

Clinical Practice Guideline

The Outpatient Management of Fever in Children and Adolescents

Tim Niehues, Hanno Krafft, Juliane Schemmer, Silke Schwarz, Ricarda Möhler, David Martin on behalf of the Guideline Group on Fever Management in Children and Adolescents*

Center for Child and Adolescent Health, Helios Hospital Krefeld, Academic Hospital of RWTH Aachen, Krefeld, HMU Health and Medical University, Campus Düsseldorf/Krefeld: Prof. Dr. med. Tim Niehues

German Society for Pediatrics and Adolescent Medicine e.V.: Prof. Dr. med. Tim Niehues, Prof. Dr. med. David Martin

Witten/Herdecke University, Faculty of Health Sciences/ Department of Human Medicine: Dr. rer. medic. Hanno Krafft, Juliane Schemmer, Dr. med. Silke Schwarz, Ricarda Möhler, Prof. Dr. med. David Martin

Eberhard Karls University of Tübingen, Department of Pediatrics: Prof. Dr. med. David Martin

* Further collaborators are listed in eBox 1.

All representatives of societies and organizations and all further participants are listed in eBox 2.

Summary

Background: Fever is one of the more common symptoms in children and adolescents, accounting for 20%-40% of all pediatric office visits and ca. 30% of all pediatric contacts with the emergency medical services. The present clinical practice guideline concerns the management of fever of acute onset in otherwise healthy children and adolescents in the outpatient setting.

Methods: A systematic literature search was conducted, with evaluation according to SIGN and GRADE.

Results: For neonates and infants under the age of 3 months, the body temperature should be measured rectally with a digital thermometer. From the age of 1 year onward, it can be measured with an infrared tympanic thermometer (sensitivity 77%, specificity 98%). For infants under the age of 3 months, temperatures above 40°C are associated with an elevated risk of severe bacterial infection (OR 6.3, 95% confidence interval [4.44; 8.95]); in older children, the height of the fever has little prognostic significance ($p = 0.11$). The decision whether to lower the fever by medical means should be based exclusively on the degree of suffering and impairment of the child. Antipyretic agents should not be given routinely. Parents and other carers should be educated about fever as a normal defense reaction of the body and should be made acquainted with the warning signs (impaired consciousness, cut-

aneous hemorrhage, dehydration, capillary refill time longer than 3 seconds). Children whose degree of suffering and impairment from fever calls for treatment can be given acetaminophen (10 to 15 mg/kg BW in each individual dose, no more than 4 times per day) or ibuprofen (10 mg/kg BW in each individual dose, no more than 3 times per day).

Conclusion: This evidence-based clinical practice guideline establishes a differentiated, symptom-oriented approach to the outpatient management of fever and emphasizes the education of parents and other carers so that the unnecessary administration of antipyretic drugs can be avoided.

Cite this as:

Niehues T, Krafft H, Schemmer J, Schwarz S, Möhler R, Martin D, on behalf of the Guideline Group on Fever Management in Children and Adolescents: Clinical practice guideline: The outpatient management of fever in children and adolescents. Dtsch Arztebl Int 2026; 123: 226–30. DOI: 10.3238/arztebl.m2026.0002

Fever is one of the more common symptoms in children and adolescents. While primary care data from Germany are lacking, data from England and the Netherlands show that 68–74% of all parents report episodes of elevated body temperature at least once every six months in children aged 6–56 months (1). 20–40% of all pediatric office visits and about one-third of all pediatric emergency department visits are fever-related (2, 3). Healthcare professionals and parents—or other caregivers—handle fever very differently. In the

authors' experience, fever is often viewed as a disease that needs to be treated.

Fever is highly conserved in evolution—the fever response has been present in both warm-blooded and cold-blooded vertebrates for more than 600 million years. This conservation, despite its high metabolic costs (for every 1°C increase in body temperature, the metabolic rate rises about 10–12.5%), implies that fever helps the organism survive infection. The fever response is mediated by integrated physiological circuits and confers a survival advantage (4, 5).

The term “hyperpyrexia” is defined inconsistently in the literature. While some authors define it as a body temperature above 41.1°C (106°F) (6), others use a threshold of 40°C (7). These differing definitions

WEBINAR

The subject of this article is treated in depth in a WEBINAR with Tim Niehues and David Martin, with which two further CME points can be obtained. <https://daeb1.de/19gc>



make it difficult to compare study results. In the case of infection-related fever, however, the term “hyperpyrexia” has no specific pathophysiological significance, since even at very high temperatures, fever is based on an endogenous, hypothalamically regulated shift in the set point. This differs fundamentally from exogenous hyperthermia (e.g., heatstroke), in which hypothalamic thermoregulation fails.

It was on this background that we have now developed the first German S3 guideline on fever management in children and adolescents (8). The guideline explicitly does not address fever in the hospital setting or in the care of chronically ill children and adolescents, for whom specific guidelines exist (9–13).

Methods

A 19-member working group consisting of experts from medical specialty societies, professional associations, and patient organizations was formed (*eBox 2*). A systematic search was conducted in MEDLINE via PubMed for publications from 13 June 2022 to 21 January 2023. Questions were formulated in the PICO framework (*eBox 3*). The literature search identified 99 studies, 19 of which were included in the final analysis (*Figure*) (e1–e19). The studies were assessed with SIGN (14) and underwent an external GRADE assessment (15). This guideline is valid for five years; the full version, guideline report, parent version, updates, and an option to register for email notifications can all be found at (8).

Results and Recommendations

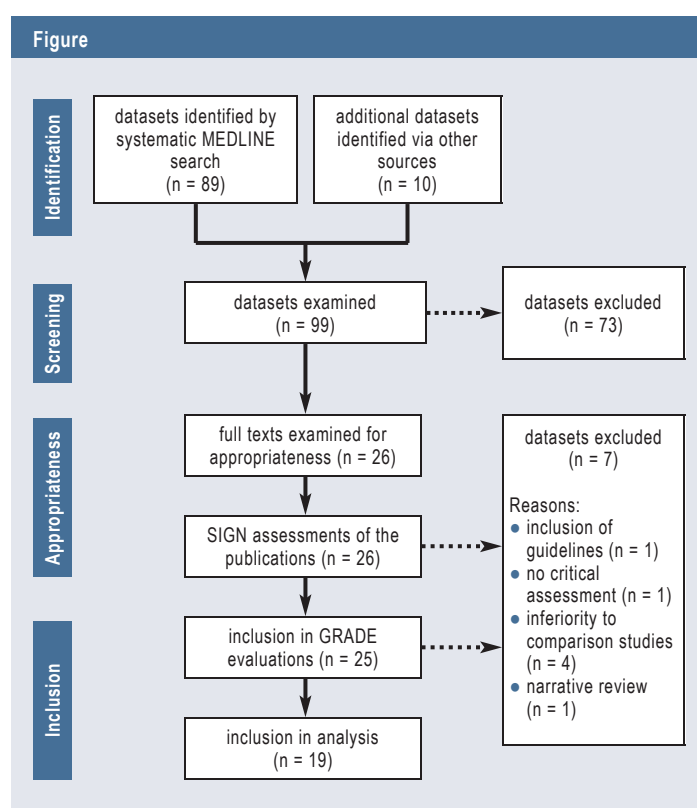
The guideline group agreed on 24 recommendations with consensus levels ranging from 92 to 100 percent (*eBox 4*).

