



National Maternity Network

Management of Intrapartum Maternal Pyrexia in Hospital

Guideline

DOCUMENT CONTROL SHEET

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1.1	05.05.2023	Elaboration of definition of pyrexia on page 3	Anne-Sophie Hoffmoen	

DISCLAIMER

The recommendations in this guideline represent the view of the Network, arrived at after careful consideration of the evidence available. When exercising their clinical judgement, healthcare professionals are expected to take this guideline fully into account, alongside the individual needs, preferences and values of their patients or the people using their service. It is not mandatory to follow the guideline recommendations and it remains the responsibility of the healthcare professional to make decisions appropriate to the circumstances of the individual, in consultation with them and their families and carers or guardian.

1. Purpose and Scope

The need for a guideline on the management of maternal pyrexia in labour was identified from significant adverse events where inconsistencies in guidance may have adversely affected outcomes. This guideline is relevant to all medical and midwifery staff involved in intrapartum care. The purpose is to create guidance that could be consistently applied across all maternity units in Scotland. The scope of this guideline covers the recognition and management of a well woman who develops pyrexia during labour at term or up to 6 six hours post-partum, within the hospital setting. Consideration of transfer to labour ward should be given to those women labouring at home, stand-alone midwifery units or alongside midwifery units who develop signs of pyrexia requiring further investigation or treatment. Management of women with sepsis is outside the scope of this guideline^{1,2}. Management of pyrexia following prolonged pre-labour rupture of membranes and during preterm labour are also outside the scope of this guideline^{3,4}. Those women who have group B streptococcal colonisation, bacteriuria or infection during the current pregnancy should be treated according to existing national guidelines⁵⁻⁸.

2. Background and Introduction:

Intrapartum and immediate postpartum (within six hours) maternal pyrexia is common and can be a physiological response to labour or a sign of more serious maternal illness including sepsis. This guideline aims to provide a consistent approach to managing the problem so that women receive appropriate and timely treatment, whilst avoiding unnecessary interventions for themselves and their babies.

3. Identification and assessment of evidence:

This guideline was developed in accordance with the standard Scottish Perinatal/Neonatal Network process by a multidisciplinary group including obstetricians, midwives and neonatologists. Evidence was obtained by searching Cochrane Database, Pubmed and Medline for articles from 2000 to 2021 using search terms of "intrapartum pyrexia", "intrapartum sepsis", "maternal pyrexia" and "maternal sepsis". The following national guidelines were also used in this assessment:

- Bacterial Sepsis in Pregnancy: RCOG GTG64a¹
- Sepsis: Recognition, Diagnosis and Early Management: NICE CG51 2016²
- NICE Guideline CG190: Intrapartum Care³
- The West of Scotland Neonatal Managed Clinical Network Guideline on Early Onset Sepsis in the Neonate: prevention and Treatment⁵
- Prevention of Early Onset Neonatal Group B Streptococcal Disease: RCOG GTG (no 36)⁶
- NICE Guideline NG121: Intrapartum care for women with existing medical conditions or obstetric complications and their babies⁷
- NICE Guideline CG195 – Neonatal infection: antibiotics for prevention and treatment⁸

Where possible, recommendations are based on available evidence and, where evidence is limited, recommendations are based on consensus opinion. We have used a colour scheme of blue for definitions, pink for assessment and investigations and purple for management in the guidance below.

Definition of Pyrexia	
Pyrexia should be defined as 38°C or above on a single reading or 37.5°C or above on two consecutive readings (1 hour apart).	Evidence Level: Consensus Opinion
Supporting statement The NICE Guideline on intrapartum care for healthy women and babies (CG 190, 2014) uses the definition of pyrexia as 38°C or above on a single reading or 37.5°C on two consecutive readings (1 hour apart), regardless of whether the patient has had paracetamol or not. This is also the definition used by NICE Guidelines Intrapartum care for women with existing medical conditions or obstetric	

complications and their babies (CG 121, 2019). The RCOG guideline on Bacterial Sepsis in Pregnancy (64a, 2012) uses this definition, but with the two 37.5°C measurements being 2 hours apart, quoting the reference for this as the preceding Guidance to CG 190 (CG 55, 2007). The West of Scotland Neonatal Managed Clinical Network Guideline on Early Onset Sepsis in the Neonate: prevention and Treatment⁵ uses the slightly different definition of a temperature reading of 38°C or above on a single reading or 37.5°C on two consecutive readings two hours apart. The review team decided to adopt the most up to date evidence from NICE 190.

Use of Partogram

A Partogram, or other early warning chart modified for obstetrics, should be used to record observations for all mothers with a pyrexia.

Evidence Level:
Consensus Opinion

Supporting statement

The RCOG guideline on Bacterial Sepsis in Pregnancy (64a, 2012) recommends use of an 'early warning chart modified for obstetrics' e.g., MEWs chart if sepsis is suspected. There are no specific guidelines for use of an early warning chart in NICE 190 or 121. Similar information is recorded in the Partogram. A MEWS maybe used in early pregnancy, but once Partogram is commenced, maternal observations should be recorded here (Clinical Practical Guide: The Scottish Maternity Early Warning System v3 2021)¹⁰.

