Virtual Journal Club Pneumonia in young children

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Objectives

- Review two articles on the treatment of pneumonia in children in low resource settings using the PICO framework
- Discuss the approach to diagnosis and treatment of pneumonia in children in the ED setting in Addis
- I have no disclosures or conflict of interest

This session will be recorded

- We are recording this Zoom session so that it can be watched again at your convenience, and so that we can share it with your colleagues who were not able to join us today.
- If you would prefer that this recording **not** be shared with your EM colleagues, please email amcknight@ghem.ca within 24 hours of the session.
- We will share the presentation slides and other materials (journal articles, etc.) by email; you will have access to all materials regardless of whether the recording is shared.

- The information in this presentation and the video recording is up to date as of the date it was recorded (October 30, 2020)
- It has not been updated to include any subsequent advances in practice, and the information presented in this video does not replace hospital, health centre, or governmental guidelines.

Article #1 Amoxicillin for 3-5 days for Chest Indrawing Pneumonia in Malawian Children Ginsburg,et al.

- Double blind, randomized, controlled, non inferiority trial in Malawi
- Children were age 2-59 months and HIV negative, and mildly ill
- Received Amoxcillin WHO recommended dose by age for 3-5 days
- Admitted to hospital for first two days, then close follow up
- Followed for 14 days
- Non inferiority defined by treatment failure no more than 1.5X difference between 3 and 5 day groups

Patients

- Defined by WHO guidelines – chest –indrawing pneumonia
- HIV negative, malaria screen negative,no testing for viruses, bacteria or TB
- Groups were similar – figure 1, and 3000 were randomized
- O2 sats greater than 90%, most afebrile
- 60% received pneumovax

Intervention

- Randomized to 3 vs 5 days of Amoxillicin – dose based on age
- Placebo for days 4/5 in 3 day group
- Low drop out rate
- High rate of follow up/evaluation

Comparison

- Table 1 shows characteristics of both groups at enrollment
- All mildly ill
- Groups are comparable

Outcomes

- Treatment failure – Day 6 – 5.9% in 3 day group and 5.2% in 5 day group
- Treatment failure – Day 14 – 12.5% in 3 day group and 10.8% in 5 day group [1.7 percentage points
- Adverse effects – 9.8% in 3 day group and 8.8% in 5 day group
- Conclusions – 3 day treatment is non- inferior to 5 day treatment

Limitations/Generalizability

- Mildly ill patients
- Very close follow up
- No lab or xray testing
- Routine HIV testing in place
- Pneumococcal immunization rate relatively high

Article #2 Randomized Trial of Amoxcillin for Pneumonia in Pakistan Jehan et al- RETAPP

- Double blind, randomized, placebo controlled non-inferiority trial
- Children age 2-59 months meeting WHO criterion for non- severe pneumonia
- Amoxicillin [dose based on weight] vs placebo for three days
- Enrolled at primary health centres, and closely followed with observed administration of meds
- Non inferiority trial based on treatment failure during 3 day course
- Non inferiority margin 1.75 percentage points

Patients

- 2-59 months of age seen in primary care centres
- Pneumonia diagnosed by WHO criterion – Resp rate. Wheeze also measured- and given three doses of bronchodilator if present
- Patients with persistent tachypnea were enrolled
- Low rate of HIV and malaria in community
- 60% had pneumcoccal vaccine
- 30% had mild fever
- No patients had 02 sat less than 90

Intervention

- Random assignment of Amoxil or placebo syrup [weight based dosage]
- All doses observed in health centre or at home
- Followed up to day 14
- 4000 patients randomized
- Excellent follow up, and low rate of dropouts

Comparison

- Baseline characteristics of two groups – very similar
- 10% incidence of anemia
- All mildly ill
- 40% underweight in both groups
- Refer to Table 1 for details

Outcomes

- Treatment failure 4.9% in placebo group
- Treatment failure 2.6% in treatment group
- Difference of 2.3 percentage points
- Presence of fever and wheeze predicted treatment failure
- NNT to prevent one treatment failure – 44
- Adverse events – 3.3% in placebo group and 2.2% in Amoxil group

Limitations/Generalizability

- Mildly ill children
- Very close follow up – observed doses
- Low incidence of HIV and malaria
- Small difference favouring treatment arm at 14 days

What is a non- inferiority trial?

- Often used to compare a new drug vs usual drug and allows for a smaller sample size
- Key question for consideration – is the difference in determining “non inferior” reasonable and practical
- This difference needs to be determined before the trial begins
- Only when the advantages of the trail treatment clearly overcome the “worsening” which is implicit in the design, can we recommend this new “non-inferior” treatment to our patients

Can we apply the results of these clinical trials in Addis?

- Patient type and severity of pneumonia in children
- Rate of malnutrition
- Rate of pneumococcal immunization
- Rate of HIV/TB/malaria in the community

Would you change your practice?

- Usual diagnostic work up for pneumonia
- CXR
- Lab tests
- Point of Care US
- Availability of oral antibiotics
- Follow up

Thank You!

- Other questions and Discussion