Parent education

Parents and other caregivers (guardians) should be informed that fever is a normal and usually beneficial immune response. Evidence-based information sources for caregivers include the FeverApp and information from the German Federal Center for Health Education (*Bundeszentrale für gesundheitliche Aufklärung, BZgA*) (16, 17).

Temperature measurement and examination

The accuracy of temperature measurement depends on the method used and the age of the patient. Alternatives to rectal measurement can be used to detect fever with high specificity, but insufficient sensitivity. In newborns and infants, the core body temperature should be measured with a digital rectal thermometer. Meta-analyses have shown that alternative methods (infrared tympanic thermometers) have a sensitivity of only 70–77% [0.60; 0.88] in this age group (e1–e4). The mean absolute deviation between index measurement methods and reference methods was -0.26°C (limits of agreement [LOA], -0.97 to 0.46°C) (e1). In children aged one year and older, measurement with an infrared tympanic thermometer is generally considered sufficiently accurate. Meta-analyses have shown a high specificity of 98% [0.95; 0.99] and a moderate sensitivity of 77% [0.60; 0.88] (e1–e3). The mean deviation from rectal measurement was -0.22°C [-0.49 ; -0.04] (e3). The highest discriminative ability (AUC 0.97) was found at a



PRISMA representation of data search

cutoff value of 37.8°C , with 92% pooled sensitivity [0.90; 0.94] and 91% specificity [0.89; 0.92] (e4). Infrared forehead and temporal thermometers are less accurate than tympanic thermometers when both are compared to rectal measurement as a reference standard; the evidence for their diagnostic accuracy is very low. Nevertheless, they can be used as a practical alternative, especially when the young patient cannot tolerate more invasive measurement. Axillary temperature measurement is unreliable in all age groups and should not be used. The mean difference from rectal measurement was from -0.67°C to -0.85°C (e3, e5), and the sensitivity was a mere 42% [0.25; 0.58] even among trained users, although the specificity was high at 96% [0.91; 0.97] (e1). Palpation can be used to rule out fever but requires confirmation if it raises suspicion of fever (sensitivity 87.5% [79.3; 92.8], specificity 54.6% [38.5; 69.9] (e6).

The assessment of warning signs for severe infection

Parents often wrongly focus on the temperature reading as the supposed main indicator of disease severity. Whatever the temperature is, fever should always be interpreted in the context of the child’s general condition, well-being, and warning signs. Infants under 3 months of age with a rectal temperature of $\geq 38^{\circ}\text{C}$ should be meticulously examined by a physician to rule out severe bacterial infection; those whose temperature exceeds 40°C are at a significantly higher risk of severe bacterial infection than those whose temperature is under 40°C (odds ratio [OR] = 6.3, [4.44; 8.95]). This increase in risk is lower in older children (OR = 1.63, [1.11; 2.40]) (e7). A very important finding is that, in 30.4% of infants with invasive bacterial infection, the peak temperature was below 38.5°C (18). Thus, fever is often absent in this age group even in the presence of a severe bacterial infection. The clinical findings, rather than the temperature reading,

Table

Traffic-light system for assessing the risk of a serious disease in a child or adolescent with fever^{*1}

Criterion	 Green (low risk)	 Yellow (medium risk)	 Red (high risk)
General condition	barely affected	impaired	significantly impaired
Skin color	normal color	pale/mottled	very pale/gray/irregular/shiny/blue
Activity	smiles and communicates, plays, awake or can be awakened, cries normally	decreased	responds abnormally or not at all to verbal stimuli, appears severely ill, does not wake up or cannot stay awake, cries noticeably weakly/shrilly or continuously
Breathing	normal	flaring nostrils, rapid breathing ^{*2} , crackles, SpO ₂ ≤ 95%	gasping for breath, > 60 breaths/min, severe chest retractions, SpO ₂ ≤ 90%
Circulation	normal skin and eyes, moist mucous membranes	tachycardia ^{*3} , dry mucous membranes, reduced food/fluid intake, oliguria, capillary refill time ≥ 3 sec	very dry lips/mouth, sunken eyes, anuria, flaccid skin
Other	no yellow/red signs	fever > 3 days, joint swelling, protective posture, severe pain, flank tenderness	Age < 3 months and T ≥ 38°C or < 36.5°C, non-blanching rash, bulging fontanelle, meningeal signs, seizure, focal neurological signs

A febrile child brought to the clinic by a parent or guardian should be evaluated by a physician as soon as possible, particularly if there is evidence of a serious condition. At the green level, a medical evaluation is not mandatory; at the yellow level, it is recommended; and at the red level, it is urgently indicated. The primary care physician decides on the next steps. The decision to reduce the fever is independent of this traffic-light system and is based solely on the extent to which the fever affects the child.

^{*1} modified from (21); not validated in Germany

^{*2} rapid breathing: up to 1 year > 40/min, 1–5 years > 30/min, 6–18 years > 20/min

^{*3} tachycardia: up to 1 year > 160/min, 1–5 years > 140/min, 6–12 years > 120/min, 13–18 years > 100/min

are determinative. Key warning signs include the overall clinical impression of severe compromise (as assessed by experienced medical personnel), impaired consciousness, sensitivity to touch, severe pain, high-pitched crying, skin hemorrhages, dehydration, capillary refill time exceeding three seconds, very pale/gray/blue skin, and a fever lasting more than three days. Age-dependent values for an excessively rapid respiratory rate (tachypnea) are: up to 1 year >40/min, 1–5 years >30/min, 6–18 years > 20/min. On the basis of the above data, a structured, “traffic-light” system for risk assessment was developed for the guideline (green = low risk, yellow = moderate risk, red = high risk), incorporating information on the patient’s general condition, skin color, activity level, respiration, and circulatory status (Table).

