World Journal of Advanced Research and Reviews
eISSN: 2581-9615 CODEN (USA): WJARAI
Cross Ref DOI: 10.30574/wjarr
Journal homepage: https://wjarr.com/

(RESEARCH ARTICLE)

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Incidence and Medical Management of Fever in Newborns at the Cinquantenaire Hospital in Kisangani, The Democratic Republic of Congo

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World Journal of Advanced Research and Reviews, 2025, 28(01), 880-887

Publication history: Received on 26 August 2025; revised on 04 October 2025; accepted on 06 October 2025

Article DOI: https://doi.org/10.30574/wjarr.2025.28.1.3413

Abstract

Introduction: Fever in newborns is the main reason for consultation in pediatrics or neonatology; it is an elevation of body temperature above 38.0°C. This study allowed us to determine the incidence of fever in newborns admitted to the pediatrics department of the Cinquantenaire Hospital in Kisangani, identify the causes, and analyze medical management.

Methods: A retrospective descriptive study based on a literature review. We collected 44 cases of fever in newborns admitted to the pediatrics department of the Cinquantenaire Hospital in Kisangani from January 1 to December 31, 2024.

Results: The incidence of fever in the pediatrics department of the Cinquantenaire Hospital in Kisangani between January 1 and December 31, 2024, was 24.0%. Bacterial infection (52.4%) and malaria (22.7%) were the most common etiologies. The medical management of fever included antipyretics (100%) and antibiotics (90.9%), leading to an 81.8% cure rate.

Conclusion: Fever in newborns is an emergency that should attract the attention of the pediatrician. Its discovery requires a clinical assessment that is as comprehensive as possible. Paraclinical assessments are almost routine in this age group. The primary objective of fever treatment is to alleviate the newborn's discomfort.

Keywords: Incidence; Medical; Management; Fever; Newborns; The Cinquantenaire Hospital in Kisangani

1. Introduction

Fever in newborns is often linked to a bacterial infection. It always warrants hospitalization for appropriate monitoring and management. It poses a very high risk of severe bacterial infection in newborns and infants between 1 and 3 months of age [1].

Increased body temperature is one of the most common manifestations of various childhood illnesses. Many parents are easily aware of hyperthermia in children, and some begin to panic. However, they need to know the main causes of hyperthermia, when it is dangerous, and how to combat this fever [2].

Fever is a common reason for consultation in tropical environments. Bacterial infection is the main cause in newborns. Malaria is rare, while plasmodium carriage is common. Antibiotic therapy should be readily prescribed for a febrile

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newborn. Fever in newborns is characterized by a rectal temperature ≥ 38.0°C (100.4°F) in children 3 months and younger. It can be acute (≤ 14 days) or chronic (> 14 days) [3].

Fever is a common reason for consultation in pediatric settings and remains a concern for parents. It accounts for 15% to 20% of emergency consultations in countries with a high standard of living and certainly in tropical areas. Infectious fevers are the most common, accounting for 40% of causes in Europe and 90% of causes in Africa [4].

Newborns with a fever (≥ 38°C) and infants aged three to six months with a temperature of 39°C or higher should be referred immediately to the emergency room. Children over six months of age with a fever (≥ 38°C) accompanied by warning signs are also at risk for severe infections and require urgent medical attention [5].

In addition, careful observation is essential. Always assess the child's general condition and look for any warning signs. First, assess whether there is a risk of sepsis. A child who no longer responds to social stimuli, appears very ill, is impossible or difficult to wake, or moans or cries constantly requires immediate medical attention. Very pale, grayish, or cyanotic skin and a rash that does not disappear with pressure are also urgent warning signs. Loss of appetite, malaise, pain, decreased activity, crying, and altered sleep patterns, on the other hand, may be generally benign signs of discomfort in a child with a fever. However, the general condition should be monitored [6, 7].

For a pediatrician, a fever lasting five consecutive days immediately suggests the presence of an infectious disease. With an incidence of approximately 10 in 100,000 per year and a risk of death of 1 to 2%, this disease is the second most common form of vasculitis in children [8]. It affects small and medium-sized arteries, primarily in children under four years of age. If left untreated, it carries a 25% risk of cardiac complications that can lead to sudden death at a later age. Since no technical examination can strictly confirm this disease, early clinical recognition is important. Furthermore, making the diagnosis is not straightforward [9].

