



ThinkAskLearn
Health Professional Education

KIDS that COOK: Fever in ED

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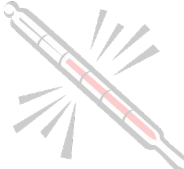
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Case Study



- Child 11/12
- History of fever and purpuric rash onset 6 hrs previous
- Appearance -limp
- Unroutable
- Airway -Normal
- Breathing -Slightly increased




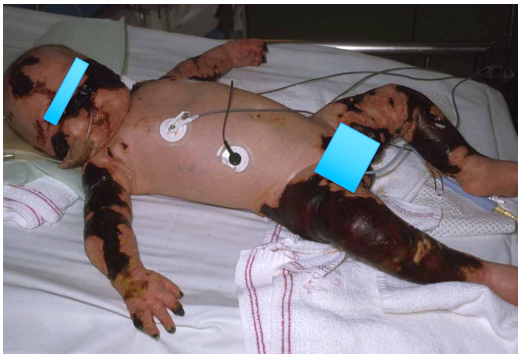
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Case Study

- Pulse -180
- Capillary refill - delayed
- Hypotensive
- SaO₂ 85%
- Rash -arms, legs, face
- Lethargic



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Diagnosis?

- **Meningococcaemia**- Presence of meningococci (N. Meningitidis) in the circulating blood.


Treatment

5 tubes

Aggressive supportive measures

Fluid load/Inotropic Support


10ml/kg + 10ml/kg NS***



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The child in shock

- Seek Help
- Reassess ABC
- Give fluid bolus 10ml/kg +10ml/kg of N/S
- Aggressive supportive measures
- Antibiotic cover – Cefcureeverything
- Consider inotropes support



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Poor Prognostic Signs

- Rapid onset of rash
- Hypotension
- Low WCC
- Not meningitis - so rapid onset of disease has not had time to localise



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Sepsis in Children

- 70% pneumococcal and 20% Haemophilus influenzae B - pre Hib immunisation
- 90% pneumococcal post Hib immunisation
- Salmonella - 6%
- N.meningitidis - 1%



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Pneumococcal Vaccine

- Pneumococcal pneumonia begins with a high fever, cough, and stabbing chest pains,
- Pneumococcal vaccine is 60% to 70% effective in preventing bacteraemic pneumococcal infections
- Now on immunisation schedule
- 1980/90's Occult bacteraemia 5% in under 2 yrs
- 21c Rates declined to 0.5-1% for under 2 yrs

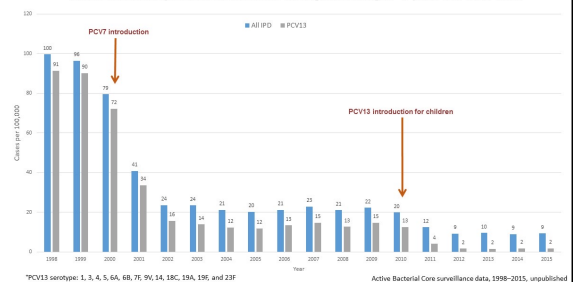


Not what is the WCC but has the child been vaccinated?



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Trends in invasive pneumococcal disease among children aged <5 years old, 1998-2015



CDC Sept 2017



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Myths of Fever

- My child feels warm, so she has a fever
- All fevers are bad for children
- Fevers cause brain damage or fevers above 40° C are dangerous
- Anyone can have a febrile seizure
- Febrile seizures are harmful
- All fevers need to be treated with fever medicine
- Without treatment, fevers will keep going higher
- With treatment, fevers should come down to normal
- If the fever doesn't come down (if you can't "break the fever"), the cause is serious
- Once the fever comes down with medicines, it should stay down
- If the fever is high, the cause is serious
- The exact number of the temperature is very important



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Fever

- No 1 presentation to ED
- Major cause of anxiety in parents
- 20-40% of parents report fever every year
- Poor diagnostic sign



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Benefits of Fever

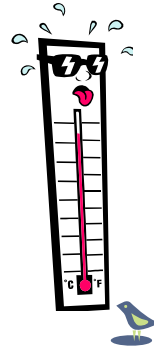
- Increases metabolic rate
- Destroy invading micro-organisms
- Increases removal of micro-organisms



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Thermometers

- Rectal
- Tympanic
- Axillary
- Oral
- Invasive



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Accuracy of Infrared Tympanic Thermometry Used in the Diagnosis of Fever in Children A Systematic Review and Meta-Analysis

Chen Zhen, MM1,2
Zhang Xia, BS2
Zhou Ya Jun, MD3
Li Long, MM2
Shuai Jian, MM4
Cai Gui Ju, MM5
Li Long, MD1

CLIN PEDIATR February 2015 vol. 54 no. 2 114-126

- When you study them, tympanic thermometers are accurate!!!
- Authors 'Cautiously recommend'



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Downloaded from <http://emj.bmj.com/> on July 27, 2016 - Published by group.bmj.com
EMJ Online First, published on June 22, 2016 as 10.1136/emjmed-2015-205122 Original article

Temperature measurement in the adult emergency department: oral, tympanic membrane and temporal artery temperatures versus rectal temperature