Fever reduction

Fever is usually self-limiting and is considered a protective response of the immune system. In clinical practice to date, the decision to treat fever has often been based mainly on the numerical height of the measured temperature. Even children without any marked pain or clinical impairment were given antipyretic drugs solely because of a high temperature. Current evidence does not support this temperature-centered approach.

As for the treatment of fever at home, parents should be advised as follows: as the body temperature rises, a child or adolescent will often feel cold (e.g., cool hands and feet, shaking chills). During this phase, the patient should be dressed and covered as needed for warmth and comfort. If, on the other hand, the patient feels too warm, lighter clothing suffices. A sense of calm and security should also be communicated by loving care.

The guideline emphasizes a paradigm shift: the child’s well-being and complaints of pain and discomfort, rather than the temperature reading, are the determinative criteria for treatment. Treating a fever in a previously healthy child is not indicated merely to lower the temperature. The level of fever is no more than weakly correlated with the severity of illness in children aged three months and above. In infants under three months of age, temperatures above 40°C indicate an increased risk of severe bacterial infection (SBI) (OR = 6.3, 95% confidence interval [4.44; 8.95]). In children aged three months and older, even though a statistically significant association was found between temperatures above 40°C and SBI (OR = 1.36, [1.16; 1.61]), the absolute risk difference was both statistically insignificant ($p = 0.11$) and clinically irrelevant (e7). In a recent cross-sectional study (published after the guideline was finalized), hyperpyrexia (temperature ≥ 40.0°C) had no significant association with SBI (adjusted OR 1.40, [0.92; 2.12]) (7). Antipyretic medications should only be used for pain relief and to improve the patient’s well-being, and not in reflex fashion just to lower a high temperature. (Dosages: acetaminophen; single dose: 10 to 15 mg/kg, maximum single dose: 1000 mg, maximum daily dose: 4000 mg [over 12 years of age], no more than four to six doses per day; ibuprofen; single dose: 7 to 10 mg/kg, maximum single dose: 600 mg [over 12 years of age], maximum daily dose: 40 mg/kg or 2400 mg, no more than four doses per day).

Systematic reviews have shown that paracetamol and ibuprofen have comparable antipyretic efficacy at the recommended doses, with average temperature reductions of 0.9 to 1.85°C within two to four hours (e8–e11). Metamizole (10–15 mg/kg) is also comparably effective. A small number of studies have shown slightly greater temperature reductions with ibuprofen, but these differences are not clinically relevant. What matters is the improvement in well-being and pain relief, not the absolute reduction in temperature.

Giving ibuprofen and acetaminophen in alternation, or changing the antipyretic drug, may be considered after consulting a physician

if the child remains affected. Compared to monotherapy with an antipyretic drug, alternating therapy with two different ones resulted in an average mean temperature that was 0.6 °C lower one hour after the second dose (MD = -0.60 °C, [-0.94; -0.26]; 78 subjects, 1 study) and 1.6°C lower three hours after the second dose (MD = -1.60°C, [-2.27; -0.93]; 40 subjects, 1 study) (e9). Another meta-analysis examined the endpoint “number of patients with fever,” comparing the alternating regimen with monotherapy at four hours (RR = 0.33, [0.07; 1.43]; 511 participants, 2 studies) and six hours (RR = 0.30, [0.15; 0.57]; 580 participants, 3 studies) (e10). The potential risk of accidentally giving the wrong drug and causing an overdose when alternating between two drugs must also be considered.

Metamizole can be given to very ill children who fail to respond adequately to ibuprofen or paracetamol (10 to 15 mg/kg up to 4 times daily). A meta-analysis (79 randomized controlled trials, with mainly adult subjects) has shown that serious adverse events with metamizole are rare, but the risk of agranulocytosis must be taken into account (e12). Detailed, continuously updated information on dosages, contraindications, interactions, and adverse effects of antipyretic drugs in children and adolescents can be found in the evidence-based online resource www.kinderformularium.de (19).

The response to antipyretic drugs does not correlate with the severity or nature of the infectious disease (viral or bacterial) and cannot be used to draw such distinctions. An overview of eight studies from 1947 to 2013 on fever in persons up to age 18 revealed that a positive response to antipyretic medication is not a suitable criterion for ruling out a serious disease (e13).

Antibiotics

A fever alone is not an indication for antibiotics. Most infections in children and adolescents are of viral origin, and even some bacterial infections do not need any antibiotic treatment.

Non-pharmacological measures

Rest, a feeling of security, keeping the child warm if he or she feels cold (cool hands/feet, shaking chills) as the fever rises, offering fluids regularly, ensuring undisturbed sleep, and light meals if the child has an appetite are recommended. Children and adolescents with a fever should not be undressed and/or exposed to cold ambient temperatures. Studies have shown that undressing the child as the sole treatment of fever causes discomfort and only minimally lowers the body temperature (e14). A meta-analysis on sponging found it to be less effective at lowering the body temperature than paracetamol alone (final temperature reduction 0.55–0.75°C vs. 0.9–1.85°C) (e8). Moreover, moderate to poor comfort was reported more frequently after sponging than after paracetamol administration alone. The focus should be on the well-being of the child or adolescent. There is only very limited evidence regarding the efficacy of calf wraps, and the available systematic reviews contain little data on this traditional method. The recommendation, based on expert consensus, is that calf wraps may be considered for warm hands and feet (no

centralization) and subjective discomfort in the child. They should be at body temperature to avoid counter-regulation and should only be used if accepted by the child.

Febrile seizures and vaccinations

Antipyretic drugs do not shorten febrile seizures and are not indicated in acute situations; nor do they prevent febrile seizures, and they should not be used for this purpose. Meta-analyses have revealed no significant difference in the recurrence rate of febrile seizures between children with and without antipyretic prophylaxis (e15, e16). Published meta-analyses of two and three randomized controlled trials yielded OR = 0.92; [0.57; 1.48] (e15) and OR = 0.9, [0.57; 1.43] (20), respectively, for febrile seizure recurrence under antipyretic treatment: in other words, no statistically significant protective effect was found.

The prophylactic administration of antipyretic drugs in children undergoing vaccination should be avoided. Systematic reviews have shown that prophylactic antipyretic treatment with acetaminophen (but not ibuprofen) led to significantly lower antibody levels after pneumococcal conjugate vaccination (e17, e18), albeit within a titer range that is still thought to be protective. Note: The STIKO recommendation of 18 January 2024 regarding the prophylactic administration of paracetamol during meningococcal B vaccination, which has since been revised, was published after the consensus meetings for this guideline.

Recovery

Children should be without fever and feeling well for at least one day before returning to preschool or school (this recommendation is based on expert consensus, not on direct evidence from the literature).