The authors of a review on modified early warning scores (Robbins 2019) conclude that 'the principle of maternity-specific early warning systems to structure surveillance for hospitalized women is intuitive. The widespread use and policy support, including recommendations following confidential enquiries and from the National Health Service Litigation Authority, is not, however, currently backed up by a strong evidence base'.

Assess for Sepsis

Assess mother for risk factors, symptoms and signs of sepsis.

Evidence Level:
High Quality
Evidence

Supporting statement

The RCOG and NICE guidelines on recognition and management of sepsis define risk factors and signs for prompt recognition. Risk factors for pyrexia include nulliparity, prolonged labour, induction of labour, use of prostaglandins, ruptured membranes, and epidural use⁸. Risk factors for sepsis also include prolonged rupture of membranes, chorioamnionitis, and known Group B Streptococcal colonisation or bacteriuria^{1,2}. Red flag signs merit urgent review and management according to Sepsis 6 protocol. Red flag signs are:

- objective evidence of new or altered mental state
- hypotension
- tachycardia
- tachypnoea
- non-blanching rash/mottled/ashen/cyanotic.

Women with suspected sepsis should be managed according to the RCOG/Sepsis 6 protocol.

Investigation if temperature >37.5°C and <38°C on one occasion	
<p>Assess the observations for any woman with a temperature >37.5°C and <38°C on one occasion.</p> <p>If any of the following: Assess for maternal sepsis and, if confirmed, manage as per national/local sepsis guidelines</p> <ul style="list-style-type: none"> • Heart rate > 100bpm • Respiratory rate > 20bpm • Systolic BP > 140 or < 100mmHg • Diastolic BP > 90mmHg <p>If observations within normal limits apart from pyrexia:</p> <ul style="list-style-type: none"> • Repeat observations in 30 minutes and one hour • If temperature <37.5°C after one hour resume standard care as per NICE Intrapartum Care guideline³ • If temperature >37.5°C after one hour proceed to further investigations 	<p>Evidence Level: Consensus Review</p>
<p>Supporting statement</p> <p>Women who have mild pyrexia on one occasion require further assessment. If the temperature settles, the patient remains well with no red flag symptoms and maternal observations are within normal limits after one hour, no further investigation or intervention is required, and the patient should return to routine intrapartum care.</p>	

Investigation if temperature >37.5°C on two occasions 1 hour apart or >=38°C on one occasion	
<p>Assess any woman with a temperature >37.5°C on two occasions one hour apart, or >=38°C on one occasion, for signs of sepsis.</p> <p>Request medical assessment of the patient for potential causes of pyrexia:</p> <ul style="list-style-type: none"> • FBC/lactate/urea and electrolytes +/- CRP and any other appropriate investigations (e.g., urine culture) • Blood cultures • Covid-19 swab • HVS • Repeat observations/MEWS at least hourly • Assess for sepsis and if suspected, manage according to local/national sepsis guidelines 	<p>Evidence Level: Consensus Review</p>
<p>Supporting statement</p> <p>Women who have a temperature >37.5°C on two occasions one hour apart, or >=38°C once, require further assessment to exclude sepsis (including covid-19). Those women with signs of sepsis should be treated according to the Sepsis 6 protocol. Those women who have pyrexia and no signs of sepsis should continue on the pathway of this guideline.</p>	

Care if temperature >37.5°C on two occasions one hour apart or >=38°C on one occasion

<p>If any woman has a temperature >37.5°C on two occasions one hour apart or >=38°C on one occasion treat as follows:</p> <ul style="list-style-type: none"> • Assess for other signs of sepsis • Offer 1g paracetamol 6-hourly • Tepid sponge • Consider IV crystalloid according to clinical condition. • If a source of infection is identified, appropriate antibiotics should be administered according to local policies and formularies. • If no source is identified, then administer prophylactic antibiotics as per local guidance or NICE guidance (appendix 2) • Commence continuous electronic fetal monitoring 	<p>Evidence Level: Consensus Review</p>
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Supporting statement

NICE (121) states that 'Paracetamol is safe and can reduce discomfort when a woman has a raised temperature.... [although]... there is no evidence that this improves outcome for mother or baby. Because paracetamol may mask a worsening fever healthcare professionals should remember that paracetamol is not a treatment for sepsis and should not delay investigation and treatment when sepsis is suspected'.

Sepsis, as defined by the WHO '...arises when the body's response to infection causes injury to its own tissues and organs.... involving organ dysfunction caused by a dysregulated host response to infection.' Assessment of this requires sending FBC, U&E's, blood cultures and a lactate, and it is recommended that these are undertaken when the temperature is $\geq 38^{\circ}\text{C}$. The decision to prescribe antibiotics is a balance between the benefits they may offer in terms of maternal and neonatal sepsis (especially with chorioamnionitis) against the risks of the antibiotics themselves - anaphylaxis, disruption of newborn microbiota (obesity, allergic disease, obesity) and antimicrobial resistance.