Although fever is alarming in the neonatal period, it remains understudied. With this study, we aim to contribute to reducing neonatal mortality by determining the frequency and management of fever in newborns.

Specifically, the study aimed to determine the incidence of fever in newborns admitted to the pediatrics department of the Cinquantenaire Hospital in Kisangani; to identify the causes and analyze medical management.

2. Methods

2.1. Materials

2.1.1. Description of the Research Area

We chose the Cinquantenaire Hospital in Kisangani as our field of investigation. The Cinquantenaire Hospital in Kisangani is located within the Public Works Agency concession, located in the Commercial District, Makiso Commune, Tshopo Province, Democratic Republic of Congo. The Cinquantenaire Hospital of Kisangani shares its boundaries to the East with the garage of the DRC Roads Office and the houses of the first avenue of the Kabondo Commune, to the West with the installations of the Zheng Wei Technical Cooperation Company, to the North with the TP Road and the Military Police Camp, finally to the South, it is bordered by the Faculty of Sciences of the University of Kisangani.

2.1.2. Study Population and Sample

Our study population consisted of all children admitted and hospitalized in the Pediatrics Department of the Cinquantenaire Hospital in Kisangani, during the 12-month period from January 1 to December 31, 2024. We counted 183 children under 15 months of age. From this population, we selected a sample of 44 newborns who developed a fever during the study period.

Using the non-probability casual sampling technique, we identified several inclusion criteria, including:

- any newborn admitted to the Cinquantenaire Hospital in Kisangani with a fever as the reason for consultation;
- any newborn treated at the Cinquantenaire Hospital in Kisangani during the study period;
- any newborn with a complete medical file containing all the variables sought by the study.

2.2. Methods and Techniques

2.2.1. Study Type

We used a retrospective descriptive method, conducted at the Cinquantenaire Hospital in Kisangani, to collect information on the management of fever in newborns. The study period was twelve months, from January 1 to December 31, 2024.

2.2.2. Data Collection Technique

In the data collection process, we used a document analysis technique, which allowed us to gather information related to the management of fever in newborns admitted to the Pediatrics Department of the Cinquantenaire Hospital in Kisangani.

As stated by Aubin I. [10], "the document analysis technique is a process that consists of collecting information related to a research study by consulting some documentation related to the research." This technique allowed us to collect information from newborn records, care cards, laboratory records and other documents kept at the pediatrics department of the Cinquantenaire Hospital in Kisangani.

To achieve this, we developed a data collection sheet containing qualitative and quantitative variables. The following variables were investigated in this study: frequency of fever at the Cinquantenaire Hospital in Kisangani, sex, gestational age, presence of genitourinary infection in the mother, amniotic fluid color, birth weight, mode of delivery, main complaint, diagnosis at admission, length of hospitalization, diagnosis at discharge, treatment received, complication, and discharge procedure.

2.2.3. Data Processing Technique

The data collected were coded and grouped after analysis using SPSS software, version 25. We then processed the data and grouped them into absolute frequency tables to highlight the results. We used percentage calculations to interpret the results. 3.

3. Results

3.1. Frequency of Fever in Newborns

Of a total of 183 children under 15 months of age admitted and treated at the Cinquantenaire Hospital in Kisangani between January 1 and December 31, 2024, 44 newborns developed fever, representing an incidence of 24.0%.

3.2. Newborn Identification Data

Table 1 Distribution of Cases by Newborn Identification Data

Identification	Effectives (n=44)	Percentage (%)
Age/day		
At birth	25	56.8
1 – 3	10	22.7
4 – 6	9	20.5
Sex		
Male	30	68.2
Female	14	31.8

This table shows that 56.8% of newborns admitted to the pediatric department of the Cinquantenaire Hospital in Kisangani had a fever at birth, compared to 20.5% who had it between 4 and 6 days old. In addition, male newborns were in the majority with 68.2%, compared to 31.8% of females.

