

# 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  $38^{\circ}\text{C}$  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 pyrogenic mediators (cytokines)
- Heat production exceeding heat loss
- Defective heat loss





Mom, I don't feel good!

LilacCityMomma.com

Picture courtesy of LilacCityMomma.com





Photo courtesy of iStockphoto.com

# History taking



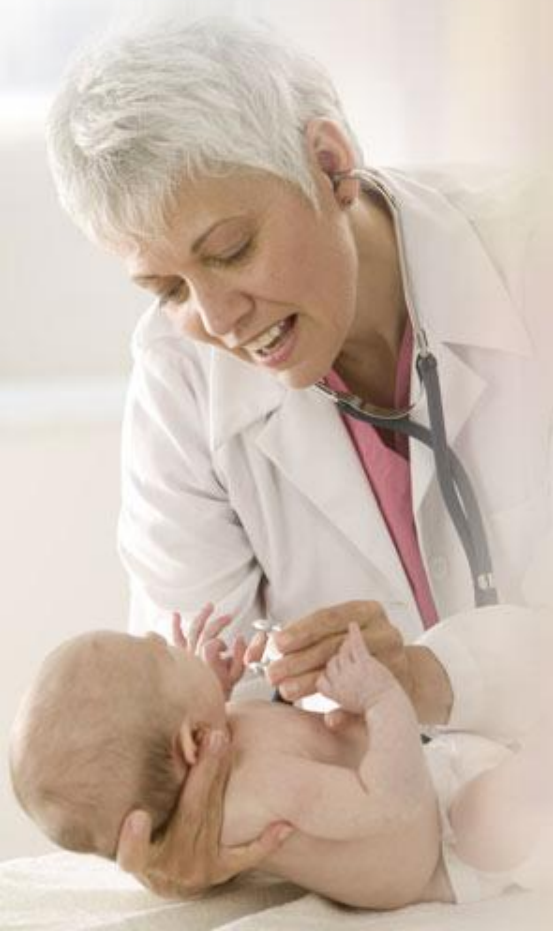
- **History of present illness**
  - Fever
  - Pain
  - Rashes
  - Localising symptoms
- **Review of systems**
- **Past medical history**
  - Recent illness, hospitalisation
  - Endemic area (dengue)
  - Immunosuppressant
- **Travel history**
- **Family history**

# 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

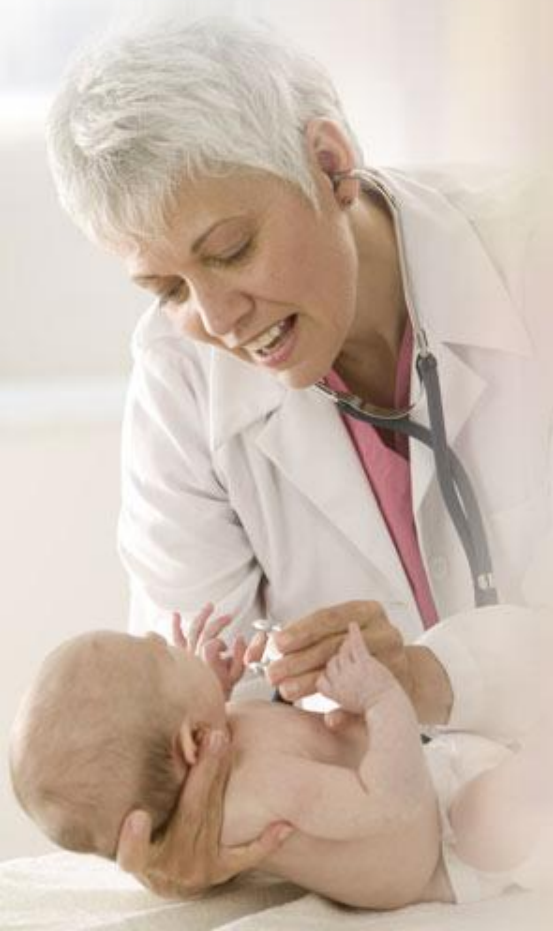
- Viral respiratory tract disease
- Otitis media
- sinusitis

