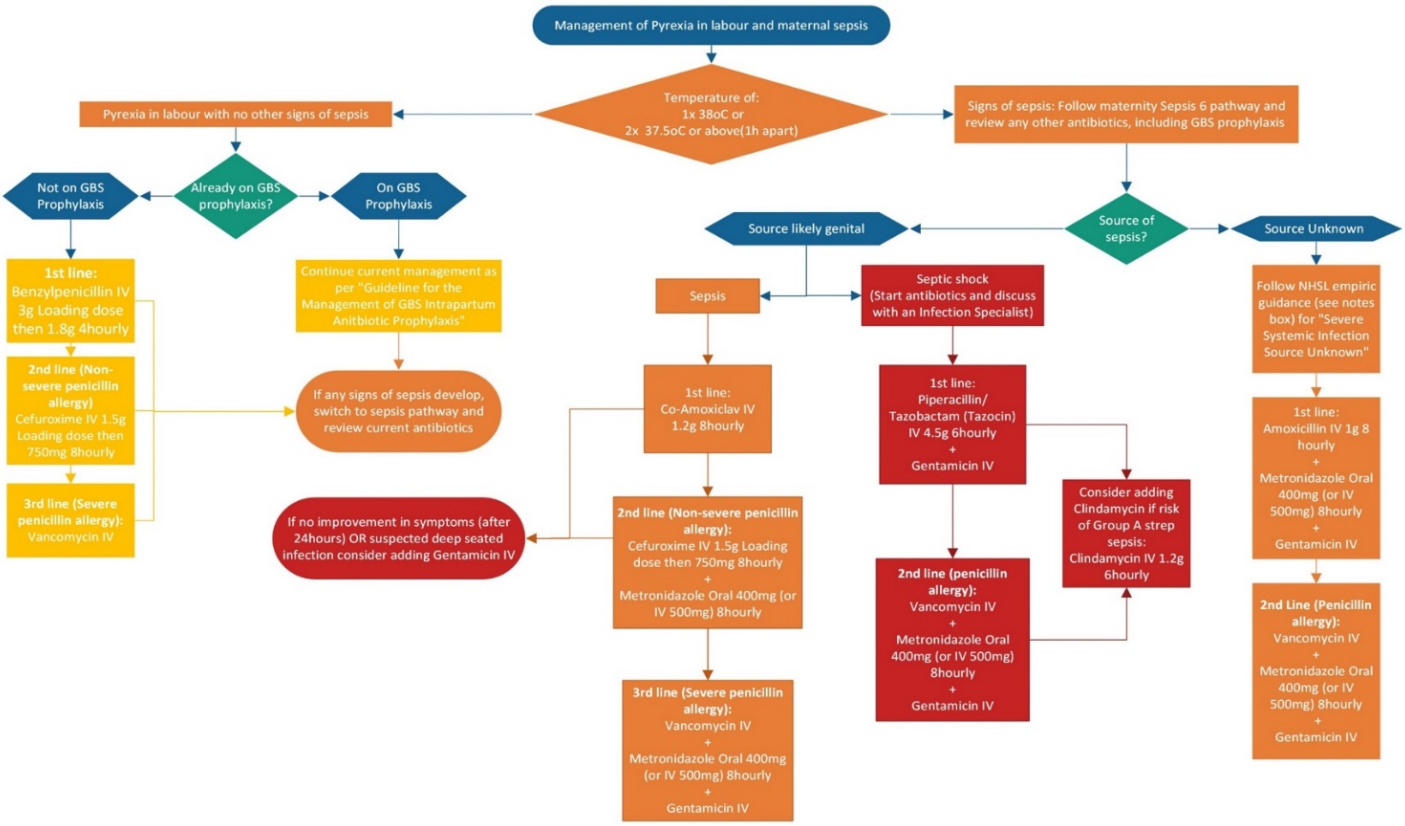
Sepsis and pyrexia – management in pregnancy

Target audience	All midwifery and medical staff providing maternity care in NHS Lanarkshire.
Patient group	All women/birthing people in the antenatal, intrapartum and postnatal periods with a potential diagnosis of sepsis. The term 'women/birthing people' is used within this document to include women, girls, trans men, and non-binary and intersex people, who are pregnant or have recently been pregnant.

