	DIVISIONAL DOCUMENT
Delete as appropriate	Maternity Services Clinical Guideline
DOCUMENT TITLE:	Sepsis in Obstetrics and Gynaecology
DOCUMENT NUMBER:	G75 v3
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LEAD EXECUTIVE DIRECTOR DGM	Divisional General Manager
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TARGET AUDIENCE:	All staff
DOCUMENT PURPOSE:	To outline how to identify and manage sepsis in O&G
To be read in conjunction with (identify which internal documents)	G10 Infection and prevention of Infection including Group B Streptococcus G16 Prevention and treatment of infection in Gynaecology

SUPPORTING REFERENCES	NICE 2016 Sepsis: recognition, diagnosis and early management NICE 2019 Intrapartum Care for Women with existing medical conditions or obstetric complications and their babies.

CONSULTATION		
	Committee/Group	**Date**
Consultation	Microbiology Lead for deteriorating Patient	
Approval Committee	Women & Newborn Quality & Safety Board	Feb 2023
Ratification date at Policy Council:	**NA**	
NEXT REVIEW DATE:	**Feb 2026**	
AMENDMENTS:	Sept 2017 – Full review April 2018 – Amendment to Appendix 1 August 2019 Amendments to Septic bundles Appendix 1 and 2 August 2019 Addition of care in labour guidance March 2020 Appendix 1 Septic bundles updated. Addition of link to Antimicrobial app January 2023 Addition of NICe Update Oct 2022	

	NHS England Patient Safety Alert on the risk of harm from inappropriate placement of pulse oximeter probes. Full review

Sepsis in Obstetrics and Gynaecology

1. Assessment

a. Think “Could this be sepsis?”(see chart 1 below)
b. People with sepsis may have non specific, non localized presentations and may not have a temperature
c. Listen to the concerns of the family especially about unusual behaviour
d. Perform history and examination to identify possible source of infection
e. Be aware of the factors that increase the risk of infection- see algorithm
f. Complete EWS/MOEWS

2. Stratifying risk of severe illness or death

Commence relevant Sepsis Bundle using risk criteria as per **Chart 2.**

3. Managing and Treating

a. Management of Sepsis
See flow Chart 3 below-*Managing suspected sepsis in adults and young people aged 18 years and over - in an acute hospital setting*

b. Pyrexia
Consider paracetamol for women in labour with a temperature of 38 C on a single reading , or a temperature of 37.5 on 2 occasions an hour apart. This is not a treatment for sepsis and should not delay investigation of sepsis.

c. For women in labour with suspected sepsis
Ensure **multidisciplinary team review** including

- A senior obstetrician
- A senior obstetric anaesthetist
- A senior midwife
- A labour ward coordinator

If **sepsis** is suspected also involve

- A senior neonatologist
- A senior microbiologist

Include **senior intensivist** if woman with sepsis has signs of organ dysfunction:

- Altered consciousness
- Hypotension(systolic BP< 90mmHg
- Reduced urine output(less than 0.5mg/kg per hour
- Need for 40 % Oxygen to maintain oxygen saturations above 92%
- Tympanic temperature of less than 36C

d. For choice of antibiotics

For up to date recommendations on choice of antibiotics for prophylaxis and treatment :

Please refer to ELHT Microguide Antibiotic formulary:
https://viewer.microguide.global/elht/adult

e. Planning Intrapartum Care

i. Agree and document a multidisciplinary care plan for the women and review this regularly taking in to account the clinical picture and the response to treatment

ii. Involve the woman and her birth companion in shared decision making about the options for induction, continuing labour, augmentation, instrumental and caesarean birth.

f. Mode of birth

i. Take into account the womans preferences, concerns and expectations and also the clinical picture including

1. Source and severity of sepsis if known
2. Weeks of pregnancy
3. Fetal well being
4. Stage and progress of labour
5. Parity
6. Response to treatment

ii. If the source is thought to be genital tract expedite the birth.

g. Fetal monitoring

i. Refer guidance(needs link)

h. Anaesthetic Guidance

i. Reference Guidance(needs link)

