Reducing Antibiotic Use in Common Infections in Family Practice

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Fever

- A fever in a child, especially in those under two years of age, is the single most common reason for children visiting a physician.
- It must be remembered that a fever is a sign of a healthy immune response to an infection.
- Surveys have found that 94% of parents believe that a fever indicates a serious illness that threatens the life of their child.

Fever

- **A fever is defined as an elevation of body temperature above 37.5 C when measured orally**
- **Common causes of fever in order of frequency as seen in family practice:**

1) Upper Respiratory infections including pharyngitis (4%)

2) Acute or chronic cough (bronchitis or pneumonia) (2%)

3) Otitis media (1%)

4) Cystitis and urinary tract infections (.8%)

5) Sinusitis (.5%)

*** (%) percentage of visits to the family physician**

Fever

- **Otitis Media is most common in children under 5 while sinusitis rarely occurs in children under 7 years of age as sinuses are underdeveloped in smaller children.**
- **The Red Flag condition in children and adults is meningitis. In the past 5 years this has become less common in younger children with wide use of hemophilis influenza and pneumococal vaccine. The earlier the detection and treatment, the better the outcome in meningitis.**
- **Every febrile child under age 3 should be carefully assessed for meningitis and if there is concern, a diagnostic lumbar puncture should be considered.**

Managing Fever

- **There is some evidence that reducing fever may prolong some illnesses of bacterial or viral origin.**
- **Drugs of choice for fever control include acetaminophen and ibuprofen. Dosages by weight are very important for children to avoid both over and under dosing.**
- **Although Ibuprofen carries risks of GI and cardiovascular complications in adults, especially those with a past history of GI or cardiac problems, little evidence of these risks has been identified in children other than increased GI irritation in some using ibuprofen.**
- **Lowering fever is to make the patient more comfortable and usually does not assist in treatment of the cause of the fever.**

Reference

- References and extra reading for this section on Fever:
- Rosser W. Fever and Common Childhood Infections. Oxford Textbook of Primary Medical Care Volume 2 Oxford University Press; 2004: 1013-1015.

URI or Cold?

- A 1998 study of antibiotic use in Kentucky, USA found that 60% of people presenting to their family physicians with uncomplicated URI received antibiotics.
- A systematic review of 1,699 children randomly allocated to receive or not receive antibiotics found no benefit for those receiving antibiotics.
- Recipients of antibiotics suffered more gastrointestinal disturbance
- The Cochrane review in 2005 states there is no evidence of benefit from antibiotics for the common cold.

Reference

Arroll B. Antibiotics for upper respiratory tract infections: an overview of Cochrane reviews.
Respir Med. 2005 Mar;99(3):255-61.

Acute Bronchitis

- Traditionally, we have treated episodes of acute bronchitis in otherwise reasonably healthy people with 7 to 14 days of antibiotics.
- This was based on the fact that most episodes of acute bronchitis produce copious amounts of mucopurulent sputum suggestive of bacterial infection.
- Studies over the past few years find that 80% of acute bronchitis is viral in origin. The color and amount of sputum produced does not predict differentiation between viral and bacterial etiology.

Acute Bronchitis

- A systematic review of the literature in 1993 recommended that in episodes of acute bronchitis in non-immuno compromised individuals and people who did not have significant pulmonary disease, there was no indication for antibiotics.
- The main treatment was to reduce risk factors (primarily smoking)
- These findings were supported by a Cochrane systematic review in 2004
- In the interests of early diagnosis of COPD there may be an indication to do spirometry on smokers.

Acute Bronchitis References

Orr PH, Scherer K, Macdonald A, Moffat MEK. Randomized placebo controlled trials of antibiotics for acute bronchitis: A critical review of the literature. The Journal of Family Practice 1993;36:507-512.

Smucny J, Fahey T, Becker L, Glazier R. Antibiotics for acute bronchitis. Cochrane Database Syst Rev. 2004 Oct 18;(4):CD000245.

Otitis Media

The following findings come from **Meta analysis of studies done in family practice and Dutch experience in general practice.**

Children 2-5 years with acute otitis media.

