Technical Seminars IMCI

Acute Respiratory Infections

Sensivity & specificity

Definition

Pneumonia

Recognition • Fast breathing • Antibiotics

Severe Pneumonia or Very Severe Disease

Lower chest wall indrawing

Recognition • Clinical signs • Antibiotics

Wheezing

Causes • Drug management

Disadvantages of Addition

Consider Addition

Pneumonia

Recognition

- Based on fast breathing, and lower chest wall indrawing
- "Cough OR difficult breathing," not "cough AND difficult breathing"
  - Fewer than 25 percent of children with cough also have difficult breathing
  - Many causes of difficult breathing not related to cough
  - Using both can cause false positives

Sensitivity and Specificity

Definitions

- Sensitivity - the proportion of those with the disease who are correctly identified by sign. It measures how sensitive the sign is in detecting the disease.
- Specificity - the proportion of those without the disease who are correctly called free of the disease by using the sign.
- Low sensitivity of diagnosis is a more serious problem than low specificity.
- Respiratory cut-off rates determined by ROC curve.

Pneumonia

Fast breathing

- Fast breathing based on age-specific thresholds
  - 2 to 12 months $\geq$ 50
  - 12 months up to 5 years $\geq$ 40
  - If rate is below cut-offs (plus no danger signs and no chest wall indrawing) the classification is no pneumonia, cough and cold.
- Use timing device to count rate for one full minute (preferably)
- Best to count rate in a quiet and alert child
- Fever can affect respiratory rates, but do not wait for fever to subside

Pneumonia

Fast breathing

- Initial WHO respiratory rate cut-off of 50/minute based on Goroka, Papua New Guinea studies
- Studies in Gambia and Philippines showed this cut-off rate was not specific enough for children 1 to 4 years
- Threshold for older children was lowered to 40/minute and confirmed with studies
- Two rates may cause confusion but advantage is increased sensitivity

Severe Pneumonia

Lower chest wall indrawing

- Problems in recognizing children who should be urgently referred
- "Retractions" suggested as indication of severe disease but multiple definitions existed
- Studies found lower chest wall indrawing best identified children who required assessment or admission
  - must be definite, present all the time

Severe Pneumonia or Very Severe Disease
Recognition

- Urgently refer children with Cough or difficult breathing **AND**
  - Lower chest wall indrawing **OR**
  - Stridor when calm **OR**
  - Any general danger sign

Severe pneumonia or Very Severe Disease
Clinical signs

	Chest indrawing	Stridor when calm	Danger signs
Severe pneumonia	+		±
Bronchiolitis	±		±
Asthma	±		±
Epiglottitis	±	+	±
Laryngo-tracheitis	±	+	±
Severe anaemia	±		±
Meningitis			+
Septicaemia			+

+ = always present ± = Present sometimes

A combination of clinical signs indicates need for referral and further assessment

Identification of potentially life threatening diseases must be made by a proper physical examination at a higher level facility

Pneumonia

Antibiotics

- Cotrimoxazole
  - Inexpensive, twice a day dosage
  - Few adverse effects
  - Resistance to S. pneumoniae and H.influenzae
- Amoxicillin
  - More expensive, 3 times daily
  - Drug reactions are less common, but include diarrhoea
  - Clinically effective against penicillin-resistant pneumococci

Severe pneumonia or Very Severe Disease
Antibiotics

- Invasive bacterial organisms warrant injectable antibiotics
  - Delivered to the blood and/or meninges
  - Incessant vomiting or shock prohibit oral antibiotics
- Penicillin – IM
  - Inexpensive
  - Widely available
  - Limited organisms treated
  - Poor CSF penetration

Severe pneumonia or Very Severe Disease
Antibiotics

- Chloramphenicol intramuscularly
  - Broader range of organisms treated
  - Good CSF penetration
  - Bioequivalent to IV administration
  - Some reluctance because diosyncratic aplastic anaemia occurs in 1 in 80,000 to 100,000
  - Still best choice as a single dose pre-referral antibiotic

Wheezing

Causes

- Under age 2 - Bronchiolitis
- Older children plus those with recurrent attacks of wheeze - bronchial asthma or reactive airways disease
  - transient wheezers
  - persistent wheezers
- Other respiratory infections
- Inhaled foreign body
- Tuberculous node compressing bronchus

Wheezing

Drug management

- Bronchodilators for asthma or recurrent airways disease but **not** for bronchiolitus
- Use of metered-dose inhalers with spacer device
- Relatively inexpensive - Salbutamol inhaler $ 1.50 for 200 doses
- Can be used in outpatient setting and at home
- Combined inhaler and inhaled steroids (expensive) reserved for cases of recurrent asthma

Wheezing

Disadvantages of Addition

- Not a major cause of mortality
- Recognition of audible wheeze is poor with low specificity
- Incorrect diagnoses increase clinic visits and drug use
- Drugs and supplies expensive to buy and maintain at first-level facilities
- Drugs often diverted to adults

Wheezing

Consider Addition

- In countries that can afford bronchodilators and where morbidity from asthma is a problem
- In areas where rapid-acting bronchodilators are available at first-level facilities
- When health workers are trained to recognize audible wheeze and use bronchodilators

Wheezing

Consider Addition

- If it will reduce unnecessary referral to the hospital
- If caretakers can be trained in home use/compliance
- If the health worker can recognize when a child with recurrent wheeze is not responsive in the first-level health facility
- If health workers can recognize underlying bacterial pneumonia