Discussion

The definition of fever and temperature measurement

There are international differences in the definition of fever in children. While in German-speaking countries a temperature of 38.5°C or higher is often defined as a fever, English-language guidelines mainly set the threshold at 38.0°C. The present guideline follows the definition of ≥38.5°C, corresponding to the usual clinical practice in Germany.

Symptom-based rather than temperature-based treatment indication

For otherwise healthy children and adolescents, there is no evidence-based temperature threshold above which antipyretic therapy is absolutely indicated. The key factors determining the need for treatment are not the temperature reading itself, but rather the child's subjective well-being, the presence or absence of pain, and the overall clinical impression. National guidelines from other European countries also emphasize this (21–23). Epidemiologic data on the prevalence of high fever in otherwise healthy children are not available. The clinical experience of the guideline group indicates that many children do not exhibit any marked discomfort even at temperatures >39°C and therefore do not require antipyretic intervention.

Limitations and strengths

The quality of evidence from the studies underpinning this guideline (assessed by the GRADE scheme) was predominantly moderate to low. Its main limitation is the scarcity of methodologically sound randomized controlled trials on patient-relevant outcomes (well-being, quality of life). Its strengths include the systematic approach in accordance with AWMF standards, the comprehensive literature review, and the broad interprofessional consensus that was reached with the additional involvement of parent representatives.

Long-term aspects

The available evidence on the potential long-term effects of repeated antipyretic therapy in childhood is limited. In a meta-analysis of 27,932 children in the first two years of life, the rate of serious adverse effects (including kidney damage) was 1.4% for ibuprofen and 1.3% for acetaminophen (e11). In Germany and the United States, acetaminophen is among the more commonly reported drugs associated with poisoning in children. These factors underscore the importance of a restrictive, symptom-oriented approach to prescribing, as recommended in this guideline.

Financial support

This guideline was funded by the Innovation Task Force (*Innovationsausschuss*) of the German Joint Federal Committee for the Promotion of Health Services Research (*Bundesausschuss zur Förderung von Versorgungsforschung*), in accordance with §9a(2), item 4, second alternative, of the German Social Code, Book V (SGB V) (funding reference: 01VSF21023; Fever Guideline – AWMF S3 Guideline: Fever Management in Children and Adolescents – G-BA Innovation Fund).

Conflict of interest statement

TN is a member of the German Medical Association's Drug Commission (AKdÄ), receives payment for writing on the subject (Uptodate.com), and receives reimbursement for travel expenses and third-party funding for research projects (KidSafe Study, GBA Innovation Fund), as well as travel expense reimbursement for consulting work for the European Medicines Agency (EMA) and for the Steering Committee of the Penta Foundation (an international scientific network for child health research).

DM advises the German Federal Ministry of Health, serves on scientific advisory boards (Hufeland Society, Pharmacovigilance Commission of the Federal Institute for Drugs and Medical Devices [BfArM]), and receives travel expense reimbursement for speaking engagements (BVKJ, DGKJ, DGHNO-KHC, DGÖG, BVÖGD, DGAAP, AWMF) and third-party funding for

research projects (BMBF/Software AG Foundation-funded FieberApp development, Joint Federal Committee [GBA] Innovation Fund).

SS receives reimbursement for travel expenses (BMBF, BVKJ, BVÖGD).

The remaining authors and guideline group members state that they have no conflict of interest.

Manuscript submitted on 29 October 2025, revised version accepted on 8 January 2026.

Translated from the original German by Ethan Taub, M.D.

Note: clinical practice guidelines that are published in the *Deutsches Ärzteblatt* and many other medical publications are not subject to peer review, because S3 guidelines are already texts that have been extensively evaluated, discussed, and broadly agreed upon by experts (peers).

References (abbreviated)

- Hay AD, et al.: *Fam Pract* 2005; 22: 367–74.
- Peetoom K, et al.: *Fam Pract* 2019; 36: 371–3.
- de Bont EGPM, et al.: *BMJ Open* 2015; 5: e007365.
- Evans SS, et al.: *Nat Rev Immunol* 2015; 15: 335–49.
- Wrotek S, et al.: *Evol Med Public Health* 2021; 9: 26–35.
- Trautner BW, et al.: *Pediatrics* 2006; 118: 34–40.
- Rachad M, et al.: *J Am Coll Emerg Physicians Open* 2024; 5: e13135.
- <https://register.awmf.org/de/leitlinien/detail/027-074>
- <https://register.awmf.org/de/leitlinien/detail/048-014>
- <https://register.awmf.org/de/leitlinien/detail/189-003>
- <https://register.awmf.org/de/leitlinien/detail/026-024>
- <https://register.awmf.org/de/leitlinien/detail/023-024>
- <https://register.awmf.org/de/leitlinien/detail/057-016>
- www.sign.ac.uk
- Guyatt GH, et al.: *BMJ* 2008; 336: 924–6.
- Beerebrock Y, et al.: *J CME* 2024; 13: 2352940.
- www.kindergesundheit-info.de/themen/krankes-kind/krankheitszeichen/fieber/
- Michelson KA, et al.: *Arch Dis Child* 2021; 106: 594–6.
- www.kinderformularium.de
- Rosenbloom E, et al.: *Eur J Paediatr Neurol* 2013; 17: 585–8.
- www.nice.org.uk/guidance/ng143
- Chiappini E, et al.: *Clin Ther* 2009; 31: 1826–43.
- Green C, et al.: *PLOS ONE* 2021; <https://doi.org/10.1371/journal.pone.0245815>

Corresponding authors

Prof. Dr. med. David Martin
david.martin@uni-wh.de

Prof. Dr. med. Tim Niehues
tim.niehues@helios-gesundheit.de

Supplementary material:

Complete literature, eLiterature, eBoxes:

www.aerzteblatt-international.de/m2026.0002

Supplementary material to accompany the article

The Outpatient Management of Fever in Children and Adolescents

by Tim Niehues, Hanno Krafft, Juliane Schemmer, Silke Schwarz, Ricarda Möhler, and David Martin on behalf of the Guideline Group on Fever Management in Children and Adolescents*

Dtsch Arztebl Int 2026; 123: 226–30. DOI: 10.3238/arztebl.m2026.0002

References (complete)

