Maternal sepsis prevention, recognition and management (GL872)

Approval

<table>
<thead>
<tr>
<th>Approval Group</th>
<th>Job Title, Chair of Committee</th>
<th>Date</th>
</tr>
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<tbody>
<tr>
<td>Maternity &amp; Children’s Services Clinical Governance Committee</td>
<td>Chair, Maternity Clinical Governance Committee</td>
<td>5th February 2021</td>
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Change History

<table>
<thead>
<tr>
<th>Version</th>
<th>Date</th>
<th>Author, job title</th>
<th>Reason</th>
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<tr>
<td>3.1</td>
<td>July 2020</td>
<td>M Pereira, Consultant O&amp;G</td>
<td>Live change to add recommendations following Audit mtg in Dec 2019 to help clinicians decide about de-escalation of antibiotics on PN wards – pg 9 section 13</td>
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<td>3.2</td>
<td>Sept 2020</td>
<td>M Pereira, Consultant O&amp;G</td>
<td>Live change to adopt the UK Sepsis Trust tools</td>
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<td>M Pereira, Consultant O&amp;G C Bell Q&amp;A Midwife</td>
<td>Changes to reflect benchmarking against NG121 – pg 4 3.1.6 &amp; pg 5 3.2.5 &amp; 3.2.6</td>
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<tr>
<td>4.0</td>
<td>March 2021</td>
<td>M Pereira, Consultant O&amp;G C Burnett, Clinical Nurse Specialist for Sepsis</td>
<td>Reviewed and updated throughout to reflect current national guidance and recommendations</td>
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1.0 Background

- Sepsis remains the fifth leading cause of maternal death in the UK (MBRRACE-UK: Saving Lives, Improving Mother’s Care 2019) which has both direct and indirect causes.
- Sepsis may be caused by bacterial, viral or fungal infections and requires treatment of the underlying infection as well as symptom control for effective care.
- Death rate due to indirect causes of sepsis due to Influenza has significantly fallen since in MBRRACE report 2017 compared to MBRRACE report 2014. This is due to influenza vaccination programme. Influenza vaccine should be offered to women at any gestation of pregnancy (PHE 2019).
- Deaths from mid-trimester sepsis account for the rise in the mortality from direct sepsis since nadir in 2012-2014.
- In a pregnant or postpartum woman, a single abnormal finding can be significant and warrants a thorough clinical assessment looking for signs of an infection. (Saving Lives, Improving Mothers’ Care 2014).
- Key actions for diagnosis and management of sepsis are (MBRRACE 2017);
  - Timely Recognition
  - Fast administration of antibiotics
  - Quick involvement of experts
- We should aim to
  1. Prevent sepsis with the appropriate use of prophylactic antibiotics
  2. Recognise sepsis and treat swiftly following the Sepsis 6 pathway.

1.1 Previously used SIRS (Systemic inflammatory Response Syndrome) factors are no longer used to screen sepsis since newer definition by sepsis task force consensus in 2016.(2) Organ dysfunction secondary to sepsis is now identified using Red Flag criteria.(2)

1.2 SOFA (Sequential Organ Failure Assessment) score is used now to assess the severity and prognosis of sepsis mainly in the by the critical care settings. Score more than 2 is suggestive of poor outcome

1.3 qSOFA score is useful in assessing the suspected sepsis in the acute setting which is systolic BP < than 100mmhg, Altered mentation and RR >22. Score more than 2 is abnormal.
2.0 Definitions

a. **Sepsis** – Sepsis is a syndrome caused by dysregulated inflammatory response to infection, which can lead to multiple organ dysfunction and death (Third International Consensus sepsis definition - Feb 2016).

b. **Septic shock** – Sepsis with persistent hypotension and requiring ionotropic support or lactate ≥2mmol/L despite adequate fluid resuscitation

c. **Maternal Sepsis** - A life-threatening condition defined as organ dysfunction resulting from infection during pregnancy, childbirth, post-abortion or post-partum period (World Health Organisation 2017).

