table>
<thead>
<tr>
<th>Name of the strategy / policy / proposal / service function to be assessed (hereafter referred to as policy)</th>
<th>(Provide brief description): SEPSIS: RECOGNITION AND MANAGEMENT OF ANTENATAL AND POSTNATAL SEPSIS – CLINICAL GUIDELINE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Directorate and service area: Obs and Gynae Directorate</td>
<td>Is this a new or existing Policy? New</td>
</tr>
<tr>
<td>Name of individual completing assessment: Sarah-Jane Pedler</td>
<td>Telephone: 01872 852879</td>
</tr>
<tr>
<td>1. Policy Aim*</td>
<td>To provide guidance for obstetricians, anaesthetists, midwives and nurses enabling prompt diagnosis and management of sepsis in pregnant and postnatal women.</td>
</tr>
<tr>
<td>Who is the strategy / policy / proposal / service function aimed at?</td>
<td></td>
</tr>
<tr>
<td>2. Policy Objectives*</td>
<td>To ensure early identification and timely treatment of sepsis in pregnant and postnatal women.</td>
</tr>
<tr>
<td>3. Policy – intended Outcomes*</td>
<td>Timely treatment and management of sepsis in pregnant and postnatal women resulting in improved outcomes for women and their families.</td>
</tr>
<tr>
<td>4. How will you measure the outcome?</td>
<td>Compliance monitoring tool to include:</td>
</tr>
<tr>
<td></td>
<td>• Implementation of Sepsis Screening Tool</td>
</tr>
<tr>
<td></td>
<td>• Number of women with severe sepsis who had ‘Sepsis 6’ care pathway implemented within 1 hour</td>
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</tr>
<tr>
<td></td>
<td>• Rate of wound infection after caesarean section</td>
</tr>
<tr>
<td>5. Who is intended to benefit from the policy?</td>
<td>All pregnant and postnatal women</td>
</tr>
<tr>
<td>6a) Is consultation required with the workforce, equality groups, local interest groups etc. around this policy?</td>
<td>No</td>
</tr>
<tr>
<td>b) If yes, have these *groups been consulted?</td>
<td>N/A</td>
</tr>
<tr>
<td>C). Please list any groups who have been consulted about this procedure.</td>
<td>N/A</td>
</tr>
</tbody>
</table>
7. The Impact
Please complete the following table.

Are there concerns that the policy could have differential impact on:

<table>
<thead>
<tr>
<th>Equality Strands:</th>
<th>Yes</th>
<th>No</th>
<th>Rationale for Assessment / Existing Evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sex (male, female, trans-gender / gender reassignment)</td>
<td>X</td>
<td></td>
<td></td>
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<tr>
<td>Race / Ethnic communities /groups</td>
<td>X</td>
<td></td>
<td></td>
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<tr>
<td>Disability - learning disability, physical disability, sensory impairment and mental health problems</td>
<td>X</td>
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<tr>
<td>Religion / other beliefs</td>
<td>X</td>
<td></td>
<td></td>
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<tr>
<td>Marriage and civil partnership</td>
<td>X</td>
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<tr>
<td>Pregnancy and maternity</td>
<td>X</td>
<td></td>
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<tr>
<td>Sexual Orientation, Bisexual, Gay, heterosexual, Lesbian</td>
<td>X</td>
<td></td>
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</tbody>
</table>

You will need to continue to a full Equality Impact Assessment if the following have been highlighted:
- You have ticked “Yes” in any column above and
- No consultation or evidence of there being consultation - this excludes any policies which have been identified as not requiring consultation. or
- Major service redesign or development

8. Please indicate if a full equality analysis is recommended.  Yes  No X

9. If you are not recommending a Full Impact assessment please explain why.

N/A

Signature of policy developer / lead manager / director
Louise Forster

Date of completion and submission
2nd October 2014

Names and signatures of members carrying out the Screening Assessment
1. Sarah-Jane Pedler
2.
A summary of the results will be published on the Trust’s web site.

Signed: Sarah-Jane Pedler

Date: 20th May 2016
If infection suspected, undertake MEOWS observation: MEOWS 4 or more

Are any 2 of the following SIRS (Systemic Inflammatory Response Syndrome) criteria present and new to your patient?