Polly E Bijur, Purvi D Shah, David Esses

- Not really accurate compared to rectal
- Only studied on adults in research conditions
- Tympanic temps most accurate
- Consider dropping temp from 38°C to 37.5°C



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Source of Fevers

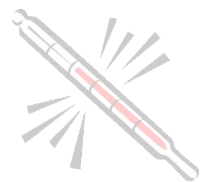
- Viral
 - Croup
 - Broncholitis/URTI
 - Varicella
 - Gastroenteritis - Rotavirus
- Bacterial
 - Otitis media
 - Cellulitis
 - Septic arthritis



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Sources of Fever

- Serious
 - UTI's
 - Pneumonia
 - Bacteraemia's
 - Meningitis
- Fever without source



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Assessment of Child with Fever

- History
 - Immunisations
 - Recent travel
 - Exposure to sick contacts
 - Previous illness/hospitalisation
 - Change in behaviour, eating drinking patterns, sleep pattern
- How was the temperature taken at home?
- When did you last give panadol?***



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Assessment of Child with Fever

- Raised Temperature may not occur in the unwell child
- The Neonate History
 - evidence of poor feeding
 - vomiting
 - poor social interaction
 - changes in the quality of crying
 - possible apneic episodes



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When to Uptriage Fever?

- Kids under 3 months – Cat 2 ???
- Pale kids
- Neck stiffness/ photophobia/ headache
- Poor tone/lethargic
- Non blanching rash



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Urinary Tract Infection

- UTI common source of sepsis
- Potential for Renal disease at later in life
 - Age younger than 12 months
 - Temperature above 39°C
 - Illness for 2 days or more
 - Absence of any other source for fever



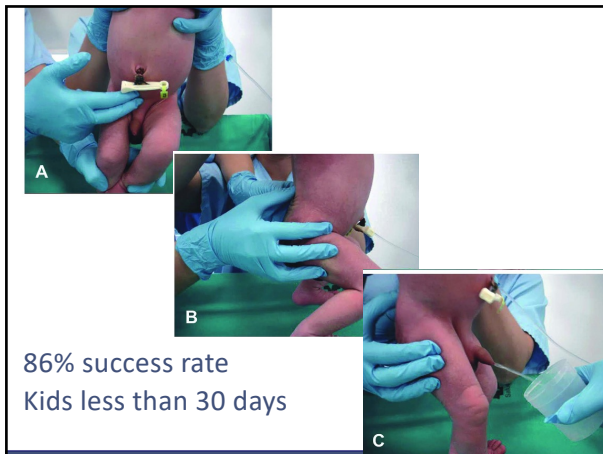
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Urinary Tract Infection

- Ban the BAG
- A negative WTU in Bag – OK
- Mid Stream Sample
- Clean Catch
- In/Out catheter
- Supra Pubic Aspirate for neonates



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Dehydration Assessment			
	Mild	Moderate	Severe
Weight loss	Up to 5%	6-10%	More than 10%
Appearance	Active, alert	Irritable, alert, thirsty	Lethargic, looks sick
Capillary filling	Normal	Slightly delayed	Delayed
Pulse	Normal	Fast, low volume	Very fast, thready
Respiration	Normal	Fast	Fast and deep
Blood pressure	Normal	Normal or low	Very low
Mucous memb.	Moist	Dry	Parched
Tears	Present	Less than expected	Absent
Eyes	Normal	Normal	Sunken
Skin Turgor	Springs back	Tents briefly	Prolonged tenting
Fontanel (infant sitting)	Normal	Sunken slightly	Sunken significantly
Urine flow	Normal	Reduced	Severely reduced

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Management of Fever

- Why do we give antipyretics?
- Strip or not to strip
- Tepid sponge – OMG what are you doing?
- Fluids, more fluids, more fluids??? How much is enough
- Check the child through the night

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Febrile Convulsion

- “A febrile convulsion is a seizure associated with fever (at least 38°C) in the absence of central nervous system infection or any electrolyte imbalance in a young child” DFTB 2014
- How many people have seen a febrile convulsion?

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Febrile Seizure

- Anxiety for Parents
- Concerned re leading to choking, brain death, develop a learning disability or seizure disorder
- Usually self limiting
- Often benign caused by viral infection
- 2-4% of all children least one febrile seizure
- 1/3 will have a repeat febrile seizure

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Febrile Seizure

- Uncertain etiology
- Related to
 - Rapidity of fever
 - Height of fever
- Young children have a low seizure threshold.
- Peak between 3 months and 5 years
 - Half between 12-30 months
- Mostly generalised seizures
 - Some Complex seizures
 - Febrile Status epilepticus (>30 mins) approx 5%



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Febrile Convulsion - Treatment

- Identify the source
- Urine collection –WTU first
- Mostly no further testing
- Routine blood test for well child not required
- Investigate harder for “diagnostic uncertainty” or unwell child



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Conclusion

- Fever poor diagnostic sign
- Paracetamol for pain - not fever
- Temperature measurement devices are important
- Need to exclude sepsis
- Febrile convulsion requires supporting parents



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