Summary

This guideline has combined the following two documents which have now been archived:

- Management of intrapartum maternal pyrexia in hospital
- Sepsis in maternity patients – recognition and immediate management



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Purpose

This document is intended to provide guidance on the assessment of patients with potential signs of sepsis during the intrapartum and postpartum period. This guideline aims to provide a consistent approach to managing sepsis vs pyrexia, so that the patients receive appropriate, and timely, treatment whilst avoiding unnecessary interventions for themselves and their babies. Where possible, Pyrexia and Sepsis, have been separated to individualise care.

Introduction

Maternal sepsis is a life-threatening condition that develops during pregnancy, childbirth, or in the months following childbirth. It can also complicate abortions and miscarriages. While maternal sepsis mortality is high in low-to-middle income countries (around 400 per 100,000 live births), the UK has a much lower rate of approximately 1 per 100,000. Key message from MBRACCE 2023, states: Treat pregnant, recently pregnant, and breastfeeding patients the same as a non-pregnant person unless there is a very clear reason not to.(1)

In the latest MBRRACE-UK report 10% of maternal deaths were attributed to sepsis. This did not include 14% deaths after contracting COVID.(2)

Failure to recognise sepsis early is a significant cause of preventable mortality, resulting in delayed treatment and escalated care, which are critical, if lives are to be saved.(3)

Genital tract infections 31% and E. coli 21.1% are some of the common causes of sepsis. Patients are at an increased risk of sepsis related complications, if they belong to an ethnic minority group or had comorbidities. Black patients are four times more likely, and Asian patients two times more likely to die of complications in the latest MBRACCE report 2019-2021.(2)

Pregnant patients face a slightly higher risk of sepsis due to naturally occurring immunological changes, the need for procedures or surgery, and risks due to complications, such as premature rupture of membranes or gestational diabetes. The most common cause is a severe bacterial infection of the uterus during pregnancy or immediately after childbirth. Maternal sepsis could also be caused by a urinary infection, or pneumonia. Pregnant patients who have a chronic condition impacting one of their organs are the most at risk from maternal sepsis.(1)

Definition of terms

Pyrexia – Single body temperature recording of 38C or above, or 37.5C and above on two separate readings, 1 hour apart. (consensus opinion)

Sepsis - Life threatening Organ Dysfunction, due to dysregulated host response to infection.4

Septic Shock - Persistent Hypotension requiring vasopressin to keep Mean Arterial Pressure of 65 mmHg, and/or serum lactate of greater than 2mmol/l despite adequate volume resuscitation.4

Source or origin of Sepsis – the organ from which is the sepsis is originating. Please note that antibiotic selection will be different for genital and non-genital sepsis.

Initial assessment

INITIAL ASSESSMENT SHOULD FIRST AND FOREMOST EXCLUDE THE PRESENCE OF SEPSIS BEFORE A DIAGNOSIS OF MATERNAL PYREXIA IS MADE

IF SEPSIS IS SUSPECTED THEN ALL STAFF SHOULD COMMENCE THE 'SEPSIS 6' BUNDLE AND THERE SHOULD BE ***NO DELAY*** *IN THE ADMINISTRATION OF ANTIBIOTICS – ANYONE CAN START THE BUNDLE IT DOES NOT REQUIRE THE* PERMISSION OF SENIOR STAFF

Medical review is required for all patient with suspected sepsis

If patient on group B streptococcus (GBS) prophylaxis and develops sepsis stop Benzylpenicillin.