3.0 Risk factors for Maternal Sepsis

<table>
<thead>
<tr>
<th>Non-pregnant</th>
<th>Pregnancy related risk factors</th>
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<tbody>
<tr>
<td>Obesity</td>
<td>Primiparous</td>
</tr>
<tr>
<td>Impaired glucose tolerance/diabetes</td>
<td>Multiple pregnancy</td>
</tr>
<tr>
<td>Anaemia</td>
<td>Cervical cerclage</td>
</tr>
<tr>
<td>Black and other ethnic minority</td>
<td>Amniocentesis and other invasive intrauterine procedures</td>
</tr>
<tr>
<td>Group A Streptococcus (GAS) infection in close contacts or family members</td>
<td>History of Group B Streptococcus (GBS) infection</td>
</tr>
<tr>
<td>History of pyelonephritis/UTI</td>
<td>Prolonged rupture of membranes</td>
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<td>History of pelvic infection/STI</td>
<td>Preterm pre-labour rupture of membranes(PPROM)</td>
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<td>Had a febrile illness or were taking antibiotics in the two weeks prior to presentation</td>
<td>Complications of caesarean section (uterine angle tear, difficult delivery of infant, ureter/bladder damage, bowel perforation, multiple adhesions) (10.4% versus 0.7%).</td>
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<td>Immuno-compromised status (e.g., HIV)</td>
<td>Vaginal trauma, wound hematoma</td>
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<tr>
<td></td>
<td>Retained products of conception after miscarriage, termination of pregnancy</td>
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In the context of infection, the presence of risk factors should always prompt a high index of suspicion for sepsis – healthcare workers should refer to screening tools to indicate potential acute illness.

**4.0 Prevention of sepsis**

**4.1 Antenatal**

4.1.1 **Influenza vaccination:** Department of Health recommends all women who are pregnant during the influenza season, regardless of stage of pregnancy, should be offered the inactivated influenza vaccine. Maternal deaths due to Influenza have significantly reduced since Influenza vaccination of all pregnant women (MBRRACE 2017).

4.1.2 **Advice to women:** Appropriate and clear advice on infection prevention and symptom identification in situations where women were prone to sepsis such as premature rupture of membranes. (MMBRRACE-UK 2014 & 2017). All women should be made aware of the sepsis advice present in their Pregnancy Notes (page 22 “Pregnancy Symptoms and Complications”).

4.1.3 **Prophylactic antibiotics:** This may be indicated for at-risk women. For prophylactic antibiotics with PPROM, cervical cerclage, caesarean section, recurrent urinary tract infections in pregnancy, Group A streptococcal infection see Antibiotic Treatment and Prophylaxis Guideline for Obstetrics (GL787). For Intrauterine Fetal Death >16 weeks, see Intrauterine Death Guideline (GL862). For Termination of Pregnancy >16 Weeks see Mid-trimester Termination of Pregnancy Guideline (GL878).

4.1.4 **Group A streptococcus (GAS):** Any GAS identified during pregnancy should be treated to avoid invasive GAS infection. The presence of three or four of the following signs suggests that a woman may have a bacterial infection and would benefit from antibiotics: tonsillar exudate, tender anterior cervical lymphadenopathy or lymphadenitis, fever and absence of cough.

Healthcare workers exposed to respiratory or infected wound secretions of women with confirmed GAS infection during or in the 7 days prior to an infection should be referred to occupational health and considered for antibiotic prophylaxis. Close household contacts should be warned of the symptoms and signs of GAS infection and seek medical care should signs develop within 30 days of the index case. Routine antibiotic prophylaxis of close contacts is not recommended.
4.1.5 **Urethral catheterisation:** If the patient is not allergic, external genitalia should be cleansed aseptically with Octenalin (aqueous octenidine HCl solution) prior to urethral catheterisation under any circumstance.

