Intrapartum Fever

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1. Scope and background

This guideline is focused on the aetiologies, management, and potential consequences of intrapartum fever. Management of some of the specific causes of intrapartum fever will be briefly discussed. Note that the scope of this guideline is restricted only to intrapartum care.

The guideline will not provide information about management of septicaemia and Group B streptococcal (GBS) infection in pregnancy (refer relevant guidelines). For detailed management of Dengue fever and COVID-19, please refer to the National Guidelines.

2. Summary of key recommendations

2.1 Definition

Intrapartum fever is defined as the elevation of maternal oral temperature ≥39°C (≥102.2°F) on one reading or temperature between 38°C (>100.4°F) to 39°C (102.2°F) on two readings 30 minutes apart in a woman in labour[1].

Healthcare worker should measure oral temperature of all women in labour 4 hourly or whenever they show signs and symptoms of febrile illness. Temperature should be recorded in the partogram routinely. Whenever high temperature is detected, it should be recorded in a separate temperature chart.

2.2 Aetiology

Intraamniotic infection (IAI) and neuraxial anaesthesia are the most common causes for intrapartum fever[2]. Aetiology of the intrapartum fever is classified into two categories.

a. Infectious causes
b. Non-infectious causes

a. Most common infection related aetiologies are
   - Intraamniotic infection (IAI)
   - Urinary tract infection
   - Respiratory tract infection including H1N1 influenza
   - Any other pre-existing infection which could present as fever during labour
   - Dengue fever and COVID-19 infection which should be given special consideration during pandemics

b. Non-infectious causes
   - Use of neuraxial anaesthesia is the most common cause of non-infectious cause of fever at term.
   - Increased metabolism (eg: thyrotoxicosis), poor ventilation, delivering in an overheated room and drug fever are considered as some other causes for intrapartum fever.

Patients with following factors are considered high risk for intrapartum fever –

- Nulliparity
- Labour induction
- Prolonged labour
- Premature labour
- Prolonged membrane rupture
- Multiple digital vaginal examinations
- Exposure to intrauterine devices: – Intrauterine pressure devices/ Foetal scalp electrodes

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3. Diagnosis and investigations

Careful history and systemic examination are required. Special consideration should be given for abdominal tenderness, vaginal examination including characteristic of amniotic fluid and odour.

Investigations

Investigations are based on suspected aetiology. However, there are no specific investigations for intrapartum fever. Usually full blood count (FBC), blood culture, urine full report (UFR) and urine culture are performed according to the suspected aetiology. High vaginal swab culture is usually done when there is evidence of premature rupture of membranes (PROM). In endemic situations, rapid antigen for Dengue fever, H1N1 influenza and COVID-19 are vital for immediate management.

Biological markers – Many systemic reviews done in intra-partum fever concluded that, measurement of C-Reactive Protein (CRP) is unreliable for detecting intrauterine infection[3].

4. Management

- Senior obstetrician's opinion should be obtained in the management of all patients with intrapartum fever. It may be beneficial to have a multidisciplinary team approach involving the Obstetrician, Microbiologist, Physician and the Anaesthetist.
- Neonatology team should be notified and involved for every case of intrapartum fever. The presence of a senior medical officer from the neonatology team at the time of delivery is the minimum requirement.
- Antibiotics – Usually broad-spectrum antibiotics with coverage of GBS (Group B streptococcus) is initiated in all patients except those with pre-existing infection. Different antibiotic regimens are used according to the hospital/unit policy (See Table 1).
- All patients with intrapartum fever should have their pulse rate, blood pressure and respiratory rate checked every 15 minutes throughout the labour and the postpartum period. All healthcare professionals should have the knowledge to identify the signs and symptoms of sepsis. In case of suspected sepsis, a Modified Obstetric Early Warning Signs (MOEWS) chart should be maintained and the patient may need HDU or ICU care during the process of labour.
- CTG (cardiotocograph) – All patients with intrapartum fever should have a continuous foetal monitoring with CTG.
- General measures should be taken to reduce the body temperature by adequate hydration (IV/ oral fluids), removing blankets and clothing, applying a cool wet towel to the skin, lowering the room temperature, and providing anti-pyretics like paracetamol.
- Mode of delivery and timing of delivery – Decisions for timing and mode of delivery should be made by the senior consultant obstetrician considering the following factors
  a) Severity of maternal infection
  b) Duration and stage of labour
  c) Gestational age
  d) Foetal viability
- There is no indication to deliver the foetus immediately unless the cause of the fever is suspected chorioamnionitis.

