The Febrile Child

Assoc. Prof Alex Tang
Objective

• Examines history taking and physical examination of a febrile child
• Understand the basis for treatment of a fever
• Develops a clinical approach to a febrile child
The child with fever

- Fever is the most common presenting symptom in children
- 10-20% of visits to clinics
- Majority of children presenting with fever < 3 years old
- Fever may be a symptom of a minor or life threatening disease

The child with fever (cont)

- Differentiating a viral illness from a bacteremia can be difficult
- Children with occult bacteremia treated as outpatients without antibiotics may develop bacterial meningitis or other focal infections

Fever

Definition:

- Rectal temperature 38°C or above
- Variant?

Measuring temperature
Taking a temperature

• Oral temperatures
• Axillary temperatures
• Tympanic temperatures
• Skin temperatures
• Rectal temperatures
Fever (cont)

Pathophysiology

• Raising of the hypothalamic ‘thermostat’ in the brain
  endogenous pyogenic mediators (cytokines)

• Heat production exceeding heat loss

• Defective heat loss
Mom, I don't feel good!
History taking

- **History of present illness**
  - Fever
  - Pain
  - Rashes
  - Localising symptoms
- **Review of systems**
- **Past medical history**
  - Recent illness, hospitalisation
  - Endemic area (dengue)
  - Immunosuppressant
- **Travel history**
- **Family history**
Physical Examination

General appearance: most important aspect of exam

Vital signs

• temperature
• respiratory rate
• blood pressure
• pulse rate
• oxygen saturation if available
Physical Examination (cont)

State of hydration
Peripheral perfusion
Mental status exam
General physical exam
Differential Diagnosis

Upper Respiratory Tract Disease
• Viral respiratory tract disease
• Otitis media
• sinusitis

Lower Respiratory Tract Disease
• Bronchiolitis
• Pneumonia

Gastrointestinal Disorders
• Bacterial gastroenteritis
• Viral gastroenteritis
Differential Diagnosis (cont)

Musculoskeletal Infections
• Cellulitis
• Septic arthritis
• Osteomyelitis

Urinary Tract Infections
Encephalitis
Meningitis
Munchausen by proxy syndrome
Septic workout

• Full Blood Picture
• Urine FEME and culture
• Blood culture
• CSF FEME and culture
• Diagnostic imaging
• Other tests
  • Sputum for PTB
  • BFMP
  • WWF
  • Dengue serology

Treatment of fever
Treatment of Fever

• Remove excessive clothing
• Tepid sponging
• Hydration
• Antipyretics
Antipyretics

- ‘Reset the thermostat’ in the hypothalamus:
  - Inhibits cyclo-oxygenase enzyme
  - Prevent synthesis of prostaglandins
  - Not anti-viral or anti-bacterial

- **Doses:**
  - Acetaminophen: 15 mg/kg every 4 hours
  - Ibuprofen: 10 mg/kg every 6-8 hours
Considerations in an approach to a febrile child

• Age groups (0-1;1-36;>36 mo)
• General condition of the child
• Fever with source
• Fever without source

Acute febrile illness in which the etiology of the fever is not apparent after a careful history and physical exam

Child with fever

0-1 month
- Healthy looking

1-3 years
- Sick looking

>3 years
- Healthy looking
- Sick looking
<table>
<thead>
<tr>
<th>Age</th>
<th>Description</th>
<th>Management</th>
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| <1 month corrected age (or < 3.5 kg in an older child) | Rectal temperature > 38°C | Full sepsis work-up: FBP/film, blood culture, urine culture (SPA), LP ± CXR  
- Admit for empirical antibiotics |
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<tbody>
<tr>
<td>1-36 months corrected age</td>
<td>Rectal temperature &gt; 38ºC</td>
<td>Full sepsis workup: FBP/film, blood culture, urine culture (SPA) ± CXR (only if respiratory symptoms or signs) ± LP&lt;br&gt;• General condition of the child&lt;br&gt;- well&lt;br&gt;- unwell</td>
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<tr>
<td>1-36 months corrected age</td>
<td>Rectal temperature &gt; 38°C</td>
<td>Discharge home with review within 12 hours if the child is:</td>
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<td></td>
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<td>Previously healthy</td>
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<td></td>
<td></td>
<td>Looks well</td>
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<td></td>
<td></td>
<td>WCC 5,000 - 15,000</td>
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<td></td>
<td></td>
<td>Urine microscopy clear</td>
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<td></td>
<td></td>
<td>CXR (if taken) clear</td>
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<td></td>
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<td>CSF (if taken) negative</td>
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<td>1-36 months corrected age</td>
<td>Rectal temperature &gt; 38ºC</td>
<td>If the child is unwell or above criteria are not all satisfied, admit to hospital for observation +/- empiric i.v. antibiotics</td>
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| > 36 months  | Temperature $>38^\circ C$ and **clear focus** of infection | child looks well  
• Treat as clinically indicated |
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| > 36 months  | Temperature >38ºC and **clear focus** of infection | child looks unwell  
• Investigate as appropriate for clinical focus  
• Admit for treatment |
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<td>&gt; 36 months</td>
<td>Temperature &gt;38°C and <strong>no clear focus</strong> of infection</td>
<td>child looks well&lt;br&gt;• If &lt; 12 months boys or &lt;2 yrs girls&lt;br&gt;- urine, can do SPA up to 12 months of age&lt;br&gt;• If &gt; 12 months - Consider Urine MSU&lt;br&gt;• Discharge home on symptomatic treatment&lt;br&gt;• Arrange medical review within 24 hr, or sooner if deteriorates</td>
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<td>&gt; 36 months</td>
<td>Temperature &gt;38°C and <strong>no clear focus</strong> of infection</td>
<td>child looks miserable but is still relatively alert, interactive and responsive</td>
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<td>• If &lt; 12 months boys or &lt;2 yrs girls - urine, can do SPA up to 12 months of age</td>
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<td>• If &gt; 12 months - Consider Urine MSU</td>
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<td>• Consider admission</td>
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<td>child looks unwell&lt;br&gt;<strong>Full sepsis workup:</strong> FBP, blood culture, urine culture ± CXR (if respiratory symptoms or signs) ± LP&lt;br&gt;• Admit to hospital for observation +/- i.v. antibiotics</td>
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Fever without source: Empiric antibiotic therapy

- Children with temperature $>39^\circ\text{C}$ and WBC $> 15,000$

- Parenteral antibiotics reduces risk of bacterial meningitis more than oral antibiotics: 0.3% vs 8.2%

A febrile episode in a child may be due to a minor or major cause. The difficulty is in telling which is which.