3.3. Clinical Data

Table 2 Distribution of cases according to the causes of fever in newborns

Clinical variables	Effectives (n=44)	Percentage (%)
Degree of fever		
≤38.5°	12	27.3
38.5° - 39.5°	29	65.9
≥39.5°	3	6.8
Distinguishing Symptoms		
Respiratory Distress	20	45.5
Irritability	12	27.3
Asthenia	9	20.4
Convulsion	3	6,8
Etiologies		
Bacterial Infection	23	52.4
Malaria	10	22.7
Sepsis	6	13.6
Neonatal Tetanus	3	6.8
Bullous Pneumonia	2	4.5
History		
Urogenital Infection	24	54.5
Fetid Amniotic Fluid	12	27.3
Premature Rupture of Membranes	8	18.2
Management		
Antipyretic	44	100.0
Antibiotic	40	90.9
Evolution		
Recovery	36	81.8
Transfer	5	11.4
Death	3	6.8

It is clear from this table that the majority of newborns had developed fever at a degree varying between 38.5° and 39.5°C, or 65.9% and respiratory distress is the discriminating symptom, or 45.5%, followed by irritability (27.3%) and asthenia (20.4%). Among the most observed etiologies, we found bacterial infection (52.4%) and malaria (22.7%). It should also be noted that urogenital infection (54.5%) and fetid amniotic fluid (27.3%) are the most encountered antecedents in newborns presenting fever; the management of fever is dominated by the administration of antipyretics (100%) and antibiotics (90.9%). Finally, the majority of newborns presented a good evolution in the treatment with 81.8% of cure, against 6.8% of deaths.

4. Discussion

4.1. Incidence of fever

In our series, fever is the main reason for relatively frequent consultation at the pediatric department of the Cinquantenaire Hospital in Kisangani during the period from January 1 to December 31, 2024, or 24.0% of cases. This result is far higher than that of Oulai and Tiecoura [11] in 2010, who found an incidence of 15.12% of newborns with fever. In her series, Clémence Grimaud [12], found a much higher incidence with a hospitalization rate related to newborn fever estimated at 76.03% of cases in 2018, unlike Nouri-Merchaoui S, Methlouthi J, & al [13] who found a lower rate, in their series in 2009, 134 newborns who were hospitalized for fever out of a total of 2374 hospitalizations. Fever accounted for 5.64% of all hospitalizations recorded over two years (5.23% in 2003 and 6.01% in 2004).

According to the French National Authority for Health (NAH) [14], fever is defined as an elevation of core temperature above 38°C, in the absence of intense physical activity, in a normally covered child, in a temperate room temperature; it is only from 38.5°C that it may be useful to initiate treatment.

At the cerebral level, body temperature is determined by the thermoregulatory center; the thermal equilibrium point is shifted upward in the event of fever.

The origin of this difference is explained by the fact that fever is the most dominant symptom of infectious diseases and constitutes the main reason for consultation and hospitalization, which explains its high frequency in newborns, on the one hand, and on the other hand, its incidence depends on the tropical climate with a predominance of malaria.

4.2. Age and Sex

It appears that the majority of newborns admitted to the pediatrics department of the Cinquantenaire Hospital in Kisangani, i.e., 56.8%, presented with fever at birth, with the majority of cases being male, i.e., 68.2%. This result is higher than those found in other studies. According to the study by Oulai & Tiecoura [11], fever appeared before the seventy-second hour of life in 51.43% of cases and in 48.57% of cases it was later and that the male sex is more affected in 60% of cases. In the neonatology department of the Farhat Hached University Hospital of Sousse in Tunisia, unlike our study, the age was less than or equal to three days in 65% of cases, between four and ten days in 15% of cases and more than ten days in 20% of cases [13].

Fever in newborns at birth (body temperature above 38°C) can have several causes, often serious given the vulnerability of this age group. The etiologies of fever are varied, and the main causes are neonatal infection transmitted before or during delivery such as *Staphylococcus B, E. coli*, or Listeria, nosocomial infection, overheated environment, dehydration, fever due to a non-infectious pathology, and malignant hyperthermia syndrome [15].

The high rate of fever observed in male newborns is generally linked to a greater susceptibility to infections and a different immune response compared to females. This can be explained by several biological and physiological factors, although the differences are not always major or systematic.

4.3. Fever Degree

In this series, the majority of newborns developed a fever ranging between 38.5°C and 39.5°C, or 65.9%, and respiratory distress was the discriminating symptom, or 45.5%, followed by irritability (27.3%) and asthenia (20.4%). According to the study by Nouri-Merchaoui S, Methlouthi J, & al [13], the temperature on admission ranged from 38°C to 39°C in 75% of cases. Fever was isolated in nearly half of the cases. Additional examinations included a complete blood count and CRP measurement in all cases.