NICE guidance 190 and 121 make no recommendation about when to start antibiotics.

The RCOG Greentop Guideline on early-onset Group B Streptococcal disease recommends that women who are pyrexial (38°C or greater) in labour should be offered a broad-spectrum antibiotic regimen which should cover GBS in line with local microbiology sensitivities. This guideline argues that intrapartum pyrexia (38°C or greater) is associated with a risk of EOGBS disease of 5.3 per 1000 (versus a background risk of 0.6 per 1000) and that this level of risk justifies antibiotics in all situations in which the temperature is 38°C or greater.

A prospective cohort analysis of 175 mother-newborn pairs using a single temperature of $>38^{\circ}\text{C}$ on one occasion demonstrated that there was evidence of infection in 17.1% (30/175), with 22% (22/100) if pyrexia in labour and 10.7% (8/75) if the pyrexia occurred postpartum. Importantly, 60% of those who had a confirmed infection had temp in the 38°C - 38.2°C range¹⁶.

Given the RCOG recommendation, and the incidence of infection identified in the cohort study above, it seems reasonable to advice starting broad spectrum antibiotics in those with a temperature of 38°C or greater on a single occasion.

The RCOG Greentop guideline suggest that 'Sepsis 6' is required if there is one MEWS red flag or following review of amber triggers (GTG 64). The authors of this guideline felt however that,

providing antibiotics had been commenced, it was reasonable to decide about the additional initial care recommended in Sepsis 6 (oxygen, fluids and urine output measurement, or escalation beyond this) using clinical judgement +/- a sepsis screening tool.

Continuous electronic fetal monitoring is recommended by NICE (1.10.4 NICE CG 190). It should be noted that electronic fetal monitoring is not a sensitive predictor of early onset neonatal sepsis ^{11,12} and that clinical judgement required on timing of delivery (NICE 121).

Post-natal Care - Mother

If there is no further pyrexia and the mother is clinically well, 24 hours of IV antibiotics and 24 hours of oral antibiotics should be given postnatally.

Evidence Level:
Medium quality evidence

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

If a pyrexia continues or develops in the first six hours postnatally, the mother should be assessed for sepsis and investigated/managed as for intrapartum pyrexia.

Supporting statement

Intrapartum pyrexia without sepsis is frequently non-infective in origin, though may result in prolonged courses of antibiotics. Provided the woman is well after delivery, the cohort study mentioned above¹⁷ has suggested that "early discontinuation of antibiotic treatment is appropriate in the majority of patients who develop term peripartum pyrexia after onset of labour."

Post-natal Management - Baby

If a mother has required antibiotic treatment due to pyrexia in labour or in the six hours postnatally, the infant should be put on NEWS charting and follow local NEWS guidance for escalation pathways.

Evidence Level:
Low quality evidence

A member of the neonatal team will assess the infant if required, according to local sepsis guideline/NICE Guideline 195⁸ and advise on further management.

Supporting statement

The management of the baby is clearly described in the NICE Guideline 195⁸. The neonatal team should be informed of any infant who has been born to a mother requiring antibiotics in labour. In addition, the team should be informed if the mother develops pyrexia in the post-natal period. Management of the baby will depend on further assessment by the neonatal team.

Appendix 1 – Intrapartum antibiotics⁷

Allergies	Women without chorioamnionitis	Women with chorioamnionitis
No penicillin allergy	Use Benzylpenicillin.	Use Benzylpenicillin plus gentamicin plus metronidazole.
Penicillin allergy that is not severe	<p>Use Cephalosporin with activity against group B streptococcus (for example cefotaxime).</p> <p>Use with caution.</p> <p>In April 2021 this was an off-label use of cephalosporins. See NICE's information on prescribing medicines.</p>	<p>Use Cephalosporin with activity against group B streptococcus (for example cefotaxime) plus metronidazole.</p> <p>Use with caution.</p> <p>In April 2021 this was an off-label use of cephalosporins. See NICE's information on prescribing medicines.</p>
Severe penicillin allergy	<p>Consider:</p> <p>Vancomycin or</p> <p>An alternative antibiotic that would be expected to be active against group B streptococcus based on either sensitivity testing performed on the woman's isolate or on local antibiotic susceptibility surveillance data.</p> <p>In April 2021 this was an off-label use of vancomycin. See NICE's information on prescribing medicines.</p>	<p>Consider:</p> <p>Vancomycin plus gentamicin plus metronidazole or</p> <p>An alternative antibiotic to vancomycin that would be expected to be active against group B streptococcus based on either sensitivity testing performed on the woman's isolate or on local antibiotic susceptibility surveillance data plus gentamicin plus metronidazole.</p> <p>In April 2021 this was an off-label use of vancomycin. See NICE's information on prescribing medicines.</p>

References

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3. NICE Guideline CG190: Intrapartum Care <https://www.nice.org.uk/guidance/cg190>
4. NICE Guideline CG25: Preterm Labour and Birth <https://www.nice.org.uk/guidance/ng25>
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