4.1.6 If the source of sepsis is thought to be genital tract then expedite delivery\(^1\)

4.1.7 Ensure early senior involvement in the care of extremely PROM cases and a full explanation of the risks and benefits of continuing the pregnancy including termination of pregnancy (MBRRACE 2020).

4.2 **Intrapartum**

4.2.1 **Prophylactic antibiotics:** See antibiotic guideline for GBS prophylaxis, Intrauterine foetal death, termination of pregnancy >16 weeks.

4.2.2 **Group A streptococcus (GAS):** See antibiotic guideline for treatment of GAS. This will decrease the risk of invasive GAS infection. Neonatologists should be informed of any gas finding in mother as it may have a significant impact on the neonate. Also, see point 4 in Antenatal prevention of sepsis.

4.2.3 **Caesarean section:** All patients should receive intra-vaginal aseptic preparation with Octenalin solution prior to commencing the procedure. Intravenous antibiotic (see antibiotic guideline) should be administered to all patients, ideally 30 minutes prior to commencing, if possible.

The abdomen should be prepared using the Chloraprep. All surgeons need to be assessed as competent in application by a senior member of the scrub team (e.g. nurse first assistant) before use.

4.2.4 Use of PICO dressing must be considered for all women with BMI>35 undergoing caesarean section. **Vaginal delivery:** Aseptic precautions should be observed for all operative vaginal deliveries. If perineal suturing is required, the operator needs to rescrub and use sterile suture pack. Repair perineal trauma under aseptic precautions. All women having assisted vaginal delivery (Forceps or Ventouse) should have single dose of IV antibiotics as per the ANODE study (GL787 & GL788).

4.2.5 **Analgesia continues to be of significance importance for women in labour, this needs continual consideration for women in labour with suspected sepsis.**\(^1\)

4.2.6 **Use of the birthing pool:** Should only be used after discussion with senior midwife and senior obstetrician if suspicion of sepsis is not considered significant enough for the woman to be commenced on antibiotics.\(^1\)
4.2.7 In women with sepsis and organ dysfunction, regional anaesthesia should be used with caution and advice from anaesthetist. (1)

4.3 Postpartum

4.3.1 Good personal hygiene: This includes avoiding contamination of the perineum by washing hands before and after using the lavatory or changing sanitary towels. It is especially necessary when the woman or her family or close contacts have a sore throat or upper respiratory tract infection.

4.3.2 Group A streptococcus: See point 2 in intrapartum prevention of sepsis.

4.3.3 All community midwives must carry a thermometer to check maternal temperature postnatally (MBRRACE 2018)

4.3.4 Safety Netting: all women should made aware of postpartum sepsis and given appropriate safety netting advice detailing increased infection risk within six weeks of delivery.

4.3.5 Communication amongst health care teams: Upon discharge, direct handover to the community carers (GP, midwives and health visitors) of women requiring antibiotics during hospital stay is essential, so that appropriate follow-up visits may be arranged and the significance of developing symptoms recognised.

4.3.6 Prophylactic antibiotics: For prophylactic antibiotics for third/fourth degree tears, manual removal of placenta, intrauterine balloon insertion, see Antibiotic Treatment and Prophylaxis Guideline for Obstetrics.

5.0 Sepsis Recognition

6.0 Screening

All obstetric women should be screened for sepsis on admission to hospital using the MEOWS scoring system

- MEOWS triggers (≥3) at any point during admission, the Inpatient Maternity Sepsis Tool should be used to identify the appropriate management. This is accessible on the electronic patient record (EPR).
Any obstetric patient who has undergone an invasive procedure and are now feeling / looking unwell should be screened for sepsis.

Any obstetric patient who is causing clinical concern (regardless of their MEOWS) should be screened for sepsis. Severe sepsis especially GAS infection, can on rare occasions manifest with normal MEOWS score.

Sepsis 6 pathway should be initiated and completed within one hour of recognising sepsis if red flag criteria identified. If amber flag criteria identified monitor the condition of woman, while waiting for the blood results and plan for further management.