- Hay AD, Heron J, Ness A: The prevalence of symptoms and consultations in pre-school children in the Avon Longitudinal Study of Parents and Children (ALSPAC): A prospective cohort study. *Fam Pract* 2005; 22: 367–74.
- Peetoom K, Crutzen R, Dinant GJ, Cals J: Most preschool children with fever and common infection symptoms do not consult the family physician. *Fam Pract* 2019; 36: 371–3.
- de Bont EGPM, Lepot JMM, Hendrix DAS, et al.: Workload and management of childhood fever at general practice out-of-hours care: An observational cohort study. *BMJ Open* 2015; 5: e007365.
- Evans SS, Repasky EA, Fisher DT: Fever and the thermal regulation of immunity: The immune system feels the heat. *Nat Rev Immunol* 2015; 15: 335–49.
- Wrotek S, LeGrand EK, Dzialuk A, Alcock J: Let fever do its job: The meaning of fever in the pandemic era. *Evol Med Public Health* 2021; 9: 26–35.
- Trautner BW, Caviness AC, Gerlach GR, Demmler G, Macias CG: Prospective evaluation of the risk of serious bacterial infection in children who present to the emergency department with hyperpyrexia (temperature of 106°F or higher). *Pediatrics* 2006; 118: 34–40.
- Rachad S, Nickel D, Berry F, et al.: Risk of serious bacterial infections in pediatric patients with hyperpyrexia. *J Am Coll Emerg Physicians Open* 2024; 5: e13135.
- Deutsche Gesellschaft für Kinder- und Jugendmedizin (DGKJ), Gesellschaft für Pädiatrische Infektiologie (DGPI), Deutsche Gesellschaft für Allgemeinmedizin und Familienmedizin (DEGAM), et al.: S3-Leitlinie „Fiebermanagement bei Kindern und Jugendlichen (ambulant)“. AWMF-Registernummer 027–054, Stand: 2024. [https://register.awmf.org/de/leitlinien/detail/027–074](https://register.awmf.org/de/leitlinien/detail/027-074) (last accessed on 16 October 2025).
- Gesellschaft für Pädiatrische Onkologie und Hämatologie (GPOH), Deutsche Gesellschaft für Pädiatrische Infektiologie (DGPI), Deutsche Gesellschaft für Kinder- und Jugendmedizin (DGKJ): S2k-Leitlinie „Diagnostik und Therapie bei Fieber ohne Fokus während der Granulozytopenie (Kinderonkologie)“. AWMF-Registernummer 048–014, Version 2.0, Stand: März 2024. [https://register.awmf.org/de/leitlinien/detail/048–014](https://register.awmf.org/de/leitlinien/detail/048-014) (last accessed on 16 October 2025).
- Arbeitsgemeinschaft Pädiatrische Immunologie (API): S3-Leitlinie „Diagnostik auf Vorliegen eines primären Immundefekts“. AWMF-Registernummer 189–003, Version 3.0, Stand: Juli 2025. [https://register.awmf.org/de/leitlinien/detail/189–003](https://register.awmf.org/de/leitlinien/detail/189-003) (last accessed on 16 October 2025).
- Mukoviszidose e.V. und AWMF: S3-Leitlinie „Mukoviszidose bei Kindern in den ersten beiden Lebensjahren“. AWMF-Registernummer 026–024, Stand: 2022. [https://register.awmf.org/de/leitlinien/detail/026–024](https://register.awmf.org/de/leitlinien/detail/026-024) (last accessed on 16 October 2025).
- Deutsche Gesellschaft für Pädiatrische Kardiologie und Angeborene Herzfehler (DGPK): S2k-Leitlinie „Primäre Kardiomyopathien im Kindes- und Jugendalter“. [https://register.awmf.org/de/leitlinien/detail/023–024](https://register.awmf.org/de/leitlinien/detail/023-024) (last accessed on 16 October 2025).
- Deutsche Diabetes Gesellschaft (DDG): S3-Leitlinie „Therapie des Diabetes mellitus im Kindes- und Jugendalter“. AWMF-Registernummer 057–016, Stand: 2022. [https://register.awmf.org/de/leitlinien/detail/057–016](https://register.awmf.org/de/leitlinien/detail/057-016) (last accessed on 16 October 2025).
- Scottish Intercollegiate Guidelines Network (SIGN): SIGN 50: A guideline developer's handbook. Edinburgh: SIGN; 2019. www.sign.ac.uk (last accessed on 8 October 2025).
- Guyatt GH, Oxman AD, Vist GE, et al.: GRADE: An emerging consensus on rating quality of evidence and strength of recommendations. *BMJ* 2008; 336: 924–6.

- Beerenbrock Y, Jenetzky E, Martin D, et al.: FeverApp for parents: A multilingual and socially accountable approach to paediatric fever management in Germany. *J CME* 2024; 13: 2352940.
- Bundeszentrale für gesundheitliche Aufklärung. Fieber. Fieber bei Babys und Kindern. Verfügbar unter: www.kindergesundheitsinfo.de/the-men/krankes-kind/krankheitszeichen/fieber/ (last accessed on 22 November 2025).
- Michelson KA, Neuman M I, Pruitt CM, et al.: Height of fever and invasive bacterial infection. *Arch Dis Child* 2021; 106: 594–6.
- Kinderformularium.de: Evidenzbasierte Arzneimittelinformation für Kinder und Jugendliche. www.kinderformularium.de (last accessed on 26 November 2025).
- Rosenbloom E, Finkelstein Y, Adams-Webber T, Kozar E: Do antipyretics prevent the recurrence of febrile seizures in children? A systematic review of randomized controlled trials and meta-analysis. *Eur J Paediatr Neurol* 2013; 17: 585–8.
- National Institute for Health and Care Excellence (NICE): Fever in under 5s: assessment and initial management. NICE guideline [NG143] 2021. www.nice.org.uk/guidance/ng143 (last accessed on 8 October 2025).
- Chiappini E, Principi N, Longhi R, et al.: Management of fever in children: Summary of the Italian pediatric society guidelines. *Clin Ther* 2009; 31: 1826–43.
- Green C, Krafft H, Guyatt G, Martin D: Symptomatic fever management in children: A systematic review of national and international guidelines. *PLOS ONE* 2021 <https://doi.org/10.1371/journal.pone.0245815> (last accessed on 2 March 2026).