5. Management of specific infections

Management of Intraamniotic infection (Chorio-amnionitis or IAI)

IAI is defined as infection or inflammation of the amniotic fluid, membranes, placenta and/or decidua[4].

Diagnosis is based on maternal pyrexia ≥38°C (100.4°F) orally, and at least the presence of two of the following findings[5].

- Maternal tachycardia (>100bpm)
- Foetal tachycardia (>160bpm)
- Uterine tenderness
- Foul odour of the amniotic fluid
- Maternal leukocytosis (>15,000cells/mm^3)

Once the diagnosis of the IAI is made, commencement of broad-spectrum antibiotics and delivery is indicated.

6. Maternal and neonatal consequences of intrapartum fever

6.1 Maternal consequences

- Dysfunctional labour
- Greater likelihood of caesarean delivery
- Uterine atony
- Postpartum haemorrhage
- Postpartum endometritis
- Septic pelvic thrombophlebitis

6.2 Neonatal consequences

- Meconium Aspiration Syndrome
- Hyaline Membrane Disease (HMD)
- Neonatal Seizures
- Intrapartum stillbirth
- Early neonatal or infant death
- Birth asphyxia
- Neonatal encephalopathy → cerebral palsy
- Needing assisted ventilation

7. Postpartum period

Antibiotics started for confirmed or suspected intraamniotic infection should not be continued automatically in the postpartum period. Continuation of the antibiotic treatment should be decided on case-by-case basis considering the clinical state and the investigations. Continuation of the temperature monitoring chart and close observation of the neonate is recommended[4].

7.1 Introduction

Fever during labour (intrapartum fever) is an important clinically relevant obstetric event associated with a range of maternal and neonatal complications. The prevalence of intrapartum fever has increased recently due to increase use of neuraxial anaesthesia. Studies indicate 6.8 percent or 1 in 15 women in labour have fever[6].

Even though there can be both infectious and non-infectious contributing causes, most pregnant women with intrapartum fever are presumed to have an intraamniotic infection (IAI) and are managed with broad spectrum antibiotics. IAI and neuraxial anaesthesia administration are the two most common contributing causes of intrapartum fever. Many risk factors such as nulliparity, prolonged labour and premature rupture of membranes are common to both. An individualised approach involving a senior obstetrician is recommended for management of labour. In addition, some pre-existing conditions may require involvement of a multi-disciplinary team management.

8. Recommendations and discussions

8.1 Definition

Intrapartum fever is defined as elevation of maternal oral temperature ≥39°C (≥102.2°F) on one reading or temperature between 38°C (>100.4°F) to 39°C (102.2°F) on two readings 30 minutes apart in a woman in labour.

Health care worker should measure oral temperature of all women in labour 4 hourly or whenever they show signs and symptoms of febrile illness. Temperature should be recorded in the partogram routinely. Whenever high temperature is detected, it should be recorded in a different temperature chart.

Elevated body temperature will occur when the hypothalamic thermo regulator is reset at the higher temperature by the endogenous pyrogens produced by specific host cells in response to infection, inflammation, injury or antigenic challenge. In some instances, due to the inability to reset the thermoregulatory centre, hyperthermia may occur. For example, recreational drugs like ecstasy can lead to increase in the core temperature by blocking the sweating or vasodilatation. In this chapter the term fever will be used to describe the rise in maternal intrapartum temperature by any mechanism. Observations of normal parturient shows a diurnal distribution of temperature with a peak from midnight to 2am and a nadir from 11am to noon[7].

The temperature should be measured in the oral sublingual pocket with an electronic thermometer, since this is an accurate and convenient method for detecting maternal fever. Mouth breathing, hyperventilation, ingestion of ice or hot beverages and oxygen administration can affect the oral temperature. Temperature measurement should be undertaken at least 15 minutes after consuming hot or cold beverages[8]. Measurement of axillary temperature will have an error of 1°C-2°C lower than the oral temperature[9].

Oral temperature is correlated better with intrauterine core temperature according to one study. Foetal/ intrauterine temperature is 0.2°C-0.9°C (0.4°F-1.6°F) higher than maternal oral temperature[8,10-13].