Assessment should include the following and be contemporaneously recorded on a paper MEOWS chart:

- Assessment for source of sepsis
- Temperature
- Heart rate
- Respiratory rate
- Blood pressure
- Level of consciousness
- Oxygen saturation (some Pulse Oximeters can under- or over-estimate Oxygen saturation levels, Over- estimation has been reported in people with darker skin)
- Blood markers of infection – FBC, CRP, Urate, U&E, LFT's and Coag
- Frequency of urination in the past 18 hours

Use the MEOWS chart and scoring system to ascertain if the patient has suspected sepsis (presence of pyrexia with additional signs):

- If any parameters are abnormal then treat as 'maternal sepsis'.
- If all other parameters are normal, then treat as 'maternal pyrexia'.

Escalation of the septic patient

Ongoing assessment of the septic patient is critical in reducing morbidity and mortality. Table 1 below shows the worsening observations between sepsis and septic shock.

Table 1: Stratifying Risk for Assessment of Sepsis

Parameter	Sepsis	Septic shock
Respiratory rate	21-24 / min	25 /min
Heart rate	91-130 bpm	130 bpm or more
Systolic Blood Pressure	91-100 mmHg	90 mmHg or less (40 mmHg from normal)
Urinary output	Nil in 12-18 hours, or 0.5-1.0 ml/Kg/hour	Nil in 18 hours, or 0.5 ml/Kg/hour
Mental state	New onset Change, acute deterioration of functional ability.	Altered levels of consciousness.
Skin	Breakdown of a wound, redness, swelling or discharge.	Ashen/mottled, cyanosis, non-blanching rash.
Temperature	Less than 36'C	Less than 36'C

Sepsis can be difficult to diagnose as symptoms can vary from person to person. The Nice guideline urges professionals to think 'Could This Be Sepsis?' in all patients who have an infection. Patients may present with non-specific, non-localized presentations; feeling very unwell, unusual behaviour for them, breathing difficulties or altered consciousness. Remember, Sepsis can be happening without Pyrexia.*(4)*

Special considerations should be given to:

- Patients who don't speak or understand English as their first language.
- People with communication problems, learning difficulties; these are poorer historians.
- Those with known risk factors for Sepsis

Risk factors for sepsis

Following groups are to be considered high risk for Sepsis and progression:

- Impaired immune systems, because of illness or drugs, diabetics (including gestational), sickle cell carriers or those with history of splenectomy, and those undergoing cancer treatments, or are receiving immunosuppressant therapy (patients with rheumatoid arthritis), or long term steroids
- Recent (within 6 weeks) history of surgeries or invasive procedures (forceps, caesarean birth, removal of retained products of conception)
- Breach of skin integrity
- Intravenous drug users
- Indwelling catheters or lines

- Prolonged rupture of membranes
- Close contact with group A streptococcal infection.
- Continued vaginal bleeding or an offensive vaginal discharge.

Maternal pyrexia

Pyrexia (also named Fever) is the elevation of the thermoregulatory set point, often secondary to a systemic inflammatory response to a stimulus, such as infection.