A newborn is considered feverish if the temperature exceeds 37.8°C, and major hyperthermia if it exceeds 40°C. The reference method is rectal measurement with a mercury or electronic thermometer [16]. Any newborn who is not febrile upon admission but has a history of fever reported by the parents should be considered febrile [17].

Senga P. and Banza A. [3] report that respiratory distress and fever in newborns may be linked, as both are often symptoms of infection or inflammation, particularly in the respiratory tract, such as asphyxia, lung infection (pneumonia, bronchitis), fever and oxygen consumption, sepsis, or generalized infection.

4.4. Etiologies and History

The most common etiologies observed in newborns admitted to the pediatrics department of the Cinquantenaire Hospital in Kisangani with fever include bacterial infection (52.4%) and malaria (22.7%). The most common antecedents of fever are maternal urogenital infection (54.5%) and fetid amniotic fluid (27.3%).

According to Clémence Grimaud [12], the prevalence of bacterial infections was 25.66%, mainly represented by pyelonephritis at 21.69%. Three children were transferred to intensive care and no deaths were observed (13.39%) of the infants returned to the emergency room within one month of their first admission. The nosocomial infection rate was 1.51% of cases.

4.5. Management

The administration of antipyretics (100%) and antibiotics (90.9%) dominated the management of fever in newborns and the majority of them were cured in a proportion of 81.8%, compared to 6.8% of deaths. For Moyen G, Okandre-Elanga JP, and Ozingou LS [18], fever in a newborn, especially in the first 28 days of life, is a medical emergency requiring immediate assessment to rule out serious infections (sepsis, meningitis, urinary tract infection, etc.).

According to the French High Authority for Health [14], ibuprofen accounts for approximately 25% of all antipyretic prescriptions in children and its use has increased considerably in recent years. The use of paracetamol is indicated in the series by Coulibaly S. [19], in whose study, 68.24% of mothers and 66.67% of fathers had given paracetamol at home before hospital admission. These results are similar to those of Senga P. and Banza A. [3], who found that 47.3% of mothers had administered paracetamol.

Paracetamol is a first-line antipyretic drug indicated for reducing fever; it is also a pain reliever. This medication can be given in tablet and/or syrup form. Currently, injectable paracetamol is much more indicated for combating fever in cases of persistent fever [20].

Antibiotic treatment was initially initiated in 66 newborns (49.2%). Approximately 31.0% of newborns received only antipyretic treatment. No treatment was prescribed in 26 newborns (19.4%). The outcome was favorable in 132 newborns. The length of stay was greater than or equal to five days in 47 cases (35.1%), less than or equal to 48 hours in 74 cases (55.2%), and between 48 and 96 hours in 13 cases (9.7%). Two deaths were due to nosocomial infection with septic shock [13].

According to Branthomme E [21], the appropriate approach for newborns at risk of bacterial infection is to initiate appropriate treatment as early as possible. This should reduce the mortality rate, the rate of fulminant forms, and the rate of morbidity and sequelae; the approach of preventive treatment results in a very large number of newborns treated compared to the number of newborns actually hospitalized [22].

The question of the legitimacy of symptomatic treatment of fever has long been raised. Some in vitro studies or studies on experimental animal models have shown that it improves the performance of certain immune responses. In human pathology, hypo- or normothermia accompanying an invasive bacterial infection is a poor prognostic factor [23, 24].

The high recovery rate among newborns with fever is believed to be due to the effective management implemented by caregivers in the Pediatrics Department of the Cinquantenaire Hospital in Kisangani.

Currently, many diagnostic and therapeutic approaches and strategies have been implemented to address this question, but the practitioner's personal experience remains the main component of judgment.

5. Conclusion

Fever in newborns without any warning signs should not be considered trivial. Its discovery requires the most comprehensive clinical assessment possible. Paraclinical assessments are almost routine in this age group. The primary goal of fever treatment is to alleviate the newborn's discomfort.

However, current data and daily observation have demonstrated that the clinical benefit of antipyretic treatment largely outweighs the supposedly beneficial effects of fever.