4. Information and Support

It is important to support people who have sepsis or suspected sepsis, their familes and carers

This should include

1. Clear explanation of sepsis and treatment plans including rationale behind antimicrobials as per local guidelines
2. Opportunities to ask questions

3. Information about about national charities and support groups

5. **At discharge**

i. Ensure people and their families and carers if appropriate have been informed that they have had sepsis or were suspected to have sepsis..
ii. Ensure discharge notifications to GPs include the diagnosis of sepsis.
iii. Give people (and their families and carers, when appropriate) opportunities to discuss their concerns.
iv. Explain how to get medical attention if required after discharge
v. Arrange consultant follow up if have been in ITU/COU.

Chart 2 Risk Criteria

Category	High risk criteria	Moderate to high risk criteria	Low risk criteria
History	Objective evidence of new altered mental state	History from patient, friend or relative of new onset of altered behaviour or mental state History of acute deterioration of functional ability Impaired immune system (illness or drugs including oral steroids) Trauma, surgery or invasive procedures in the last 6 weeks	Normal behaviour
Respiratory	Raised respiratory rate: 25 breaths per minute or more New need for oxygen (more than 40% FiO2) to maintain saturation more than 92% (or more than 88% in known chronic obstructive pulmonary disease)*	Raised respiratory rate: 21–24 breaths per minute	No high risk or moderate to high risk criteria met
Blood pressure	Systolic blood pressure 90 mmHg or less or systolic blood pressure more than 40 mmHg below normal	Systolic blood pressure 91–100 mmHg	No high risk or moderate to high risk criteria met
Circulation and hydration	Raised heart rate: more than 130 beats per minute Not passed urine in previous 18 hours. For catheterised patients, passed less than 0.5 ml/kg of urine per hour	Raised heart rate: 91–130 beats per minute (for pregnant women 100–130 beats per minute) or new onset arrhythmia Not passed urine in the past 12–18 hours For catheterised patients, passed 0.5–1 ml/kg of urine per hour	No high risk or moderate to high risk criteria met

Category	High risk criteria	Moderate to high risk criteria	Low risk criteria
Temperature		Tympanic temperature less than 36°C	
Skin	Mottled or ashen appearance Cyanosis of skin, lips or tongue Non-blanching rash of skin	Signs of potential infection, including redness, swelling or discharge at surgical site or breakdown of wound	No non-blanching rash

*Be aware that some pulse oximeters can underestimate or overestimate oxygen saturation levels, especially if the saturation level is borderline. Overestimation has been reported in people with dark skin. See also the NHS England Patient Safety Alert on the risk of harm from inappropriate placement of pulse oximeter probes.

Chart 1 'could this be sepsis?'

- If they present with signs or symptoms that indicate infection, even if they do not have a high temperature.
- Be aware that people with sepsis may have non-specific, non-localising presentations (for example, feeling very unwell)
- Pay particular attention to concerns expressed by the person and family/carer.
- Take particular care in the assessment of people who might have sepsis who are unable, or their parent/carer is unable, to give a good history (for example, young children, people with English as a second language, people with communication problems)

ASSESSMENT

Assess people with suspected infection to identify:

- likely source of infection
- risk factors **(see righthand box)**
- Indicators of clinical of concern such as abnormalities of behaviour, circulation or respiration.

People more vulnerable to sepsis

- older people (over 75 years) or very frail people
- recent trauma or surgery or invasive procedure (within the last 6 weeks)
- Impaired immunity due to illness or drugs (for example, people receiving steroids, chemotherapy or immunosuppressants)
- Indwelling lines / catheters / intravenous drug misusers, any breach of skin integrity (for example, any cuts, burns, blisters or skin infections).

Additional risk factors for pregnant women

- who are pregnant or who have been pregnant, given birth, had a termination or miscarriage within the past 6 weeks
- gestational diabetes, diabetes or other co-morbidities;
- needed invasive procedure such as caesarean section, forceps delivery, removal of retained products of conception,
- prolonged rupture of membranes, close contract with someone with group A streptococcal infection, have continued vaginal bleeding or an offensive vaginal discharge).