7.0 Recognition

- Urgent Obstetric/ Anaesthetic opinion must be sought when there is a concern.
- An aide memoire of **history and clinical examination** to help identify sepsis and the source of sepsis is attached in Appendices 3, 4 and 5.
- **Severity assessment** should be performed using the Inpatient maternity tool, published by UK sepsis trust and available on the Trust EPR. Slightly modified tool is available if sepsis is suspected in the community. Please refer Appendix 1b. If Red Flag sepsis is identified, Obstetric consultant and Anaesthetist should be involved in management.

8.0 Initial sepsis management

**Aim to perform all of the following tasks within 1 hour of recognition of sepsis.**
- Full MEOWS observations and repeat every ½ hour or earlier if required.
- Administer Paracetamol 1g orally.
- Medical (Obstetric) review.
- Follow the Sepsis 6 pathway (**Appendix 1D**).

9.0 Sepsis Pathway

- Send all the investigations including 2 sets of paired blood cultures and give antibiotics within one hour of diagnosis.
- Two sets of paired blood cultures increase the probability of finding the microorganism from 50% to 85%.
- Core and additional investigations may be accessed via the Maternity Power Plan on EPR. See **Appendix 2**.
- For every hour of delay in giving antibiotics, there is cumulative increase of 7.5% of mortality (over background mortality of 60%).
10.0 Further management of sepsis
- Continue MEOWS assessment every 30 minutes; tailor it according to response to treatment.
- Perform serial lactate to assess response to treatment.
- Every attempt should be made to identify the source of sepsis, (Appendix 5 and 6), to allow additional investigations and treatment (Appendix 2) if necessary.
- Ensure thromboprophylaxis: prescribe TEDS and Tinzaparin. If Tinzaparin is contraindicated, apply intermittent compression device (Flowtron).
- If anaemic with Hb < 7 g/dL transfuse blood: aim for target Hb = 7 – 9 g/dL
- Alert a consultant to attend in person if the woman fails to respond within 1 hour of initial antibiotic and/or intravenous fluid resuscitation.

11.0 Signs of septic shock
1. Systolic blood pressure persistently below 90 mmHg.
2. Reduced level of consciousness despite resuscitation.
3. Respiratory rate over 25 breaths per minute or a new need for respiratory support.
4. Lactate not reduced by more than 20% of initial value within 1 hour of fluid resuscitation.

12.0 Complications
- If woman deteriorates or does not improve, consider additional or alternative IV antibiotics. Seek advice from Consultant Microbiologist.
- Repeat microbiological specimens and mark ‘urgent’.
- Consider additional imaging to aid diagnosis and target treatment.
- If pregnant, consider delivery to assist resuscitation measures.
- Closed-space infections need surgical drainage, including evacuation of retained products of conception.
- In women with Endometritis not responding to antibiotics, consider septic pelvic thrombosis.
- Necrotising fasciitis requires early surgical intervention with fasciotomy and aggressive antibiotic therapy.
- Most commonly identified microorganisms among direct causes are E Coli and GAS (MBRRACE 2020).
13.0 Multi-disciplinary Team Management of Septic Shock/Severe Sepsis

- Such women should be cared for on Delivery suite or Intensive Care Unit.
- Follow resuscitation measures of airway, breathing and circulation.
- Involve a Consultant Obstetrician as early as possible. The Consultant Obstetrician should seek advice from other specialists e.g. Anaesthetists, Haematologists, Microbiologists, Outreach Team and Intensivists.

14.0 Management of Pyrexia in pregnancy and postpartum period

If woman has pyrexia;

- Keep woman cool
- Administer Paracetamol 1 g orally, repeated 6-hrly as required
- Avoid dehydration
- Repeat temperature ½ hourly until apyrexial
- Unlike previous international guidelines, hyperthermia is no longer considered as screening factor and not included in the Sepsis Screening Tool (International Sepsis Guidance 2016). Be guided by the clinical condition of the patient and sepsis six pathway to manage these women.
- Women may have intrapartum hyperthermia due to prolonged labour, dehydration, epidural anaesthesia. These factors to be taken into consideration to avoid unnecessary antibiotic usage.