## 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

- 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

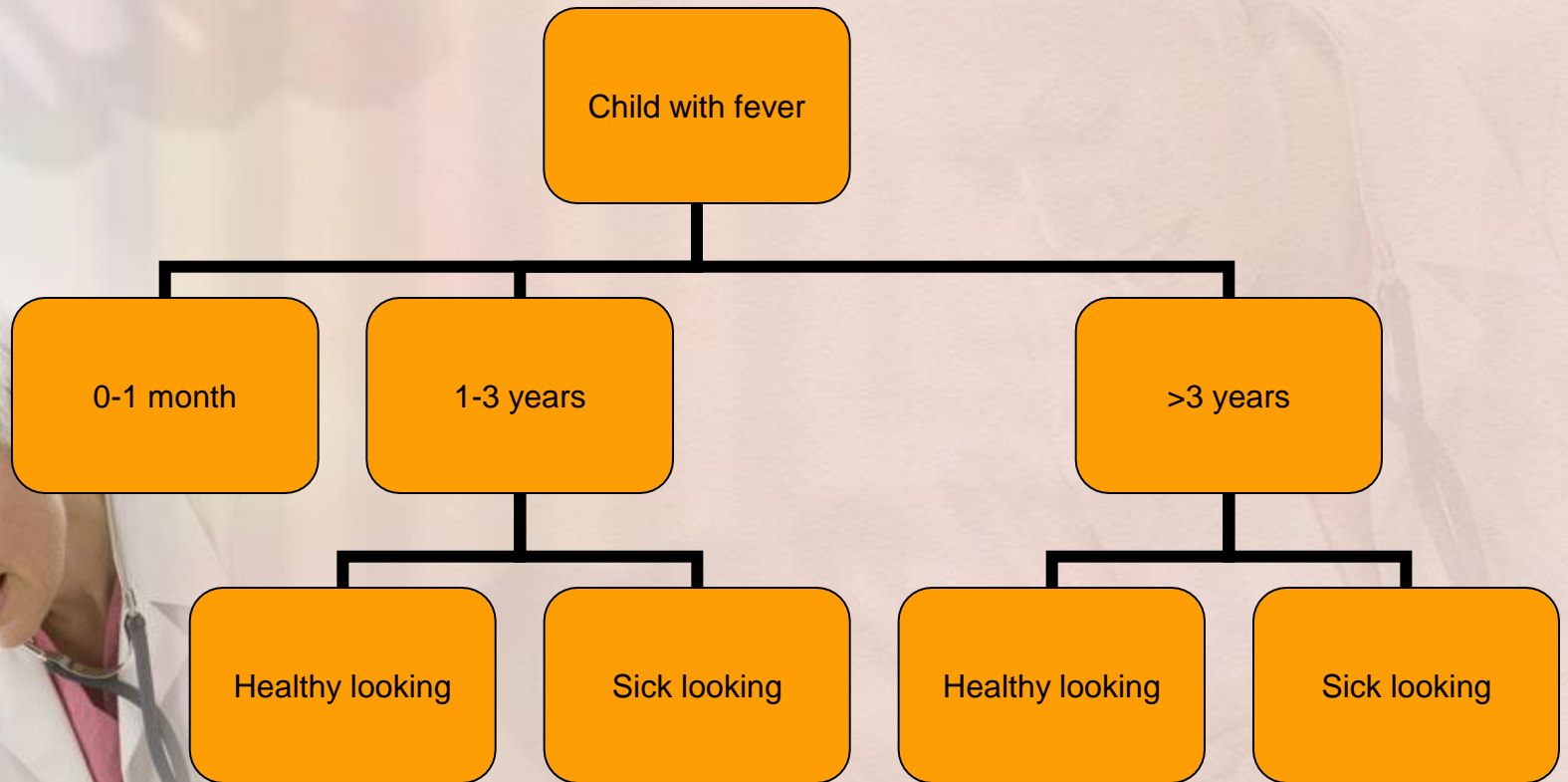
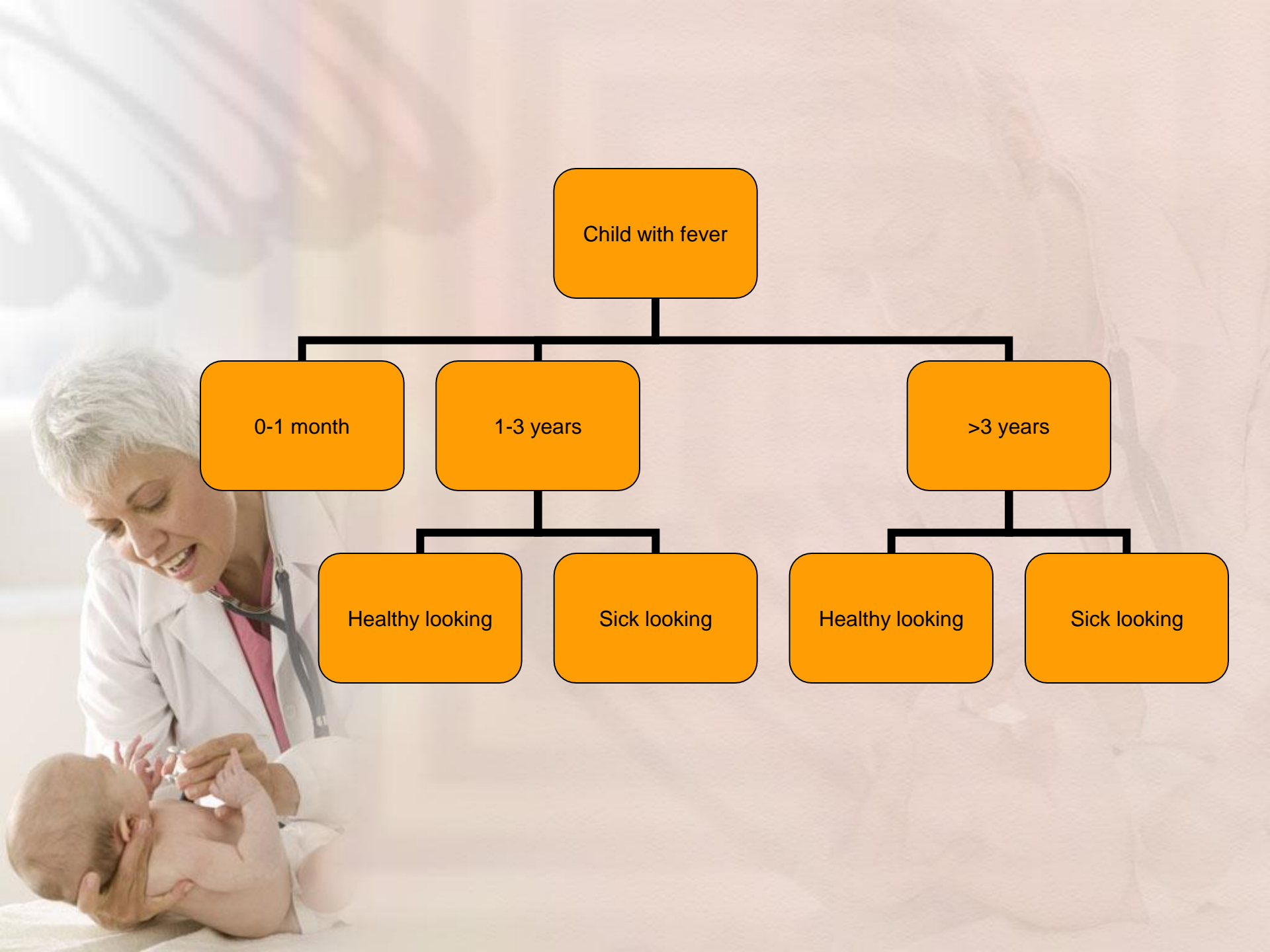
- Age groups (0-1;1-36;>36 mo)
- General condition of the child
- Fever with source
- Fever without source

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

Berlin CM. Fever in children: A practical approach to management. Contemporary Pediatrics 1-8.