8.2 Aetiology and risk factors

IAI and neuraxial anaesthesia are the most common causes for intra-partum fever.

Aetiology of the intrapartum fever is classified into two categories.

a. Infectious causes

b. Non-infectious causes

a. Most common infection related aetiologies are
   - Intra-amniotic infection (IAI)
   - Urinary tract infection
   - Respiratory tract infection
   - Any other pre-existing infection which could be present as fever during labour
   - Special consideration should be given to dengue fever and COVID-19 infection

b. Use of neuraxial anaesthesia is the most common non-infectious cause of intrapartum fever.

Increased metabolism (eg: thyrotoxicosis), poor ventilation, delivering in an overheated room and drug fever are also considered as some other causes for intrapartum fever.

The pathophysiology of the intra-partum fever associated with neuraxial anaesthesia is not well understood. It has been attributed to –

- Direct effect of local anaesthetics on endothelial cells, trophoblast cells or leukocytes to induce proinflammatory or inhibit anti-inflammatory cytokines release, which will act on thermo-regulatory centre to reset the temperature[14-18].
- Both neuraxial anaesthesia and IAI share same risk factors.
- Reduced heat loss – parturient with epidural anaesthesia have less pain induced hyper-ventilation and less perspiration because of sympathetic block[2].

In general, increased in temperature >38°C is usually observed 4 hours following insertion of epidural anaesthesia[19,20]. Nulliparous are more likely to have longer labour and likely to have intrapartum fever than multiparous (risk 13-33%)[21]. There is no difference in the maternal temperature elevation in parturient who receive CSE (combined spinal and epidural anaesthesia) compared to epidural alone. There is no known effective method to prevent neuraxial anaesthesia related temperature elevation.

Patients with following factors are considered high risk for intrapartum fever –

- Nulliparity
- Labour induction
- Prolonged labour
- Premature labour
- Prolonged membrane rupture
- Multiple digital vaginal examinations
- Exposure to intrauterine devices: – Intrauterine pressure devices – Foetal scalp electrodes

However above-mentioned conditions are risk factors for both IAI and neuraxial anaesthesia. Since there are no intrapartum clinical or laboratory findings that can reliably distinguish IAI and neuraxial anaesthesia related elevated maternal temperature, broad spectrum anti-biotics are usually administered in this situation, resulting in overtreatment of mothers.

Other sources of fever could be due to urinary tract infection, respiratory tract infection, influenza, pneu-monia and appendicitis that began during the antepartum period.

8.3 Diagnosis and investigations

Careful history and systemic examination are required. Special consideration should be given for abdominal tenderness, vaginal examination including characteristic of amniotic fluid and odour.

Investigations are based on suspected aetiology. However, there are no specific investigations for intra-partum fever. Usually full blood count (FBC), blood culture, urine full report (UFR) and urine culture are performed according to the suspected aetiology. High vaginal swab culture is usually done when there is evidence of premature rupture of membranes (PROM). In endemic situations, rapid antigen for Dengue fever, H1N1 influenza and COVID-19 are vital for immediate management.

Biological markers – Many systemic reviews done in intra-partum fever concluded that, measurement of C-Reactive Protein (CRP) is unreliable for detecting intra-uterine infection[3].

- **White Blood Cell count/ Differential count (WBC/DC)** – It is recommended to take WBC/ DC in labouring women who are clinically ill or having a high temperature. Since elevated WBC count is a normal physiological occurrence in labour, the value of this is limited. The mean values of WBC count vary from 10,000 - 29,000 cells/microlitre. Usually, the mean count increases linearly throughout the labour[22]. With other evidence of infection, the presence of leukocytosis will support the diagnosis, especially when accompanied by a left shift.

- **Blood culture** – Even though there is no immediate benefit of doing blood culture in intrapartum women, it will be useful for the subsequent management as appropriate antibiotic therapy is important in patients with bacteraemia, for the prevention of progressing to sepsis and shock. It is highly recommended to obtain the blood cultures from the patients with following features[23,24].

- Fever >39°C (102.2°F)
- Chills
- Hypothermia
- Leukocytosis with left shift
- Neutropenia
- Development of otherwise unexplained organ dysfunction

Usually, blood cultures are not routinely performed in patients with suspected IAI as delivery and empirical antibiotic therapy is effective in 80-90% of these patients.