- ⇨ **If given adequate Tylenol for pain and saline nose drops, 70-75% cases will resolve in 72 hours spontaneously.**
- ⇨ **Those that remain unresolved after 72 hours are treated with antibiotics for 7 days.**
- ⇨ **No serious implications from using this approach have been recorded in more than 10,000 children with otitis media.**

The most important change strategy is educating the public

- Public education and physician and pharmacist education through entire community education programs can be effective.
- Many physicians are providing information about the "*watchful waiting*" approach to their patients and then giving the parents the prescription and telling them not to fill it until they are worried.
- Family physicians using this strategy report fewer than 50% of prescriptions are filled

- The Canadian and American Paediatric Associations do not support this approach.
- They continue to suggest a 5-day course of antibiotics as an intermediate step.
- Often agreement within the medical community as to the interpretation of evidence may be difficult to achieve.

- One argument is that the 15-25% of children who require antibiotics have a lengthened duration of illness.
- Meta analysis demonstrates the duration of illness was increased by an average of less than one day in the group requiring antibiotics.

References

1. Delmar C, Glaz P, Hayem M. Are antibiotics indicated in the initial treatment for children with acute otitis media? A meta-analysis. BMJ 1997; 314: 1526-1530.
2. Merenstein D, Diener-West M, Krist A, Pinneger M, Cooper LA. An assessment of the shared-decision model in parents of children with acute otitis media. Pediatrics. 2005 Dec;116(6):1267-75.
3. Macfadyen C, Acuin J, Gamble C. Systemic antibiotics versus topical treatments for chronically discharging ears with underlying eardrum perforations. Cochrane Database Syst Rev. 2006 Jan 25;(1):CD005608.
4. Flynn CA, Griffin GH, Schultz JK. Decongestants and antihistamines for acute otitis media in children. Cochrane Database Syst Rev. 2004;(3):CD001727.

Cystitis

- **Although cystitis does not usually cause a fever it is a common and unpleasant problem especially in younger women.**
- **It tends to recur. In the past decade many physicians have prescribed 3 days of antibiotics (Septra) for women without assessing their urine.**
- **McIsaac found that nearly 30% of these women did not need antibiotics. This could be determined by a simple dipstick urine test done by the women.**

Cystitis

- **Presence of nitrites and WBC on dipstick test predicted an infection and antibiotics were indicated.**
- **Women with recurrent infections should acidify their urine with vitamin C.**
- **Non infected recurrent infections are likely due to trauma to the bladder**

Reference

- McIsaac WJ, Low DE, Biringer A, Pimlott N, Evans M, Glazier R.The impact of empirical management of acute cystitis on unnecessary antibiotic use.
Arch Intern Med. 2002 Mar 11;162(5):600

Phryngitis

- Everyone complaining of a sore throat should be assessed for

Symptoms of

- **Sore throat**
- **Tender glands in the anterior cervical region below the mandible**
- **Fever**
- **White Exudates on the tonsils or pharynx**
- **Absence of Cough**

If only a sore throat present no treatment is required. This is the case for 45% of people seeking care

Pharyngitis

Symptoms

- Sore throat
- Tender glands in the anterior cervical region below the mandible
- Fever
- White Exudates on the tonsils or pharynx
- Absence of Cough

If Two/Three Symptoms Present

Found in 45% of persons presenting to a family practice complaining of sore throat.

- Approximately 25% were found to have streptococcal pharyngitis

Recommendation:

Rapid Strep test

Treat according to results.

Pharyngitis

Symptoms

Sore throat

- **Tender glands in the anterior cervical region below the mandible**
- **Fever**
- **White Exudates on the tonsils or pharynx**
- **Absence of Cough**

Four Symptoms Present

Found in 10% of persons presenting to a family practice complaining of a sore throat.

- At least 60% were found to have a streptococcal infection.

Recommendation:

Treat immediately without/with throat swab with Penicillin –v 300mgms T.I.D. for 7 to10 days.

References

- Del Mar CB, Glasziou PP, Spinks AB. Antibiotics for sore throat. Cochrane Database Syst Rev. 2004;(2):CD000023.
- McIsaac WJ, Goel V, To T, Low DE. The validity of a sore throat score in family practice. CMAJ. 2000 Oct 3;163(7):811-5.
- McIsaac WJ, White D, Tannenbaum D, Low DE. A clinical score to reduce unnecessary antibiotic use in patients with sore throat. CMAJ. 1998 Jan 13;158(1):75-83.