Sepsis not suspected

- no clinical cause for concern
- no risk factors.

Use clinical judgment to treat the person, using NICE guidance relevant to their

SUSPECT SEPSIS

If sepsis is suspected.
Consider using early warning scores in hospital settings.
Commence Septic bundle sheet
Parental or carer concern is important and should be acknowledged.

Stratify risk of severe illness and death from sepsis using algorithm appropriate to age and setting

Chart 2 Managing suspected sepsis in adults and young people aged 18 years and over - in an acute hospital setting.

Stratify risk of severe illness and death from sepsis using the risk criteria in the stratification tool for adults, children and young people aged 12 years and over

High risk criteria

- Objective evidence of new altered mental state Respiratory rate: 25 breaths per minute or more OR new need for oxygen (more than 40% FiO2) to maintain saturation more than 92% (or more than 88% in known chronic obstructive pulmonary disease)
- Heart rate: 130 beats per minute or above
- Systolic blood pressure 90 mmHg or less or systolic blood pressure more than 40 mmHg below normal Not passed urine in previous 18 hours, or for catheterised patients passed less than 0.5 ml/kg of urine per hour
- Mottled or ashen appearance Cyanosis of skin, lips or tongue Non-blanching rash of skin

1 high risk criterion

Arrange immediate review by senior clinical decision maker (person authorised to prescribe antibiotics, such as ST3 + or advanced nurse practitioner).

Carry out venous blood for the following

- Blood gas including glucose and lactate
- FBC, CRP, U&Es, LFT's, clotting
- Blood cultures

Give intravenous antibiotics without delay, and at least within one hour of identification of high risk criteria.

Give iv fluids- 500mls stat(see below)
Administer oxygen to keep saturations above 94%
Take appropriate microbiological samples including HVS, MSSU, wound/placental swab.
Consider CXR and other samples depending on likely source of infection
Inform consultant O&G and anaesthetics

Lactate > 4 mmol/L **OR** SBP < 90 mmHg

- Give i.v. fluid (500 ml over less than 15 minutes) without delay
- Refer to critical care

Lactate 2 – 4 mmol /L

Give i.v. fluid (500 ml over less than 15 minutes) without delay

Lactate < 2 mmol /L

Consider i.v. fluids.

Carry out observations at least every 30 minutes or continuous monitoring if available. Consultant to attend if not already present if patient does not improve

Moderate to high risk criteria

- History from patient, friend or relative of new onset of altered behaviour or mental state
- History of acute deterioration of functional ability
- Impaired immune system (illness or drugs including oral steroids) Trauma, surgery or invasive procedures in the last 6 weeks Respiratory rate: 21-24 breaths per minute
- Heart rate: 91-130 bets per minute (for pregnant women 100-130 beats per minute) OR new onset arrhythmia
- Systolic blood pressure 91-100 mmHg
- Not passed urine in the past 12-18 hours, or for catheterised patients passed 0.5-1 ml/kg of urine per hour
- Tympanic temperature less than 36°C
- Signs of potential infection, including redness, swelling or discharge at surgical site or breakdown of wound.

2 or more moderate to high risk criteria **OR** SBP: 91-100 mmHg

Clinician to review person's condition and venous lactate results within 1 hour

Carry out venous blood test for the following:

- Blood gas including glucose and lactate
- FBC, CRP, U&Es, LFT's, clotting
- Blood cultures

Lactate > 2 mmol / L OR assessed as having AKI* = escalate to high risk

Only 1 moderate to high risk criterion

Clinician review within 1 hour and perform blood tests if indicated

Lactate ≤ 2 mmol / L and no AKI (see acute kidney injury (NICE CG169)

If no definitive condition identified, repeat structured assessment at least hourly

Ensure review by a senior decision maker within 3 hours for consideration of antibiotics.