15.0 Differential diagnosis

Consider other conditions mimicking sepsis especially when not responding to treatment. This includes occult haemorrhage, myocardial infarction, adrenal insufficiency, venous thrombosis.

16.0 Review and de-escalation of antibiotics following initiation of sepsis pathway

When MEOWS is 0 and initial blood culture result is negative which is available in 24 hours (may have to call the lab) stop IV antibiotics. Do not repeat blood tests for WCC and CRP. Do not start on oral antibiotics

WCC and CRP are non-specific markers for infection and levels can increase significantly due to physiological changes in labour. WCC and CRP cannot guide management of sepsis in clinically well patients. Repeat them
only in those who are persistently unwell, not responding to treatment or culture positive patients.

If patient’s improvement is slow and need to be switched over to oral antibiotics, liaise with microbiologist. Repeat the blood tests, review all the swab results and consider other tests as appropriate. Be guided by the clinical condition and culture results of the patient.

17.0 Auditable standards (NICE QS161) (7)

- **Statement 1**: People with suspected sepsis are assessed using a structured set of observations to stratify risk of severe illness or death.
- **Statement 2**: People with suspected sepsis in acute hospital settings and at least one of the criteria indicating high risk of severe illness or death have an immediate review by a senior clinical decision-maker and antibiotics given within 1 hour if indicated.
- **Statement 3**: People with suspected sepsis in acute hospital settings who need treatment to restore cardiovascular stability have an intravenous fluid bolus within 1 hour of risk being stratified.
- **Statement 4**: People with suspected sepsis in acute hospital settings who receive intravenous antibiotics or fluid bolus are seen by a consultant if their condition fails to respond within 1 hour of initial treatment.
- **Statement 5**: People with suspected sepsis who have been stratified as at low risk of severe illness or death are given information about symptoms to monitor and how to access medical care.

18.0 References

1. NICE NG121 Intrapartum care for women with existing medical conditions or obstetric complications and their babies (updated April 2019) [https://www.nice.org.uk/guidance/ng121](https://www.nice.org.uk/guidance/ng121)


4. UK sepsis trust – clinical tools [https://sepsistrust.org/professional-resources/clinical-tools/](https://sepsistrust.org/professional-resources/clinical-tools/)
5. RCOG guidelines; Green-top guideline No64a & 64b
   https://www.rcog.org.uk/en/guidelines-research-services/guidelines/gtg64a/
   https://www.rcog.org.uk/en/guidelines-research-services/guidelines/gtg64b/

6. Maternal sepsis update: current management and controversies – The Obstetrician & Gynaecologist, Volume 22, issue 1

7. NICE Quality Standards QS 161 https://www.nice.org.uk/guidance/qs161
Appendix 1A – 1D – UK Sepsis Trust screening tools

Maternity Guidelines – Preventing maternal sepsis (GL872)
May 2021

Author: M Pereira
Date: May 2021
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Policy Lead: Group Director Urgent Care
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SEPSIS SCREENING TOOL INPATIENT ASSESSMENT

PATIENT DETAILS:  
NAME:  
DESIGNATION:  
SIGNATURE:  
DATE:  
TIME:  
GROUNDS FOR A RED FLAG PRESENTATION:

01 START THIS CHART IF THE PATIENT LOOKS UNWELL OR MEOWS HAS TRIGGERED

RISK FACTORS FOR SEPSIS INCLUDE:
- Impaired immunity (e.g. diabetes, steroids, chemotherapy)
- Recent trauma / surgery / invasive procedure
-Indwelling line / IVDU / broken skin