- **Urine tests** – Urinary dipstick is important in a labouring woman for the rapid diagnosis of a urinary tract infection. This is easy to perform, convenient and low cost. Sample could be obtained from a clean catch midstream urine, straight catheter, or an indwelling catheter. Urine culture is important when the patient is clinically ill, but not practical as a first line diagnosis test.

- **Rapid antigen test** – In dengue fever detecting the NS1 antigen is important since early intervention with proper fluid management is necessary.

  In suspected COVID-19 infection, rapid antigen test is strongly recommended, because symptomatic or asymptomatic patients in endemic situation need early isolation in the management. Real time PCR has a value if available, for patients who are found to be having fever despite negative Rapid antigen.

- **High vaginal swab** – It is routinely taken in women with PROM. Positive culture for potential pathogens does not correlate well with the risk, or developing chorioamnionitis; however, they are useful in determining the organisms when the chorioamnionitis is diagnosed and directing the antibiotic therapy.

8.4 Management of intra-partum fever

Senior obstetrician's opinion should be obtained in the management of all patients with intrapartum fever. It may be beneficial to have a multidisciplinary team approach involving the Obstetrician, Microbiologist, Physician and the Anaesthetist.

Neonatology team should be notified and involved for every case of intrapartum fever. The presence of a senior medical officer from the neonatology team at the time of delivery is the minimum requirement.

Antibiotics – Usually broad-spectrum antibiotics with coverage of GBS (Group B streptococcus) is initiated in all patients except those with pre-existing infection. Different antibiotic regimens are used according to the hospital/unit policy.

All patients with intrapartum fever should have their pulse rate, blood pressure and respiratory rate checked every 15 mins throughout the labour and the postpartum period. All healthcare professionals should know the signs and symptoms of sepsis. In case of sepsis, patient may need HDU or ICU care. In case of suspected sepsis, a Modified Obstetric Early Warning Signs (MOEWS) chart should be maintained and the patient may need HDU or ICU care during the process of labour.

Clinical signs and symptoms of sepsis are – pyrexia, hypothermia, tachycardia, tachypnoea, hypoxia, hypotension, oliguria, impaired consciousness and

failure to respond to treatment. These signs including pyrexia, may not always be present and are not necessarily related to the severity of the sepsis[25]. Refer to quick Sequential Organ Failure Assessment (qSOFA) score for early detection of suspected patients with sepsis Table 2.

CTG (cardiotocograph)

All patients with intrapartum fever should have a continuous foetal monitoring with CTG.

Intrauterine infection is associated with abnormal foetal heart trace, but there is no specific CTG pattern that indicate early onset neonatal sepsis.

Foetal tachycardia may occur due to maternal pyrexia or intrauterine infection. If Foetal tachycardia occurred secondary to maternal pyrexia, foetal tachycardia will subside once the normalisation of the maternal temperature is achieved.

Changes in baseline variability or new onset decelerations must prompt measurement of maternal mean arterial pressure (MAP), hypoxia and acidaemia.

General measures

Measures should be taken to reduce the body temperature by adequate hydrations (IV/oral fluids), removing blankets and clothing, applying a cool wet towel to the skin, lowering the room temperature and providing anti-pyretics like paracetamol.

Mode of delivery and timing of delivery – Decisions for timing and mode of delivery should be made by the senior consultant obstetrician considering the following factors

a) Severity of maternal infection

b) Duration and stage of labour

c) Gestational age

d) Foetal viability

There is no indication to deliver the foetus immediately unless the cause of the fever is suspected chorioamnionitis.

Expediting the delivery with maternal instability may increase the risk of maternal and foetal mortality unless the infection is intrauterine.

8.5 Management of specific infections

Management of Intra-amniotic infection (Chorioamnionitis or IAI).

IAI is defined as infection or inflammation of the amniotic fluid, membranes, placenta and/or decidua.

Diagnosis is based on maternal pyrexia ≥38°C (100.4°F) orally, and at least the presence of two of the following findings

- Maternal tachycardia (>100bpm)
- Foetal tachycardia (>160bpm)
- Uterine tenderness
- Foul odour of the amniotic fluid
- Maternal leukocytosis (>15,000cells/mm^3)

Other clinical and laboratory criteria are insensitive for IAI.

"Triple I" is another terminology proposed by an expert panel in 2015, replacing IAI, which indicate intra uterine infection, inflammation or both[1, 27]. The organisms involved in the chorioamnionitis usually present in the lower genital tract.