Low risk criteria
Suspected sepsis, but:

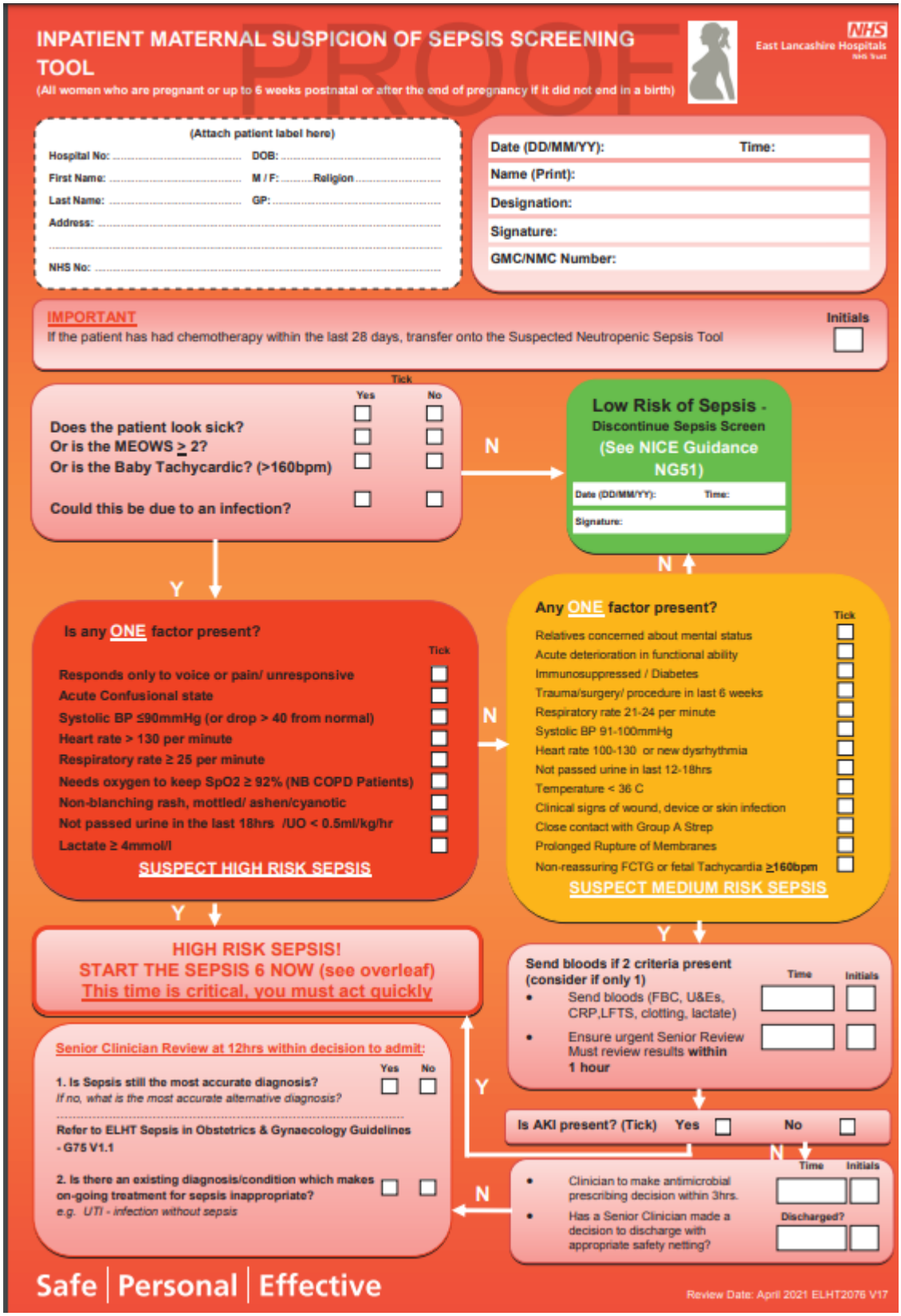
- Normal behaviour
- No high risk or moderate to high risk

Suspected sepsis and no high risk or high to moderate risk criteria met

Clinical assessment and manage according to clinical judgement

Manage definitive condition / infection if diagnosed

Appendix 1: Inpatient Maternal Sepsis Screening and Action Tool



SEPSIS SIX PATHWAY

To be applied to all women who are pregnant or up to 6 weeks postpartum (or after the end of pregnancy, if the pregnancy did not end in a birth)