02 COULD THIS BE DUE TO AN INFECTION?

LIKELY SOURCE:
- Respiratory
- Urine
- Breast abscess
- Abdominal pain / distension
- Infection (cerebral / perineal)
- Vascular access / line

03 ANY RED FLAG PRESENT?

- Objective evidence of new or altered mental state
- Systolic BP < 90 mmHg (or drop of > 40 from normal)
- Heart rate ≥ 136 per minute
- Respiratory rate ≥ 25 per minute
- Nares Ox to keep SatO2 ≥ 92%
- Non-blanching rash / mottled / ashen / cedematous
- Lactic acidosis ≥ 2 mmol/l
- Not passed urine in 24 hours (tes test if automated)

RED FLAG SEPSIS SIX

+3/4 RED FLAGS = ROUTINE CARE / CONSIDER OTHER DIAGNOSIS

START SEPSIS SIX

FURTHER REVIEW REQUIRED:
- Give Bloods and review results
- Give V0 antibiotics

RECORD ADDITIONAL NOTES HERE:
- e.g. allergy status, arrival of specialist team, de-escalation of care, delayed antimicrobial decision making, variance

SEPSIS SCREENING TOOL - THE SEPSIS SIX

PATIENT DETAILS:  
NAME:  
DESIGNATION:  
SIGNATURE:  
DATE:  
TIME:  
GROUNDS FOR A RED FLAG PRESENTATION:

01 ENSURE SENIOR CLINICIAN ATTENDS

- All patients with red flags will need the ‘red flags’ urgently. A senior decision maker may sign alternative diagnosis / escalation care. Record decisions below

02 OXYGEN IF REQUIRED

- Start if O2 saturations < 90% - aim for 94-98%
- If at risk of hypovolaemia or for saturations of 88-92%

03 OBTAIN IV ACCESS, TAKE BLOODS

- Blood cultures, blood glucose, lactate, FBC, INR, CRP and clotting
- Luminar punctures if isolated

04 GIVE IV ANTIBIOTICS

- Max dose broad-spectrum therapy

05 GIVE IV FLUIDS

- Give fluids to target if: e.g. age > 50, 90mmHg if 15% NICE recommends using lactate to guide further fluid therapy

06 MONITOR

- Luminar measure urinary output, may require a urinary catheter to repeat lactate
- At least once per hour if initial lactate elevated or clinical condition changes

NO AMBER FLAGS = ROUTINE CARE / CONSIDER OTHER DIAGNOSIS
Appendix 2 - Core investigations

- Full blood count (FBC)
- Venous blood gas for Lactate (part of sepsis 6 pathway)
- Follow amber and red flag guidance on Sepsis 6 pathway for blood tests to be done
- Group & Save (G+S)
- Blood cultures – 2 sets (take 3 sets only if infective endocarditis suspected)
- Mid-stream urine (MSU) or catheter-specimen urine (CSU)
- Low vaginal swab (LVS)

Additional investigations

Should only be taken if clinically indicated:

- Endometritis / chorioamnionitis: High vaginal swab (HVS); low vaginal swab (LVS) and rectal swabs for GBS and GAS culture
- Pelvic inflammatory disease: endocervical swabs for chlamydia (use PCR detection kit) and gonorrhoea (swab in charcoal medium)
- Chest infection: sputum cultures, urinary Legionella antigen test
- Tonsillitis/sore throat: throat swab
- Diarrhoeal disease: stool culture
- Wound infection: wound swab
- Headache / photophobia: Lumbar puncture for CSF
- Any injection-site lesions should be swabbed and an MRSA screen performed.