Recommendations for the management of febrile newborns are not entirely clear; most authors consider hospitalization and empirical antibiotic therapy preferable. However, outpatient management with or without antibiotics is possible, provided the parents can be reached quickly.

Compliance with ethical standards

Disclosure of conflict of interest

The authors declare that there is no conflict of interest in the conduct of this study.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

Author Contributions

Joseph Kasereka Kyakwa conducted the design and data collection; the other authors contributed to data review and processing.

References

[1] Greenhow TL & al (2014). The changing epidemiology of serious bacterial infections in young infants. *Pediatr Infect Dis J*. 2014;33:595-599.

[2] Bariety M & al (2010). Fever. In Compendium of Semiology. 7th Edition, *Masson*, Paris. 2010.

[3] Senga P. & Banza A (2001). Fever in children in malaria-endemic areas. 1658 cases at the University Clinics of Kinshasa. *Tropique Santé*, 2001, Paris.

[4] Moustapha Cissé (2007). Knowledge and practical attitudes of mothers towards fever in children at home. *Médecine Tropicale*, 2007, Paris.

[5] Hui C & al (2012). Diagnosis and management of febrile infants (0–3 months). *Evid Rep Technol Assess*. 2012;205:1-297.

[6] Kuppermann, N. & al (2019). A clinical prediction rule to identify febrile infants 60 days and younger at low risk for serious bacterial infections. *JAMA Pediatrics.* 2019;173:342-351.

[7] Bonadio W, & al (2016). Meta-analysis to determine risk for serious bacterial infection in febrile outpatient neonates with RSV infection. Pediatr Emerg Care. 2016;32:286-289.

[8] Beaufils F. & Bourrillon A. (2005). Infant fever. Arch. Fr. Pédiatr, Paris.

[9] Begue P. & Quinet B. (2008). Childhood fever In Infectious pathology of children. Flammarion, Paris.

[10] Aubin I (2008). Introduction to Qualitative Research. Practice [Online]. 2008;19(84):142-145. Available on: https://www.exercer.fr/numero/84/page/142/, consulted on 03/20/2024 at 3:30 p.m.

[11] Oulai, WV. Tiecoura (2010). Newborn Fever in Tropical Environments: Etiological Aspects, Black African Medicine.

[12] Grimaud C. (2018). Evaluation of fever management practices in infants under 3 months of age. dumas-01714718, version 1 (21-02-2018).

[13] Nouri-Merchaoui S, Methlouthi J, & al (2009). Newborn fever: study of 134 cases collected at the neonatology department of Sousse (Tunisia). Journal of Pediatrics and Childcare. Volume 22, Issues 4–5, July–August 2009, Pages 182-192

[14] High Authority of Health (HAS) (2016). Management of fever in children, Canada, Québec.

[15] Mohamed Boulatar (2020). Newborn fever: Experience of the neonatal intensive care unit at the Mohamed VI University Hospital in Marrakech, Medical Thesis, Mali

[16] Marvin B. & al (2004). Update on the management of the febrile infant. Clin. Pediatr. Emerg. Med., 2004.

[17] Brouard J. & al (2007). Fever in children under three months old. *J. Pediatr. Puer,* 2007.

[18] Moyen G & al (2003). Fever in children regarding 168 cases collected at the Brazzaville University Hospital in *Med. Black Africa*, Brazzaville.

[19] Coulibaly, S (2010). Prolonged fever in children: etiology, clinical features, epidemiology and evolution, in the pediatric department of Gabriel Touré Hospital. *Med Thesis*, Bamako, Mali.

[20] Atmani S, Bouharrou A, Hida M (2006). Management of fever in newborns. *Journal of Pediatrics and Childcare*. Volume 19, Issues 4–5, July–August 2006, Pages 167-171

[21] Branthomme E. (2009). Body temperature measurement during general medicine consultation. *Rev Prat Med Gén*. 2009 ; 12 (2) : 32-39.

[22] Gerdes JS (2004). Diagnosis and management of bacterial infections in the neonate. *Pediatr Clin North Am*, 2004.

[23] Gaudelus J, & *coll* (2008). Prolonged fever in childhood infectious disease. Diagnosis and treatment. *Edition Pradel* Paris.

[24] Veron A & Depinoy D (2006). Childhood Fever in General Medicine: Are Parents Competent? *Rev Prat Médecine Générale*. 2006 (748-49) : 1231-1236.