	Time Zero	Consultant Informed (Tick)	Initials
Make a treatment escalation plan and decide on CPR status **Inform consultant that this patient has a High Risk of developing Septic Shock**			

COMPLETE ALL SEPSIS SIX WITHIN 1 HOUR

1. Administer Oxygen

- Aim to keep saturations >94%
  (88-92% if at risk of CO_2 retention e.g.COPD)

Time complete | Initials | Reason not done/variance

2. Take blood cultures

- At least a peripheral set. Consider e.g. vaginal swab, urine, sputum, breast milk, throat swab, wound swab, CXR and Urine MSU for all adults
  Think source control
- Call surgeon / radiologist if needed
- Bloods - FBC, U&Es, LFTS, Clotting, Glucose, VBG/ABG, Lactate, CRP

Time complete | Initials | Reason not done/variance

3. Give IV antibiotics

- See ELHT antimicrobial formulary
- Consider allergies prior to administration
- Document antibiotic indication & review date on drug chart

Time complete | Initials | Reason not done/variance

4. Give IV fluids

- If hypotensive / lactate >2mmols/l. 500mls stat
- May be repeated if clinically indicated –
  Do not exceed max 30mls/kg

Time complete | Initials | Reason not done/variance

5. Check serial lactates

- Corroborate high VBG lactate with arterial sample

If lactate >4mmols/l. CALL THE INTENSIVE CARE TEAM (RBH) OR CONSULANT OBSTETRICIAN / ANAESTHETIST / ST5+ (BGH) and recheck after each 10ml/kg challenge

Time complete | Initials | Not applicable -initial lactate

6. Measure Urine Output

- May require urinary catheter
- Ensure fluid balance chart commenced & completed hourly
- Commence FCTG, plan timing and delivery of baby

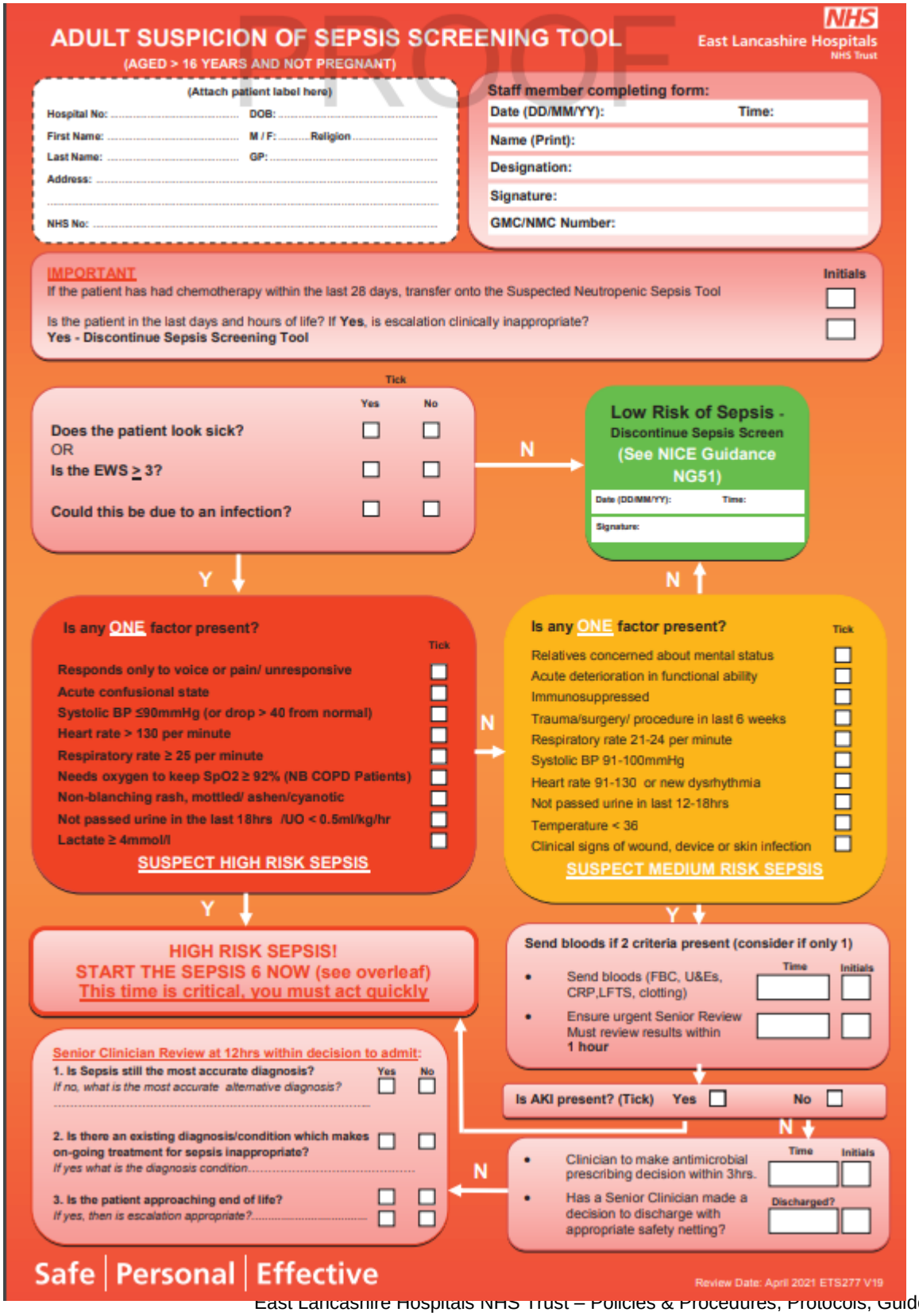
Time complete | Initials | Reason not done/variance