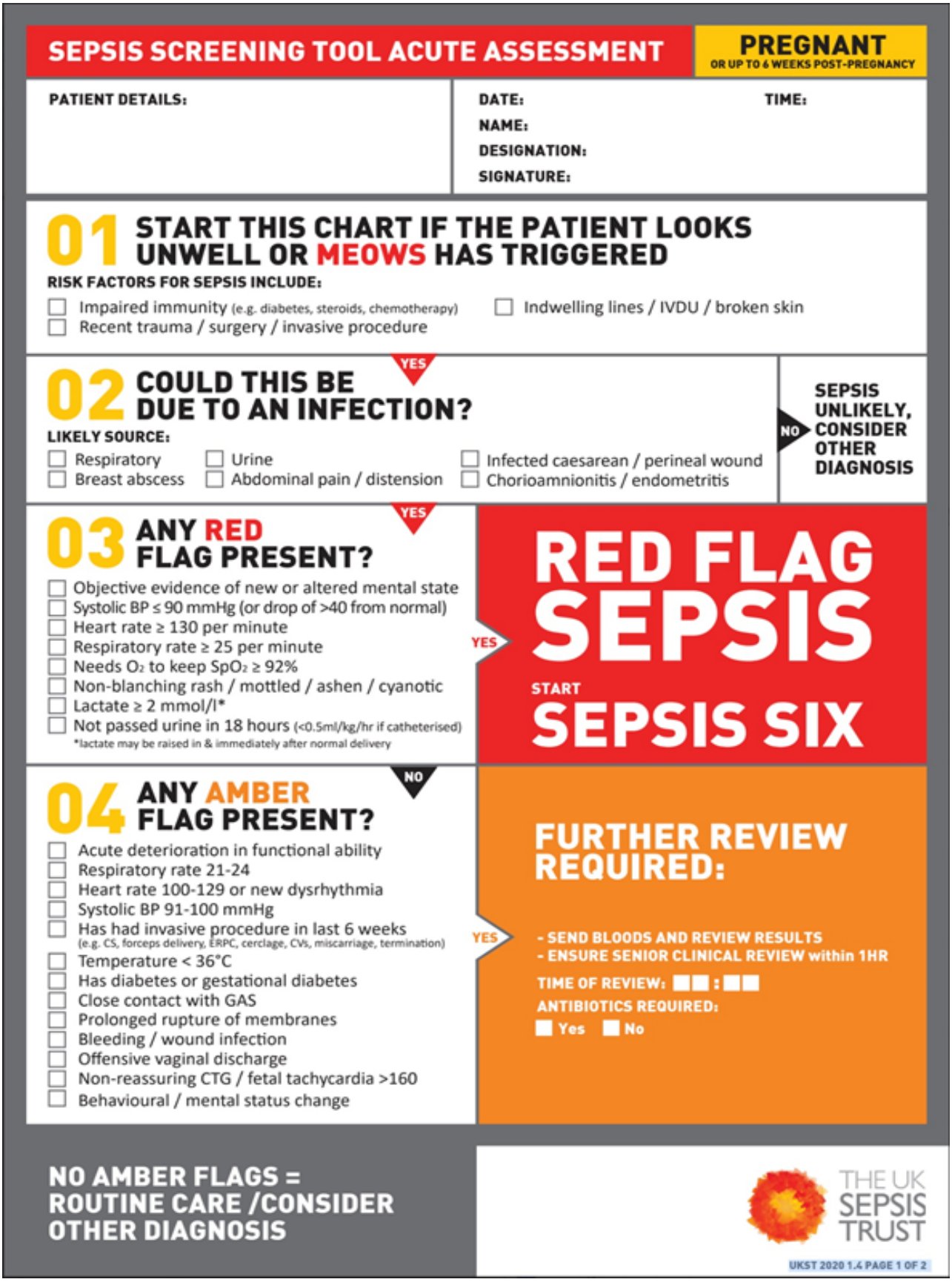
Intrapartum and immediate post-partum (within 6 hours) maternal pyrexia is common, and can be a physiological response to labour.

Normal body temperature is different for everyone and changes during the day. A high temperature above 38C, is called pyrexia, and might be caused by simply the body fighting an infection, such as cold or flu. Rest, the avoidance of dehydration, regular paracetamol or NSAIDS (if postnatal) are considered appropriate.*4*