Usually, a presumptive diagnosis is made depending on the above findings. However, for the definitive diagnosis of IAI amniotic fluid gram stain, culture or placental histology showing features of an infection is necessary.

Even though the positive amniotic fluid culture is the gold standard for the diagnosis, it is of limited value in clinical practice as the results may not be available for up to 3 days from sampling. Maternal C-Reactive protein and Leukocytosis have low sensitivity and specificity to detect the chorioamnionitis. Combination of maternal blood and amniotic fluid biomarkers (interleukin 6 >7.9ng/ml, Glucose <15mg/dl) could improve the accuracy of the diagnosis. Ultrasonographic evaluation of the foetal thymus is more sensitive to diagnose chorioamnionitis than the foetal biophysical profile[26]. Foetuses complicated with chorioamnionitis were found to have small thymus in ultrasound scan.

Delivery is indicated once the diagnosis of intraamniotic infection is made. It is also important to treat with broad-spectrum antibiotics with the coverage of group

B streptococcus to reduce the maternal and neonatal morbidity. Patient should initially be started on intravenous antibiotics[2]. See the Table 1 below for regimens of antibiotic combinations.

Usually, the IAI is associated with labour abnormalities, caesarean section, uterine atony, PPH, endometritis and septic pelvic thrombophlebitis. Chorioamnionitis is very important as it can lead serious maternal complications such as septic shock, postpartum haemorrhage, adult respiratory syndrome, intensive care admissions and rarely maternal death. Forty – seventy percent of preterm birth and 1-13% of term births with preterm rupture of membranes or spontaneous labour are complicated with chorioamnionitis[28]. Early onset neonatal meningitis, neurodevelopment delay, pneumonia, respiratory distress, sepsis and death are some of the neonatal complications of IAI.

Management of UTI

Urinary tract infections are common during pregnancy. The presence of fever, flank tenderness, nausea, vomiting, costo-vertebral angle tenderness, with or without lower urinary tract symptoms like – dysuria, frequency, urgency, suprapubic pain and haematuria, may indicate the presence of upper or complicated urinary tract infection. Simple cystitis may present without fever. Empirical antibiotic treatment is indicated for UTI. Commencement of the antibiotic regimen is customised according to the unit/hospital policy. This may need to be changed according to the sensitivity pattern of the urine culture and clinical response later.

Management of respiratory tract infection

Upper respiratory tract infections will present with nasal congestion, rhinorrhoea, sore throat, malaise and cough. Fever, if present is usually of low grade. These patients do not need any specific antibiotics, except for symptomatic management and simple antipyretics. If the patient present with sudden onset rigors followed by fever, productive cough, purulent sputum and pleuritic chest pain high possibility of pneumonia should be considered. Treatment and management are similar to the non-pregnant individual, but chest X-Ray could be delayed until after delivery. Pregnant mothers can be treated safely with Azithromycin or/ and Ceftriaxone.

Antiviral prophylaxis should commence immediately if indicated for mothers suspected to have H1N1 influenza.

Patient with severe lower respiratory tract infection may need to be positioned comfortably in propped-up (Fowler's) position. They need close monitoring of vital signs, especially the respiratory rate and oxygen saturation. Patients with severe respiratory failure may need transferring to intensive care unit (ICU) and early delivery.

Management of dengue fever

The management of dengue fever depends on the phase of the fever. Patients in the critical or leaking phase, are considered in the high-risk category and need to be managed in an ICU setting during labour. (See National guidelines on dengue fever in pregnancy).

Management of COVID-19

In a pandemic situation patient may present without any symptoms or fever. Therefore, all patients presenting to labour suite may need a COVID-19 screening with Rapid antigen or Real time PCR.

Early diagnosis and patient isolation at the appropriate setting is of paramount importance, with adequate personal protective equipment (PPE). Maternal pulse rate, blood pressure, respiratory rate and oxygen saturation should be monitored throughout the labour.

Decision making in labour should be precise to avoid obstetric emergencies, since the delay is anticipated in transferring, organising and performing procedures with adequate isolation and personal protective equipments (PPE). Patients who are on prophylaxis enoxaparin should be discontinued of it, 12 hours before the onset of labour or induction. (see the national guideline on Management of COVID-19 infection in pregnancy).