- Temperature <36 or > 38°C
- Respiratory rate > 20/ min
- Heart Rate > 100 bpm
- Acutely altered mental state
- WCC < 4 x10⁹/l or > 12 x10⁹/l
- Glucose > 7.7 mmol/l (if patient is not diabetic)

If patient is neutropenic and any 1 present, follow ‘yes’ and call Consultant

Follow standard MEOWS protocol. Re-apply screening tool if MEOWS score changes

Patient has SIRS: Think SEPSIS!!!!

Is this likely to be due to an infection?

For example

- Cough/ sputum/ chest pain / sore throat
- Dysuria/ loin pain
- Abdo pain/ distension/ diarrhoea
- Headache with neck stiffness
- Line infection
- Wound infection/ calf tenderness/ breast tenderness

No

Yes

Patient has SIRS
Continue MEOWS every 30 mins
Give oxygen to keep SpO₂>92%
Consider fluid challenge
Look for other causes of SIRS (pancreatitis, transfusion reaction, trauma, burns, thromboembolism)
Re-evaluate for sepsis if MEOWS increases or condition changes

This patient has SEPSIS
Immediately start ‘Sepsis 6’ Care Pathway
(Appendix 4 overleaf)

Ensure SHO/ middle grade attends NOW and work together to achieve the tasks below
Appendix 4: ‘Sepsis 6 (BUFALO) Care Pathway

To be completed within 1 hour of admission if sepsis is suspected

<table>
<thead>
<tr>
<th>Patient Label</th>
</tr>
</thead>
</table>

Date:.............. Time:..............
Staff Name:......................... Designation:.................... Ward:....................

**B - Take blood cultures** if not already taken
Consider sputum, MSU, HVS, MRSA & throat swab

<table>
<thead>
<tr>
<th>Time</th>
<th>Initial</th>
<th>Reason not done or result</th>
</tr>
</thead>
</table>

**U - Measure hourly Urine Output**
Catheter if unconscious or retention, otherwise start strict fluid input chart.

<table>
<thead>
<tr>
<th>Time</th>
<th>Initial</th>
<th>Reason not done or result</th>
</tr>
</thead>
</table>

**F - Give a fluid challenge**
Hypotensive: Syst BP< 90: STAT 20ml/kg Hartmann’s or 0.9% Saline, contact senior immediately.
Normotensive: At least 500ml Hartmann’s or 0.9% Saline

<table>
<thead>
<tr>
<th>Time</th>
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</tr>
</thead>
</table>

**A - Give IV antibiotics**
Take blood cultures first
According to Trust protocol (from intranet), 48 hour review at latest.

<table>
<thead>
<tr>
<th>Time</th>
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</tr>
</thead>
</table>

**L - Measure lactate** (blood gas: ED, ITU)
If > 2mmol/l: CONTACT Anaesthetist oncall, give 20ml/kg Hartmann’s or 0.9% Saline FBC, LFT, U& E, Coag, Glucose.

<table>
<thead>
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<th>Time</th>
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</table>

**O - Give high-flow oxygen**
15l/minute via reservoir facemask initially. Monitor SATS. Seek expert help if used for > 4hr

<table>
<thead>
<tr>
<th>Time</th>
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</table>

**Evaluation at 1 hour:**
**MEOWS:**  
**Fluid volume given:**  
**Antibiotics:**

**SHO:** Inform Registrar (SBAR): situation= ‘Confirm Sepsis’, Liaise with Microbiologist on call

---

**BP**
Syst < 90 / Mean < 65 (after initial fluid challenge)

- **Urine output**: < 0.5 ml/kg/hr for 2 hrs
- **INR**: > 1.5
- **aPTT**: > 60 s
- **Bilirubin**: > 34 μmol/l
- **O₂**: Needed to keep SpO₂ > 90%
- **Platelets**: < 100 x 10⁹/l
- **Creatinine**: > 177 μmol/l
- **Risk of neutropenic sepsis**

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**NO**
Continue MEOWS every 30 mins. Reassess for high-risk factors each time condition changes

**YES**

This is SEVERE SEPSIS
Call Registrar or Consultant to attend within 30 mins, document sepsis and action plan in notes.
Inform on call Anaesthetist, Critical Care Outreach Team to attend urgently

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