Additional references (eReferences)

- Niven DJ, Gaudet JE, Laupland KB, Mrklas KJ, Roberts DJ, Stelfox HT: Accuracy of peripheral thermometers for estimating temperature: A systematic review and meta-analysis. *Ann Intern Med* 2015; 163: 768–77.
- Zhen C, Xia Z, Ya Jun Z, et al.: Accuracy of infrared tympanic thermometry used in the diagnosis of fever in children: A systematic review and meta-analysis. *Clin Pediatr (Phila)* 2015; 54: 114–26.
- Pecoraro V, Petri D, Costantino G, et al.: The diagnostic accuracy of digital, infrared and mercury-in-glass thermometers in measuring body temperature: A systematic review and network meta-analysis. *Intern Emerg Med* 2021; 16: 1071–83.
- Shi D, Zhang LY, Li HX: Diagnostic test accuracy of new generation tympanic thermometry in children under different cutoffs: A systematic review and meta-analysis. *BMC Pediatrics* 2020; 20: 210.
- Craig JV, Lancaster GA, Williamson PR, Smyth RL: Temperature measured at the axilla compared with rectum in children and young people: Systematic review. *BMJ* 2000; 320: 1174–8.
- Li YW, Zhou LS, Li X: Accuracy of tactile assessment of fever in children by caregivers: A systematic review and meta-analysis. *Indian Pediatr* 2017; 54: 215–21.
- Rosenfeld-Yehoshua N, Barkan S, Abu-Kishk I, Booch M, Suhani R, Kozar E: Hyperpyrexia and high fever as a predictor for serious bacterial infection (SBI) in children-a systematic review. *Eur J Pediatr* 2018; 177: 337–44.
- Watts R, Robertson J, Thomas G: Nursing management of fever in children: A systematic review. *Int J Nurs Pract* 2003; 9: S1–S8.
- Wong T, Stang AS, Ganshorn H, et al.: Combined and alternating paracetamol and ibuprofen therapy for febrile children. *Evid Based Child Health* 2014; 9: 675–729.

- e10. Trippella G, Ciarcià M, de Martino M, Chiappini E: Prescribing controversies: An updated review and meta-analysis on combined/alternating use of ibuprofen and paracetamol in febrile children. *Front Pediatr* 2019; 7: 217.
- e11. Tan E, Braithwaite I, McKinlay CJD, Dalziel SR: Comparison of acetaminophen (paracetamol) with ibuprofen for treatment of fever or pain in children younger than 2 years: A systematic review and meta-analysis. *JAMA Netw Open* 2020; 3: e2022398.
- e12. Kötter T, da Costa BR, Fässler M, et al.: Metamizole-associated adverse events: A systematic review and meta-analysis. *PLOS ONE* 2015; 10: e0122918.
- e13. King D: Question 2: Does a failure to respond to antipyretics predict serious illness in children with a fever? *Arch Dis Child* 2013; 98: 644–6.
- e14. Kinmonth AL, Fulton Y, Campbell MJ: Management of feverish children at home. *BMJ* 1992; 305: 1134–6.
- e15. Hashimoto R, Suto M, Tsuji M, et al.: Use of antipyretics for preventing febrile seizure recurrence in children: A systematic review and meta-analysis. *Eur J Pediatr* 2021; 180: 987–97.
- e16. Offringa M, Newton R, Cozijnsen MA, Nevitt SJ: Prophylactic drug management for febrile seizures in children. *Cochrane Database Syst Rev* 2017; 2: CD003031.
- e17. Das RR, Panigrahi I, Naik SS: The effect of prophylactic antipyretic administration on post-vaccination adverse reactions and antibody response in children: A systematic review. *PLoS ONE* 2014; 9:
- e18. Koufoglou E, Kourlaba G, Michos A: Effect of prophylactic administration of antipyretics on the immune response to pneumococcal conjugate vaccines in children: A systematic review. *Pneumonia* 2021; 13: 7.
- e19. Aggarwal N, Garg M, Dwarakanathan V, et al.: Diagnostic accuracy of non-contact infrared thermometers and thermal scanners: A systematic review and meta-analysis. *J Travel Med* 2020; 27: taaa193.

eBox 1

Guideline Collaborators

- Luisa Leiby, Kinderchirurgie, Universitätsklinikum Heidelberg
- Gesche Kranz, Koordination für Fachpraxisanleitung, Charité Universitätsmedizin Berlin
- Prof. Dr. med. Arne Simon, Klinik für Pädiatrische Onkologie und Hämatologie, Universitätsklinikum des Saarlandes, Homburg
- PD. Dr. med. Ulrich von Both, Abteilung für Pädiatrische Infektiologie, Kinderklinik und Kinderpoliklinik im Dr. von Haunerschen Kinderspital, LMU Klinikum München
- Prof. Dr. med. Tilmann Kallinich, Klinik für Pädiatrie mit Schwerpunkt Pneumologie, Immunologie und Intensivmedizin, Charité – Universitätsmedizin Berlin
- Sandra Lopes – Praxis für Naturheilkunde, Spelle
- Dr. med. Till Reckert, Praxis für Kinder- und Jugendmedizin, Reutlingen
- Bettina Beyer-Lichtblau – Pflegemanagement, Kinderhaus AtemReich, München
- Prof. Dr. med. Catharina Schütz, Klinik und Poliklinik für Kinder- und Jugendmedizin, Universitätsklinikum Carl Gustav Carus Dresden
- Dr. med. Melanie Ahaus, Praxis für Kinder- und Jugendmedizin, Leipzig
- Prof. Dr. med. Regina Trollmann, Universitätsklinik, Kinder- und Jugendklinik, Erlangen
- Prof. Dr. med. Stephan Hackenberg, HNO-Klinik, Universitätsklinik RWTH Aachen
- Lisa Degener, Hausärztliche Gemeinschaftspraxis, Altenberge
- Dr. med. Kerstin Barlet, Familienarztpraxis, Hamburg
- Prof. Dr. med. Michael Freitag, Allgemeinmedizin im Department Versorgungsforschung, Carl von Ossietzky Universität Oldenburg
- Dr. med. Claudia Korebritz, Kinder- und Jugendärztlicher Dienst, Gesundheitsamt, Stadt Leipzig
- Prof. Dr. med. Hagen Bachmann, Lehrstuhl für Pharmakologie und Toxikologie, Department Humanmedizin, Fakultät für Gesundheit der Universität Witten/Herdecke

eBox 2

Participating medical specialty societies and organizations and their representatives in the guideline group for the S3 guideline on fever management