8.6 Maternal and neonatal consequences of intrapartum fever

Neonatal consequences

- Meconium Aspiration Syndrome
- Hyaline Membrane Disease (HMD)
- Neonatal Seizures
- Intrapartum stillbirth
- Early neonatal or infant death

- Birth asphyxia
- Neonatal encephalopathy and cerebral palsy
- Needing assisted ventilation

When the labouring woman is having fever, peripartum transfer of the infection to the fetus is one the major concerns. The presence of intraamniotic infection can give rise to short term effects to the new-born like septicaemia, meningitis and pneumonia. Long term outcomes are cerebral palsy and neurodevelopmental delay.

Once the micro-organisms enter the foetal mucosa, it induces a localised and subsequently a systemic inflammatory response called foetal inflammatory response syndrome (FIRS). FIRS affect multiple organ functions including the hematopoietic system, immune system, thymus heart, adrenal glands, skin, lung, brain and gut[29,30].

There is no definite method to differentiate intrapartum fever due to neuraxial anaesthesia from chorio-amnionitis. Hence, there is increased tendency for neonatal sepsis screening and treating with antibiotics. However, fever due to neuraxial anaesthesia is not associated with increased rate of proven sepsis. But, even in the absence of documented infection, neuraxial anaesthesia related intra-partum pyrexia may be associated with adverse neonatal outcome. When the mother is having temperature during labour, neonate should be closely observed for sepsis. Especially neonates with low birth weight, prematurity, and hypothermia at birth, maternal Group B streptococcal colonization, preeclampsia and maternal hypertension should have a full septic screening[31].

Maternal consequences

- Labour abnormalities (dysfunctional labour)
- Greater likelihood of caesarean delivery
- Uterine atony
- Postpartum haemorrhage
- Postpartum endometritis
- Septic pelvic thrombophlebitis

Maternal outcome depends on the causes of the intrapartum fever. Almost all the women with intrapartum fever are likely to receive antibiotics. One study indicated that even low risk nulliparous women with intrapartum fever have double the chance of requiring a caesarean delivery or assisted vaginal delivery than those without intrapartum fever regardless of receiving neuraxial anaesthesia[32].

9. Clinical governance

Possibility of chorioamnionitis should be suspected whenever a woman in labour develop fever as it is a condition associated with high perinatal morbidity and mortality. All measures should be taken to prevent the occurrence of chorioamnionitis.

- Optimum sterility should be maintained during vaginal examinations and procedures like artificial rupture of membranes, membrane sweeping, Foley catheter insertion etc.
- Minimise the number of vaginal examinations, especially for those with prelabour rupture of membranes and those who are in labour.
- Plan the vaginal examination in such a way that only the decision-making staff member will perform it. Avoid repeated vaginal examinations done by different categories of staff in short intervals.

All mothers with intrapartum fever should have their management discussed with the senior obstetrician and should also get neonatal team involvement.

All mothers who are suspected of having chorioamnionitis should be counselled regarding their management and possible neonatal consequences.

Maintenance of partogram and MOEWS chart in suspected sepsis are of paramount importance in the management.