Baraff LJ, Bass JW, Fleisher GR, et al. Practice guideline for the management of infants and children 0 to 36 months of age with fever without source. Pediatrics 1993; 92:1-12.







| Age   | Description                     | Management   |
|---|---------------------------------|--|
| <1 month<br>corrected age<br>(or < 3.5 kg in an<br>older child) | Rectal<br>temperature ><br>38°C | <b>Full sepsis work-<br/>up: FBP/film,<br/>blood culture,<br/>urine culture<br/>(SPA), LP ± CXR</b><br><b>•Admit for<br/>empirical<br/>antibiotics</b> |



| Age                          | Description                     | Management   |
|------------------------------|---------------------------------|--|
| 1-36 months<br>corrected age | Rectal<br>temperature ><br>38°C | <b>Full sepsis<br/>workup:<br/>FBP/film, blood<br/>culture, urine<br/>culture (SPA) ±<br/>CXR (only if<br/>respiratory<br/>symptoms or<br/>signs) ± LP</b><br><b>•General<br/>condition of the<br/>child</b><br><b>-well</b><br><b>-unwell</b> |



| Age                          | Description                     | Management  |
|------------------------------|---------------------------------|---|
| 1-36 months<br>corrected age | Rectal<br>temperature ><br>38°C | Discharge home<br>with review<br>within 12 hours if<br>the child is:<br><b>Previously<br/>healthy</b><br><b>Looks well</b><br><b>WCC 5,000 -<br/>15,000</b><br><b>Urine<br/>microscopy clear</b><br><b>CXR (if taken)<br/>clear</b><br><b>CSF (if taken)<br/>negative</b> |



| Age                          | Description                     | Management  |
|------------------------------|---------------------------------|---|
| 1-36 months<br>corrected age | Rectal<br>temperature ><br>38°C | If the child is<br>unwell or above<br>criteria are not<br>all satisfied,<br>admit to hospital<br>for observation<br>+/- empiric i.v.<br>antibiotics |



| Age         | Description   | Management   |
|-------------|---|--|
| > 36 months | Temperature >38°C and <b>clear focus</b> of infection | child looks well<br><br>•Treat as clinically indicated |





| Age         | Description   | Management   |
|-------------|---|--|
| > 36 months | Temperature >38°C and <b>clear focus</b> of infection | child looks unwell<br><br>•Investigate as appropriate for clinical focus<br><br>•Admit for treatment |



| Age         | Description  | Management  |
|-------------|--|---|
| > 36 months | Temperature >38°C and <b>no clear focus</b> of infection | <p>child looks well</p> <ul style="list-style-type: none"><li>•If &lt; 12 months boys or &lt;2 yrs girls -urine, can do SPA up to 12 months of age</li><li>•If &gt; 12 months - Consider Urine MSU</li><li>•Discharge home on symptomatic treatment</li><li>•Arrange medical review within 24 hr, or sooner if deteriorates</li></ul> |



| Age         | Description  | Management   |
|-------------|--|--|
| > 36 months | Temperature >38°C and <b>no clear focus</b> of infection | <p><b>child looks miserable but is still relatively alert, interactive and responsive</b></p> <ul style="list-style-type: none"><li>•If &lt; 12 months boys or &lt;2 yrs girls -urine, can do SPA up to 12 months of age</li><li>•If &gt; 12 months - Consider Urine MSU</li><li>•Consider admission</li></ul> |



| Age         | Description  | Management   |
|-------------|--|--|
| > 36 months | Temperature >38°C and <b>no clear focus</b> of infection | child looks unwell<br><b>Full sepsis workup: FBP, blood culture, urine culture ± CXR (if respiratory symptoms or signs) ± LP</b><br><b>•Admit to hospital for observation +/- i.v. antibiotics</b> |

# 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.**