- **Leading specialty society:**
 - German Society for Pediatrics and Adolescent Medicine (Deutsche Gesellschaft für Kinder- und Jugendmedizin e.V., DGKJ): Prof. Dr. med. Tim Niehues, Prof. Dr. med. David Martin
- **Moderation of consensus conferences:**
 - Association of Scientific Medical Societies in Germany (Arbeitsgemeinschaft der Wissenschaftlichen Medizinischen Fachgesellschaften e.V.), (AWMF): Dr. med. Monika Nothacker, Dr. Cathleen Muche-Borowski
- **Coordinating center:**
 - Universität Witten/Herdecke: Prof. Dr. med. David Martin, Dr. Hanno Krafft, Juliane Schemmer
- **Participating medical specialty societies and organizations:**
 - German Society for Nursing Science (Deutsche Gesellschaft für Pflegewissenschaft e.V., DGP): Luisa Leiby, Gesche Kranz
 - Society for Pediatric Oncology and Hematology (Gesellschaft für Pädiatrische Onkologie und Hämatologie e.V., GPOH): Prof. Dr. med. Arne Simon
 - German Society for Pediatric Infectious Diseases (Deutsche Gesellschaft für Pädiatrische Infektiologie e.V., DGPI): Priv.-Doz. Dr. med. Ulrich von Both
 - Society for Pediatric and Adolescent Rheumatology (Gesellschaft für Kinder- und Jugendrheumatologie, GKJR): Priv.-Doz. Dr. med. Tilmann Kallinich
 - Professional Association of Pediatricians (Berufsverband der Kinder- und Jugendärzte e.V., BVKJ): Dr. med. Till Reckert
 - Professional Association of Pediatric Nurses in Germany (Berufsverband Kinderkrankenpflege Deutschland e.V., BEKD): Bettina Beyer-Lichtblau
 - German Society of General Practice and Family Medicine (Deutsche Gesellschaft für Allgemeinmedizin und Familienmedizin, DEGAM): Lisa Degener, Dr. med. Kerstin Barlet, Prof. Dr. med. Michael Freitag
 - Pediatric Immunology Working Group (Arbeitsgemeinschaft Pädiatrische Immunologie e.V., API): Prof. Dr. med. Catharina Schütz
 - German Society for Outpatient General Pediatrics (Deutsche Gesellschaft für Ambulante Allgemeine Pädiatrie e.V., DGAAP): Dr. med. Melanie Ahaus
 - Society for Neuropediatrics (Gesellschaft für Neuropädiatrie e.V., GNP): Prof. Dr. med. Regina Trollmann
 - German Society for Otolaryngology and Head and Neck Surgery (Deutsche Gesellschaft für Hals-Nasen-Ohren-Heilkunde, Kopf- und Hals-Chirurgie e.V., DGHNO-KHC): Prof. Dr. med. Stephan Hackenberg
 - National Association of Physicians in Public Health Services (Bundesverband der Ärztinnen und Ärzte des öffentlichen Gesundheitsdienstes e.V., BVÖGD): Dr. med. Claudia Korebritz
 - German Society for Public Health (Deutsche Gesellschaft für Öffentliches Gesundheitswesen, DGÖG): Dr. med. Claudia Korebritz
 - German Society for Pharmacology (Deutsche Gesellschaft für Pharmakologie e.V., DGP): Prof. Dr. med. Hagen Bachmann
- **Patient representation:**
 - Patient Organization for Congenital Immunodeficiencies (Patientenorganisation für angeborene Immundefekte e.V., DSAI): Sandra Lopes

eBox 3

PICO Questions for the Systematic Literature Review● **Diagnosis – temperature measurement**

1. Is there a measurement method or type of thermometer for determining body temperature or fever in children that is more accurate than or comparable to rectal measurement?
2. Is the measurement of body temperature or fever with an infrared tympanic thermometer in children and adolescents comparable in diagnostic accuracy to rectal measurement?
3. Is the measurement of body temperature or fever with a forehead/temple thermometer in children and adolescents comparable in diagnostic accuracy to rectal measurement or measurement with an infrared tympanic thermometer?
4. Is the measurement of body temperature or fever with an oral digital thermometer in children and adolescents comparable in diagnostic accuracy to rectal measurement?
5. Is the measurement of body temperature or fever by the axillary method in children and adolescents comparable in diagnostic accuracy to rectal measurement?
6. Is the tactile perception (palpation) of fever in children by parents/guardians comparable to a standard instrumental measurement with a clinical thermometer?

● **Diagnosis – age and temperature**

7. Is body temperature or fever a predictor of severe bacterial infection in children, and in which age group?

● **Treatment – fever reduction**

8. Is there a temperature threshold for otherwise healthy children and adolescents above which antipyretic treatment should be initiated?

● **Treatment – non-pharmacological measures**

9. Can undressing improve body temperature or well-being in children and adolescents with fever, compared to standard treatment or antipyretic drugs?
10. Can calf compresses improve body temperature or well-being in children and adolescents with fever, compared to standard treatment or antipyretic drugs?

● **Treatment – antipyretic drugs**

11. Can antipyretic drugs prevent febrile seizures in children?
12. Can antipyretic drugs influence the effectiveness of vaccinations in children?
13. Does alternating or combined administration of antipyretic drugs such as ibuprofen and acetaminophen in children with fever affect body temperature, well-being, or safety differently than giving one of the drugs alone?
14. What is a safe dosage for acetaminophen for the treatment of pain in children with fever?
15. What is a safe dosage of ibuprofen for the treatment of pain in children with a fever?
16. Is metamizole more effective and just as safe as acetaminophen and/or ibuprofen in children?
17. Can antipyretic drugs be used for diagnostic purposes in children?

eBox 4

Full text of all recommendations from the S3 guideline “Fever Management in Children and Adolescents”

Legend

- EC = Expert Consensus (consensus-based recommendation without sufficient evidence from the literature)
- Strength of evidence according to GRADE:
++++ high, +++ moderate, ++ low, + very low
- Recommendation level: ↑↑ strong recommendation (must), ↑ recommendation (should), ↔ open recommendation (may be considered), ↓ negative recommendation (should not), ↓↓ strong negative recommendation (must not)
- Consensus strength:
> 95 % = strong consensus, 75–95 % = consensus

1. Parent/guardian education

- Recommendation 1.2.1.1 (EC, ↑, 100% strong consensus)
 - Caregivers should be informed that fever is a normal and usually helpful defense reaction of the body in dealing with pathogens. As a precautionary measure—for example, at the time of the first vaccination—they should be given written or multimedia information on how to manage fever, in addition to verbal communication.

2. Body temperature measurement

- Recommendation 2.1.1.1 (Evidence-based: +++ low, ↑↑, 100 % strong consensus)
 - The core body temperature of newborns and infants should be measured rectally with a digital thermometer (the thermometer should be lubricated).
- Recommendation 2.2.1.1 (Evidence-based statement: +++ moderate, ↔, 100% strong consensus)
 - For children aged one year and older and adolescents, temperature measurement with an infrared ear thermometer is generally considered sufficiently accurate.
- Recommendation 2.2.2.1 (Evidence-based statement: +— very low, ↔, 100% strong consensus)
 - Body temperature measurement with an infrared forehead or temple thermometer is less accurate than rectal or aural measurement but may still be considered.
- Recommendation 2.2.3.1 (Evidence-based statement: +— very low, ↔/↑, 100% strong consensus)
 - As an alternative to a tympanic thermometer, the body temperature can be measured with a digital thermometer sublingually with the mouth closed. This method is prone to error and should only be used for adolescents.
- Recommendation 2.2.4.1 (Evidence-based: +— very low, ↓↓, 100% strong consensus)
 - Axillary temperature measurement with a digital thermometer is unreliable and should not be used in any age group.