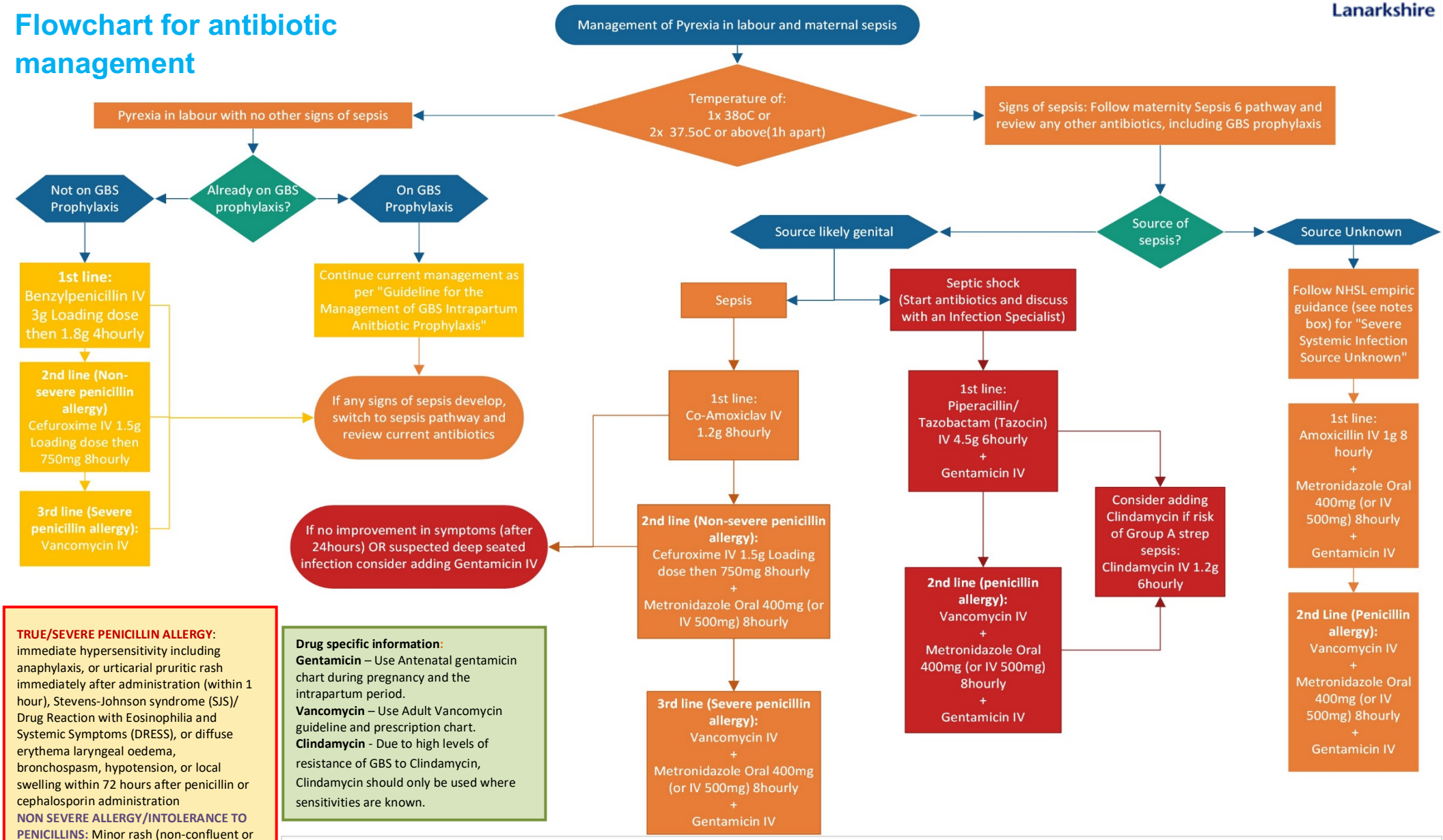
Once a diagnosis of maternal sepsis has been excluded, but pyrexia persists (as per the definition of a single body temperature recording of 38C or above, or 37.5C and above on two separate reading 1 hour apart), please follow the chart in section 5 for appropriate prophylactic antibiotic cover.