Additional imaging

Should be arranged if clinically indicated:

In suspected severe sepsis consider imaging to determine focus of infection

- Chest X-ray (CXR)
- Ultrasound (USS) abdomen and pelvis
- Computed tomography (CT) chest (+/- CTPA) or abdomen
- Magnetic resonance (MRI)
Appendix 3 - Detailed history

Aim
1. To help identify factors for acquiring infection
2. Clues to identify infection sites, which should assist in guiding choice of empirical antimicrobial therapy.
   - Any SROM/PPROM and duration if present
   - Any abdominal pain and nature of this?
   - Any associated offensive discharge?
   - Vomiting/nausea/diarrhoea?
   - Dysuria, haematuria or loin pain?
   - Ear pain, nasal/ear discharge, cough – otitis media?
   - Nasal stuffiness, cough, nasal discharge, frontal headache – sinusitis
     (Both sinusitis and otitis media can cause invasive CNS infections including meningitis)
   - Shortness of breath, cough with sputum, chest pain?
   - Sore throat, painful swallowing, swelling in neck (Group A strep. Infection), contact history?
   - Any recent antibiotic intake?
   - Any microbiological samples already in lab? e.g. urine sent by GP
   - Has the patient had contact with animals?
   - Has the patient come in contact with another person with similar symptoms?

Full medical history
- What medications does the patient take?
- Has the patient had previous hospitalisation?
- Has the patient had recent surgical procedures?
- Has the patient had indwelling prosthetic devices?
- Has the patient travelled abroad recently?
- Is there underlying immunosuppression?
Maternity Guidelines – Preventing maternal sepsis (GL872)

Appendix 4 - Clinical findings in sepsis: General

Central Nervous System
- Altered consciousness/confusion

Cardiovascular
- Tachycardia
- Hypotension
- Prolonged capillary refill
- Warm or cool peripheries

Respiratory
- Tachypnoea
- Hypoxaemia

Renal
- Oliguria
- Anuria
  (ensure catheter patent)

Gastro Intestinal
- Abnormal LFT’s
- Reduced albumin

Haematology
- WBC abnormal count/forms
- DCl
  - Reduced platelets
  - Increased PT/APTT
  - Increased D-dimer
  - Reduced fibrinogen

Metabolic
- Acetic acidosis
- Hype/hyperglycaemia
- Hypocalcaemia

Skin
- Abnormal temperature

Head to toe examination

Appendix 5 - Clinical findings in sepsis: looking for source

Central Nervous System
- Headache
- Neck stiffness
- Photorphia

Respiratory
- Consolidation
- Pleural effusion

Gastro Intestinal
- Abdominal pain/tenderness
- Diarrhoea

Breast changes
- Tenderness, engorgement, lump, axillary lymphadenopathy

Haematology
- Neutropenic (primary)

Cardiovascular
- New murmur

Group A streptococcal
- Sore throat, cervical lymphadenopathy, tonsillar exudate

Renal
- Dysuria
- Loin pain
- Haematuria

Joints
- Swelling/redness/tenderness

Skin
- Cellulitis
- Petechial rash
- Splinter haemorrhages
- Wounds
- Cannulae/lines

Obstetric (Antenatal)
- Uterine tenderness
- Fetal tachycardia
- Offensive liquor

Postnatal
- Uterine tenderness
- Uterine Subinvolution
- Offensive lochia
- Perineal/ caesarean wound discharge or breakdown
Appendix 6 - Diagnosis in sepsis

Central Nervous System
- Meningitis
- Encephalitis
- Sinusitis
- Cerebral abscess

Cardiovascular
- Endocarditis

Breast
- Mastitis
- Abscess

Respiratory
- Pneumonia
- Empyema
- Bronchiectasis

Renal
- UTI
- Pyelonephritis

Gastro Intestinal
- Peritonitis (upper or lower perforation)
- Appendicitis
- Cholecystitis
- Diverticulitis

Joints
- Septic arthritis

Haematology
- Neutropenic sepsis

Skin
- Cellulitis
- Meningococcal sepsis
- Endocarditis
- Line sepsis
- Wound infection

Gynaecological
- Antenatal – Chorioamnionitis
- Postnatal
- Endometritis
- Retained products of conception
- Pelvic collection
- Perineal or abdominal wound infection