Sepsis in Adults Pathway

WITHIN FIRST HOUR

- Check vital signs and document
- Insert Cannula
- Arrange initial blood tests FBC, U&E, LFT's CRP, G&S, INR, APTT, Fibrinogen using CyberLab Sepsis Order Set.
- Check Serum Lactate (arterial or venous). ⚠
- Blood cultures to be taken peripherally using aseptic non touch technique and from CVC if one insitu. **PRIOR TO ANTIBIOTIC ADMINISTRATION.** ⚠
- Piperacilin-tazobactam and gentamicin is first line for haematology patients. For Oncology patients gentamicin can be omitted unless signs of severe sepsis. Patients on platinum based chemotherapy (e.g. Cisplatin) or history of rash only with penicillins should receive meropenem. Refer to antibiotic guideline if known antibiotic allergies or renal failure

Never wait for results before starting IV antibiotics.

- Prompt prescription and administration of first line antibiotic therapy or nursing staff to administer IV Antibiotic according to Patient Group Direction for patients suspected of neutropenic sepsis (this is only applicable to Haematology nursing staff, giving meropenem only)
- Time of antibiotics, agent and dose given must be documented in case notes ⚠
- If already an inpatient on the ward, IV antibiotics to be administered within 1 hour of suspected neutropenic sepsis.
- Time of antibiotics given must be documented in case notes
- Medical Review within 1 hour
- Consider need for barrier nursing and platelets

Contact on call microbiologists, and haematologist or oncologists for advice

Follow the Management of Neutropenic Sepsis in Adults Pathway – click here to view

Symptoms/Signs:
- Unwell Patient (fever, chills, confusion)
- Non specific deterioration

Is patient >20 wks pregnant or 6 weeks post partum? YES → **Contact Obstetric ST3 Inform Senior Midwife** → **Follow the Hospital Severely Ill Pregnant / Postnatal Woman Pathway – Click here to view**

NO

Has patient received chemotherapy or immune-suppressants within last 2 months or undergone bone marrow or stem cell transplantation? SUSPECT NEUTROPENIC SEPSIS YES

NO

Are any 2 of the following present and new to the patient?
- Temperature <36C or >38C
- Heart Rate more than 90bpm
- Respiratory Rate more than 20/Min
- White cells <4 or >12
- Plasma Glucose >7.7 mmol in the absence of diabetes

Never wait for results before starting IV antibiotics.

NO → **- Follow standard EWS protocol - Re-apply screening tool if situation changes - Consider source of infection without inflammatory response**

YES

Are the clinical features suggestive of a new infection?
- Pneumonia - UTI - Diarrhoea
- Peritonitis - Meningitis - Endocarditis
- Cellulitis/Septic Arthritis/Fasciitis/Wound infection
- Catheter/other Infection (including Central Line Infection)

NO → **Look for non-infective causes** (e.g. Pancreatitis, transfusion reaction, trauma, burns, thromboembolism)

YES

Patient has Sepsis

WITHIN THE 1ST HOUR ANTIBIOTICS MUST HAVE BEEN PRESCRIBED AND ADMINISTERED

WITHIN FIRST HOUR

- Give oxygen to maintain target saturations > 94%-99% (or 88%-92% following senior clinical review if at risk of type II respiratory failure) ⚠
- Blood cultures: take at least one set plus FBC, U&E's, LFT's, CRP, INR, APTT, Fibrinogen, Grp/Save (using CyberLab Sepsis order set). Check Serum Lactate (arterial or venous). ABG, if patient requiring >40% oxygen to maintained target saturation or if hypotension/raised lactate. ⚠
- Prescribe and administer IV antibiotics within 1 hour of diagnosis as per Trust guidelines (CORP/GUID309). ⚠
- Give fluid challenge in the event of Hypotension (systolic <90mmHg or >40mmHg fall from baseline or MAP <65mmHg) and/or lactate >4 mmol/L: Deliver an initial bolus of up to 30ml/kg of Plasma-lyte 148 in water (or colloid equivalent) in the 1st hour intravenously (some patients may require greater volumes). Fluids must be titrated to BP response. Consider maintenance fluids as required. Caution with fluid load > 30ml/kg in patients with significant heart disease. ⚠
- Continue EWS every 30 mins
- Monitor fluids and record fluid balance hourly
- Address source control for definitive treatment of underlying cause of sepsis
- Request senior review (Consultant or Registrar)
- Seek critical care opinion if concerns

BY THE END OF 3 HOURS A DIAGNOSIS OF SEPSIS, SEVERE SEPSIS OR SEPTIC SHOCK MUST HAVE BEEN MADE AND A MANAGEMENT PLAN CLEARLY IDENTIFIED

Review patient every 30 mins
Are any of the following present and new to the patient?
- Act on blood results
- Systolic Blood Pressure < 90mmHg or MAP < 65mmHg
- New or increased need for oxygen to keep SpO2 >90%
- Lactrate > 2mmol/l. Consider Severe Sepsis.
- Creatinine > 177 mmol/l or Urine output < 0.5ml/kg/hr for 2 hrs
- Bilirubin > 34µmol/l Platelets < 100
- Coagulopathy: INR >1.5 or APTT >60 s
- Catheterise and commence hourly urine output measurement to maintain >0.5mls/kg/hr if hypotension or raised creatinine, oliguria, raised lactate >4mmol/l ⚠
- Acutely altered mental status

NO → **- Reassess patient - Document appropriate Management plan**

YES

Patient has Severe Sepsis

WITHIN HOURS 2-3

Systolic BP <90mmHg or MAP <65mmHg or a fall of >40mmHg or lactrate >4mmol from baseline after resuscitation?