ALWAYS REASSESS FOR THE PRESENCE OF SEPSIS IF THE PATIENTS CLINICALCONDITION CHANGES

Sepsis screening tool



Flowchart for antibiotic management



TRUE/SEVERE PENICILLIN ALLERGY: immediate hypersensitivity including anaphylaxis, or urticarial pruritic rash immediately after administration (within 1 hour), Stevens-Johnson syndrome (SJS)/ Drug Reaction with Eosinophilia and Systemic Symptoms (DRESS), or diffuse erythema laryngeal oedema, bronchospasm, hypotension, or local swelling within 72 hours after penicillin or cephalosporin administration

NON SEVERE ALLERGY/INTOLERANCE TO PENICILLINS: Minor rash (non-confluent or non-pruritic rash restricted to a small area) or rash occurring after 72 hours.

See NHSL Guidance on Antibiotic Choice in Penicillin Allergy for full details: https://rightdecisions.scot.nhs.uk/media/a5afdqri/guidance-on-antibiotic-choice-in-penicillin-allergy-atdc-approved-march-2024.pdf

Drug specific information:
Gentamicin – Use Antenatal gentamicin chart during pregnancy and the intrapartum period.
Vancomycin – Use Adult Vancomycin guideline and prescription chart.
Clindamycin - Due to high levels of resistance of GBS to Clindamycin, Clindamycin should only be used where sensitivities are known.

Notes:
1. If MRSA is the suspected causative microorganism IV Vancomycin should be used after discussion with the on call infection specialist.
2. If source of sepsis is not thought to be genital tract refer to NHSL "Empirical First Line Antibiotic Therapy for Adult Patients" and discuss with on call infection specialist if necessary. (Access through Firstport guidelines site/app under Adult Hospital Guidance in the Antimicrobial Guidelines area).
3. Some antibiotics in the Adult Empiric policy are not safe for use in pregnancy and/or breastfeeding, if considering use of agents outside this guidance check suitability and consult with infection specialist or specialist pharmacist (or on-call pharmacist) for advice if needed.
4. Caution with Gentamicin, Vancomycin and Tazocin in renal impairment – see BNF or pharmacy for advice.

This is a local document produced by the Maternity Clinical Effectiveness Group (CEG) with collaboration from the antimicrobial committee (AMC). This chart was reviewed by CEG on 17/4/24 and agreed to have this added to the Maternity Sepsis and Intrapartum Pyrexia Guideline. Chart approved by AMC June 2024, for review June 2027.

Related clinical scenarios

Postnatal care

For patients treated for sepsis, 24 hours IV and 24 hours of oral antibiotics to be given if the mother clinically well and there is no further pyrexia.

If a source of infection is identified, appropriate antibiotics should be given according to local policies and formularies

Pre-term/PROM

Please refer to NHS Lanarkshire Guidelines *(Guideline for Preterm Pre-labour rupture of membranes)*, and *(Guideline for the treatment of preterm labour)*

If receiving GBS prophylaxis, and develops signs of sepsis, follow the sepsis pathway and review antibiotics. *(Guideline for the Management of GBS intrapartum Antibiotic Prophylaxis)*

Operative vaginal birth

All operative vaginal births to receive one single dose of antibiotic to minimise risk of infection, as standard. However, if already on sepsis protocol, this extra dose of antibiotics is not required. *(Guidelines for the prevention of sepsis after operative vaginal deliveries)*

Postpartum haemorrhage

As per NHS Major Obstetric Haemorrhage guideline, all patients with a PPH>1500ml should receive a dose of antibiotics (or second if operative vaginal or CS birth). Please refer to MOH guidance for specific antibiotic selection.

If on continued observation of the patient, there is development of sepsis, follow the sepsis pathway and review antibiotics.

References

1. UK Sepsis Trust, Maternal sepsis.
2. MBRACCE 2019-2021.
3. Lawton B, MacDonald EJ, Brown SA, et al: Preventability of severe acute Maternal Morbidity. Am J Obstet Gynaecol. 2014;2106).
4. Updated NICE guidelines 2023, sepsis: recognition, diagnosis and early management. November 2023.

Clinical governance

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