Annexure 1. Intrapartum fever management algorithm

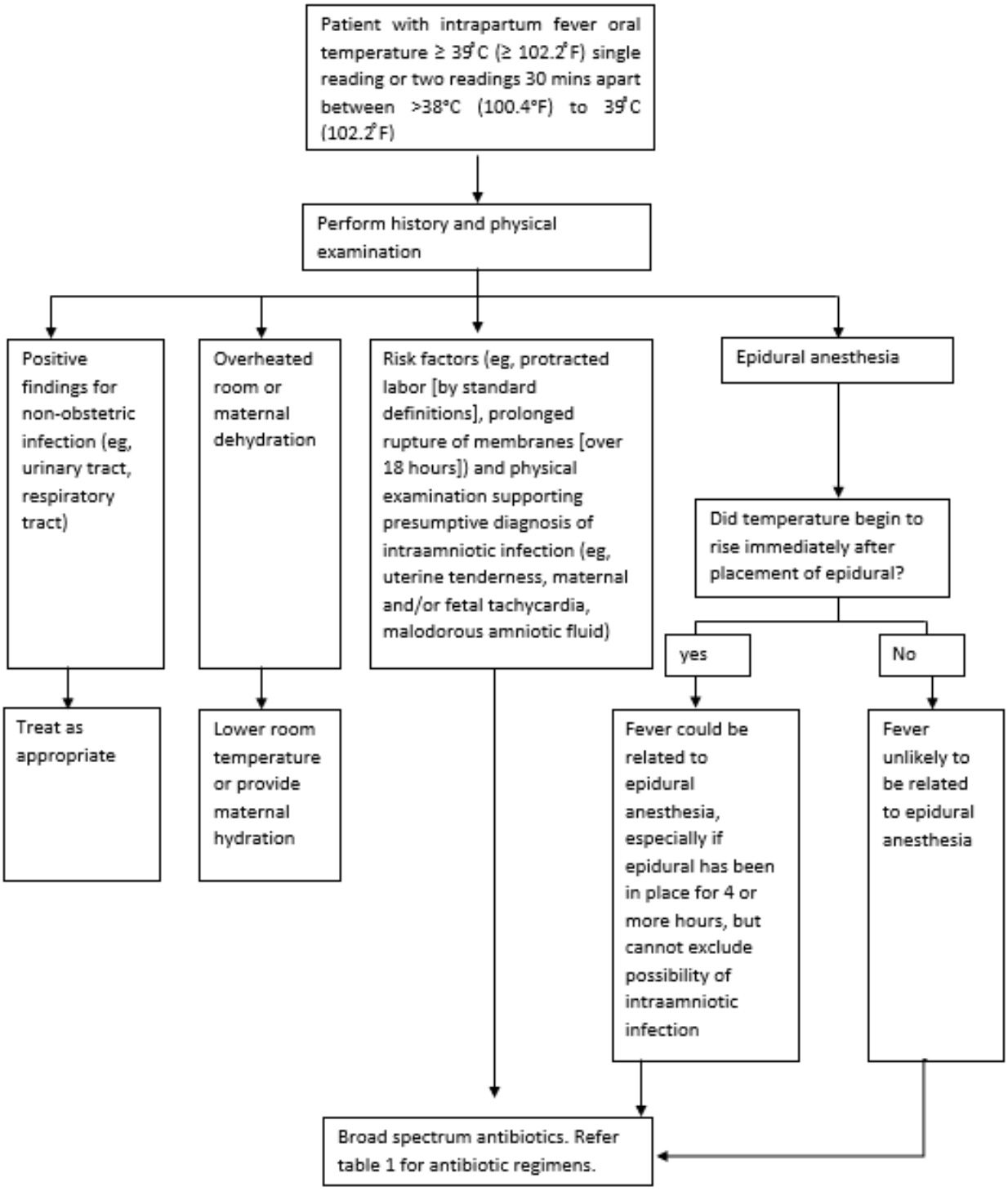

Table 1. Different antibiotic regimens to be used in intrapartum fever

Regimen	Doses
1. Ampicillin and Gentamycin	Ampicillin IV 2g every 6 h and Gentamicin 2mg/kg IV load followed by 1.5mg/kg 8 h or 5mg/kg IV every 24 h
2. Cefuroxime + Metronidazole	Cefuroxime 750mg IV 8 h + Metronidazole 500mg IV 8 h
3. Ceftriaxone, Metronidazole and clarithromycin	Ceftrixone 1g IV every 24 h, Metronidazole IV 500mg every 8 h, and clarithromycin 500mg oral every 12 h
4. Ampicillin and Azithromycin	Ampicillin 1.5g IV every 6 h and Azithromycin oral 500mg every 24 h
5. Ampicillin	3g IV every 6
6. Piperacillin-Tazobactum	4.5g IV every 8 h
7. Ertapenem	1g IV every 24 h
8. Mild penicillin allergy – Cefuroxime and Gentamycin	Cefuroxime 1.5g loading dose,750mg 8 h and Gentamicin 2mg/kg IV load followed by 1.5mg /kg every 8 h or 5mg/kg IV every 24 h
9. For severe penicillin allergy – Clindamycin or Vancomycin and Gentamicin	Clindamycin 600-800mg IV every 8h or Vancomycin 1g IV every 12h (slow infusion over 1 hr) and Gentamycin 2mg/kg IV load followed by 1.5 mg/kg every 8 h or 5mg/kg IV every 24 h
IV- Intravenous, h - hourly	

Table 2. qSOFA scoring

Parameter	Value	Score
Blood pressure	< 100mmHg	1
Respiratory rate	> 22 bpm	1
Level of consciousness	GCS < 15	1
Score of 2 or more: suggestive of sepsis		

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