YES

Septic Shock

Refer to Critical Care?

ACCEPTED FOR ITU/HDU → **Transfer ITU/HDU**

- Ensure patient has received adequate fluid resuscitation: boluses of 30ml/kg 0.9% saline or Plasma-lyte 148 in water
- If still shocked *(low BP/ low urine output/ high lactrate)* insert central venous catheter under USS guidance (only if competent; otherwise seek help)
- Aim to achieve CVP 8-12mmHg with Care, Check CVP Monitor
- Consider noradrenaline if still shocked or dobutamine if ScvO2 < 70%. Consider +/-blood transfusion
- Take heparinised sample from central line (use ABG syringe): check ScvO2>70%
- Consider blood transfusion if haematocrit < 30 and ScvO2 <70%.
- Recheck Lactrate if initially high >4 mmol/L
- Review Antibiotics

WARD MANAGEMENT

- Agree Ceiling of treatment - Consider DNAR

Consider patient for Care of the Dying Patient Plan?

Follow Care of the Dying Patient Pathway – Click here to view

NO

Severe sepsis, no shock
- Refer to Critical Care Outreach Team/Acute Response Team
- Ensure management plan is documented in notes
- Ensure hourly EWS taken, recorded and acted upon.
- Monitor urine output
- Record hourly fluid balance
- Monitor blood test for signs of AKI
- daily antibiotic review

- Medical review at 6 hrs ⚠

YES

Patient fails to respond to treatment

NO

WITHIN HOURS 3-6

MAX. 6 HRS

KEY:
⚠ **Mission Critical Points**
Click Here to Follow Link

NHS Blackpool Teaching Hospitals NHS Foundation Trust

Local Pathway Agreed 25th June 2018

Management of Neutropenic Sepsis in Adults Pathway

KEY:

⚠ **Mission Critical Points**

Click Here to Follow Link

Definition: Fever of 38.3°C or more on one occasion, or 38.0°C or more sustained for 1 hour in a patient at risk of neutropenia e.g. post chemotherapy, but the possibility of sepsis must be considered in any unwell patient irrespective of temperature e.g chills, rigors, unexplained hypotension or hypoxia, signs or symptoms of chest infection.

↓

History & exam with particular attention to the following:
- **Nature of chemotherapy, days since cycle completed**
- **History of bone marrow or stem cell transplant**
- **Drug allergies**
- **Evidence of infection - oropharynx, sinuses, perineum, central venous lines, skin lesions, chest, abdomen**
- **Evidence of septicaemic shock, hypoxia, renal failure, DIC**

↓

Investigations:
- **Two sets of blood cultures including set from any central venous lines** ⚠
- **Culture symptomatic sites e.g. throat and skin swabs, sputum, MSU, stool**
- **Radiology of symptomatic areas e.g. chest X-ray**
- **If not already done that day - check FBC, U&Es, LFTs, CRP, G&S +/- coag screen if? DIC?**
- **Check Serum Lactate (arterial or venous).** ⚠

NEVER WAIT FOR RESULTS BEFORE STARTING IV ANTIBIOTICS

↓

Discuss all cases with the on-call consultant microbiologist

↓

Commence first line antibiotic therapy without delay prescribing first dose on the once-only part of the chart –

Refer to Trust Policy for gentamicin adult dosing treatment CORP/GUID/313

OMIT Gentamicin for Oncology patients unless authorised by Oncologist

If there has been anaphylaxis with penicillins discuss with on call microbiology. If there is a history of only rash with penicillin give meropenem 1g tds.
Antibiotics must be given as soon as possible and definitely within one hour of hospital admission. ⚠

↓

Consider need for additional therapy:
- **If septicaemic shock and/or hypoxia → IV fluid, O_2 + GCSF (Granocyte 263mcg sc od)**
- **Consider ITU referral if patient unstable or fails to improve on the above – discuss with consultant**
- **Cellulitis at iv catheter sites → teicoplanin**
- **Severe oral or GIT mucositis → teicoplanin**
- **Herpetic lesions → aciclovir**

Taken from Management of Infection in Neutropenic Patients Protocol (CORP/PROT/003)