If after delivering the sepsis six, patient still has:

- Systolic BP <90mmHg
- Reduced level of consciousness despite resuscitation
- Respiratory rate over 25 breaths per minute
- Lactate not reducing

Or if the patient is clearly critically ill at any time then call the Obstetric/Anaesthetic Team immediately - Consider Urgent Referral to Critical Care

Appendix 2: Adult Suspicion of Sepsis Screening Tool



SEPSIS SIX PATHWAY

To be applied to all non-paediatric patients over the age of 16 years with suspected or confirmed High Risk Sepsis

	Time Zero	Consultant Informed (Tick)	Initials
Make a treatment escalation plan and decide on CPR status			
Inform consultant that this patient has a High Risk of developing Septic Shock			

COMPLETE ALL SEPSIS SIX WITHIN 1 HOUR

1. Administer Oxygen

- Aim to keep saturations >94%
  (88-92% if at risk of CO_2 retention e.g.COPD)

Time complete | Initials | Reason not done/variance

2. Take blood cultures

- At least a peripheral set. Consider e.g. CSF, Urine, Sputum, CXR and Urine MSU for all adults -
  Think source control
- Call surgeon/ radiologist if needed
- Bloods - FBC, U&Es, LFTS, Clotting, Glucose, VBG/ABG, Lactate, CRP

Time complete | Initials | Reason not done/variance

3. Give IV antibiotics

- See ELHT antimicrobial formulary
- Consider allergies prior to administration
- Document antibiotic indication & review date on drug chart

Time complete | Initials | Reason not done/variance

4. Give IV fluids

- If hypotensive / lactate >2mmols/l. 500mls stat.
- May be repeated if clinically indicated –
  Do not exceed max 30mls/kg

Time complete | Initials | Reason not done/variance

5. Check serial lactates

- Corroborate high VBG lactate with arterial sample

If lactate >4mmols/l. CALL THE ACUTE CARE TEAM

Time complete | Initials | Not applicable -initial lactate

6. Measure Urine Output

- May require urinary catheter
- Ensure fluid balance chart commenced & completed hourly

Time complete | Initials | Reason not done/variance

If after delivering the sepsis six, patient still has:

- Systolic BP <90mmHg
- Reduced level of consciousness despite resuscitation
- Respiratory rate over 25 breaths per minute
- Lactate not reducing

Or if the patient is clearly critically ill at any time then call the Acute Care Team immediately bleep 113