3. Assessment of warning signs and risks

- Recommendation 3.1.1.1 (EC, ↑, 100% strong consensus)
 - If fever is detected in a child by a correctly performed measurement, it should always be interpreted in the context of the child's general condition, well-being, warning signs, and the parents' worry and concern. Warning signs include, in particular, altered consciousness, sensitivity to touch, severe pain, high-pitched crying, skin hemorrhages (a rash that does not fade when pressed), dehydration, very rapid breathing, a capillary refill time of more than 3 seconds, very pale, gray, or blue skin, a critically ill child, or a fever lasting longer than 3 days.
- Recommendation 3.3.1.1 (EC, ↑↑, 100% strong consensus)
 - Infants under 3 months of age with a (rectal) temperature of 38°C or higher should undergo a meticulous medical examination for a severe bacterial infection. Fever may often be absent in this age group even in the presence of a severe bacterial infection. The clinical findings, not the temperature level, determine further management.

4. Non-pharmacological fever management

- Recommendation 4.2.1.1 (EC, ↔, 100% strong consensus)
 - Fever associated with an infection is usually self-limiting. In previously healthy children and adolescents with fever, there is no indication to reduce the fever based on the temperature alone.

- Recommendation 4.2.1.2 (EC, ↔, 100% strong consensus)
 - Antipyretic medications should not be used with the sole aim of lowering core body temperature, but only for pain relief and to improve the child's well-being. Ibuprofen (from 3 months of age) or acetaminophen may be used in children and adolescents who are severely affected by fever and should only be administered for as long as this is the case.
- Recommendation 4.3.1.1 (EC, ↔, 100% strong consensus)
 - For fever management at home, parents should be advised to offer the child fluids regularly; if the child has an appetite, offer light meals (it is not initially important that the child should eat).
- Recommendation 4.3.2.1 (EC, ↔, 100% strong consensus)
 - For home fever management, parents should be advised to let the child sleep undisturbed. Children and adolescents with fever who are sleeping peacefully should not be awakened for temperature checks or interventions, but they do need to feel that a caring person is with them.
- Recommendation 4.3.3.1 (EC, ↔, 100% strong consensus)
 - For fever management at home, parents/guardians should be advised as follows:
 - When a fever is rising, children and adolescents who feel cold (cool hands and feet, chills) should be dressed and covered until comfortably warm.
 - If the child feels too warm, lighten the covers.
 - The child or adolescent should feel calm and safe through loving care.
- Recommendation 4.3.4.1 (Evidence-based: ++— low, ↑, 100 % strong consensus)
 - Children and adolescents with fever should not be undressed and/or exposed to cold ambient temperatures. The primary focus should be on the well-being of the child or adolescent.
- Recommendation 4.3.5.1 (EC, ↔, 100% strong consensus)
 - If the child or adolescent with a fever has warm hands and feet—implying that the elevated temperature is not centralized—but is suffering from the fever, caregivers may apply calf compresses if the child or adolescent feels unwell. Calf wraps should be at body temperature to avoid counter-regulation.

5. Pharmacological fever management – antipyretic drugs

- Recommendation 5.4.1.1 (Evidence-based: ++— low, ↓↓, 92 % consensus)
 - Antipyretic drugs do not prevent febrile seizures and should not be used for this purpose.
- Recommendation 5.5.1.1 (Evidence-based: ++— low, ↓, 100% strong consensus)
 - The prophylactic administration of antipyretic drugs during vaccinations should be avoided.*

*Note: The STIKO recommendation dated January 18, 2024, regarding the prophylactic administration of paracetamol with the meningococcal B vaccine, which has since been revised, was published after the consensus meetings for this guideline. For further information, please refer to the current STIKO recommendations.

- Recommendation 5.6.1.1 (Evidence-based: ++— low, ↔, 100 % strong consensus)
 - The administration of ibuprofen and paracetamol in alternation, or switching from one drug to the other, may be considered, after consultation with a physician, if the child remains affected and if this can be done properly before the next dose of the same drug is scheduled.
- Recommendation 5.7.1.1 (Evidence-based: ++— low, ↑↑, 100 % strong consensus)
 - The recommended single dose of paracetamol (10 to 15 mg/kg) should not be exceeded. The maximum single and daily doses for each age and weight group should be observed. The maximum single dose (1000 mg) and maximum daily dose (4000 mg for children over age 12) should not be exceeded. Depending on the single dose, no more than four (at 10 to 15 mg/kg) to six doses (at 10 mg/kg) should be administered per day.
- Recommendation 5.7.2.1 (Evidence-based: ++— low, ↑↑, 100% strong consensus)
 - The recommended single dose for ibuprofen (7 to 10 mg/kg) should not be exceeded. The maximum single and daily doses for each age and weight group should be observed. The maximum single dose for children over 12 years of age is 600 milligrams. The maximum daily dose (40 mg/kg or 2400 mg) should not be exceeded. No more than four doses should be administered per day.
- Recommendation 5.8.1.1 (Evidence-based statement: ++— low, ↔, 100% strong consensus)
 - Metamizole may be administered to severely ill children and adolescents after an inadequate response to ibuprofen or acetaminophen (10 to 15 mg/kg up to four times per day).

- Recommendation 5.10.1.1 (EC, ↑, 100% strong consensus)
 - A positive response to antipyretics is not correlated with the severity or nature of infectious disease (viral or bacterial) and therefore cannot be used for diagnostic inferences of this type.

6. Antibiotics

- Recommendation 6.1.1.1 (EC, ↑↑, 100% strong consensus)
 - In children and adolescents with fever, antibiotics should be prescribed restrictively, rationally, and in accordance with guidelines. Fever alone is not an indication for antibiotics. Most infectious diseases in children and adolescents are not caused by bacteria. Viral infections and some bacterial infections do not require antibiotic therapy. When antibiotics are not needed, their administration has no benefit and can be harmful (side effects, disruption of the microbiome, environmental impact, antibiotic resistance).

7. Time for recovery

- Recommendation 7.1.1.1 (EC, ↑↑, 100% strong consensus)
 - Parents/guardians should be advised to ensure a sufficiently long recovery period. For children and adolescents, this means being well and fever-free for at least one day before returning to daycare or school.