Local Pathway Agreed 25th June 2018

NHS Blackpool Teaching Hospitals NHS Foundation Trust

Management of Severely Ill Pregnant or Postnatal Woman Pathway

KEY:
⚠ **Mission Critical Points**
Click Here to Follow Link

MOEWS Calculated

- Score = 0-2 → Antenatal = Daily Observations Postnatal = at least 12 hourly observations
- Score =3-5 → Within 30 Minutes you must; - Inform Senior Midwife - Inform Senior Obstetrician, ST3 or above
- Score 6 Or Above → Within 15 Minutes you must; - Inform Shift leader - Inform Senior Obstetrician, ST3 or above. - Inform the Anaesthetist - Transfer to delivery suite

Senior Obstetrician, ST3 or above review within time frame

YES
Senior Obstetrician, ST3 or above to ensure;
- The consultant Obstetrician is informed.
- Review and document management plan in the health record.
- Multidisciplinary team is involved as appropriate
- Consider transfer to Delivery Suite

NO
- Call Consultant Obstetrician
- Contact the Anaesthetic Registrar/Consultant as required.
- Depending on the MOEWS consider critical care referral as per Trust guidelines

Does the woman have any Two of the following?
-Temperature under 36°C or Over 38.3°C
-Heart Rate - over 100 bpm Antenatal
- over 90 bpm Postnatal
-Respiratory Rate over 24/minute
-White Cells less than 4, more than 12 x 10 /L
-Blood Sugar more than 7.7 in the absence of diabetes
-Acutely altered mental state

NO → **- Follow standard MOEWS protocol - Re-apply screening tool if situation changes - Consider source of infection without inflammatory response**

YES

Is the History Suggestive of New infection?
- Prolonged Spontaneous Rupture of the membranes.
- Unexplained foetal tachycardia in the absence of a maternal tachycardia.
- Urinary Tract Infection
- Catheter or other line infection.
- Meningitis
- Pneumonia
- Peritonitis
- Offensive liquor.
- Breast redness/tenderness/ mastitis
- Intra Uterine Death/ Stillbirth
- Cellulites / Septic Arthritis/ Fasciitis / Wound Infection
- Endocarditis
- Diarrhoea

NO → **Look for non-infective causes** (e.g. Pancreatitis, transfusion reaction, trauma, burns, thromboembolism)

YES

Patient has Sepsis

- Seek Senior Review
- Consider seeking critical care opinion
- Oxygen : High Flow 15L / min via a non-re breather mask
- Blood Cultures: Take at least one set prior to antibiotics Plus FBC, U&E, LFT, Clotting, Glucose, Lactate, ⚠
- Serum Lactate If more than 2 with signs of organ dysfunction inform Senior Anaesthetist.
- Inform ITU
- IV Antibiotics - 1st dose to be given within the first hour ⚠
- Fluid Resuscitation ⚠
- Continue MOEWS every 30 mins
- Monitor fluids and record fluid balance hourly
- Catheterise and commence HDU Chart (if not commenced) ⚠
- VTE Prophylaxis
- Consider Delivery or ERPC

Does the woman have any signs of Organ dysfunction?
- Blood Pressure systolic less than 90 or MAP of less than 65
- New need for O2 to keep SpO2above 90%
- Urine Output less than 0.5 ml /KG for 2 hours
- Bilirubin more than 34 µmols/l
- Platelets less than 100 x 10 L
- INR less than 1.5 or aPTT less than 60s
- Lactate more than 2mmol /L
- Creatinine more than 170 mmol/L

NO → **- Reassess patient hourly - Document appropriate Management plan**

YES

Patient has Severe Sepsis

Systolic BP <90mmHg or MAP <65mmHg or a fall of >40mmHg or lactate >4mmol from baseline after resuscitation?

YES

Septic Shock

TRANSFER ITU/HDU — **Refer to Critical Care**

- Ensure patient has received adequate fluid resuscitation: boluses of 30ml/kg 0.9% saline or Plasma-lyte
- If still shocked *(low BP/ low urine output/ high lactate)* insert central venous catheter under USS guidance (only if competent; otherwise seek help)
- Aim to achieve CVP 8-12mmHg with Care, Check CVP Monitor
- Consider noradrenaline if still shocked or dobutamine if ScvO2 < 70%. Consider +/-blood transfusion
- Take heparinised sample from central line (use ABG syringe): check ScvO2>70%
- Consider blood transfusion if haematocrit < 30 and ScvO2 <70%.
- Recheck Lactate if initially high >4 mmol/L
- Review Antibiotics
- Daily Obstetric review if antepartum

NO

Severe sepsis, no shock
- Refer to Critical Care /CCOT/Acute Response Team
- Ensure management plan is documented in notes
- Ensure hourly MOEWS taken, recorded and acted upon.
-Monitor urine output
- Record hourly fluid balance
- Monitor blood test for signs of AKI
- daily antibiotic review
- Medical review at 6 hrs

Patient fails to respond to treatment

YES → Refer to Critical Care

NO → Severe sepsis, no shock

WITHIN FIRST HOUR
WITHIN HOURS 2-3
WITHIN HOURS 3-6

Taken from Severely Ill Pregnant / Postnatal Woman Guidelines (OBS/GYNAE/GUID/042)

Local Pathway Agreed 25th June 2018

NHS Blackpool Teaching Hospitals NHS Foundation Trust