Sinusitis

- Evidence based criteria for diagnosing acute sinusitis are somewhat soft.
- Williams found that the combination of a maxillary toothache, poor response to nasal decongestants, colored nasal discharge by history or examination and an abnormal trans illumination had a reasonable predictive value for the diagnosis of acute sinusitis.

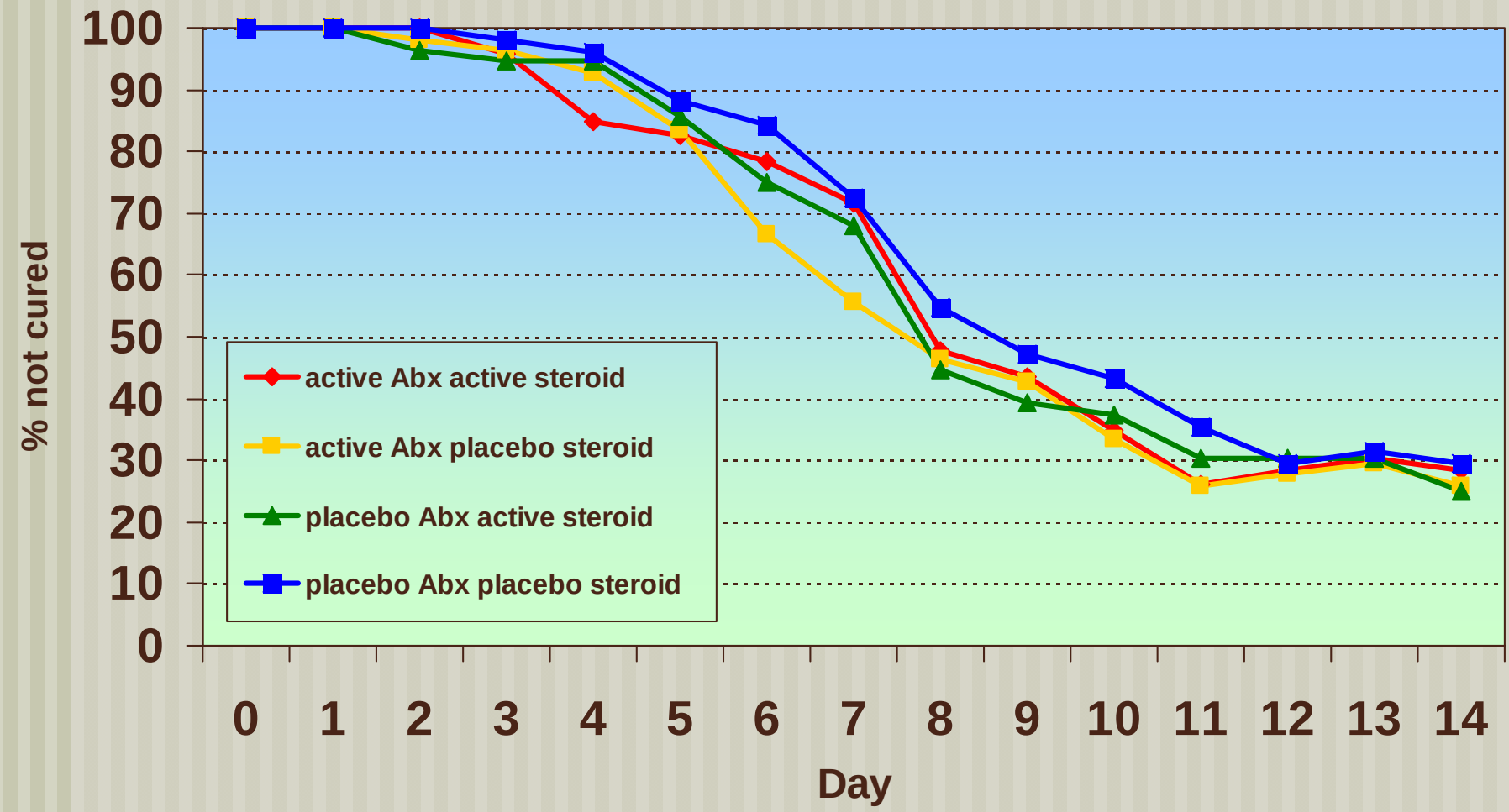
Sinusitis

- Williams conducted a randomized controlled trial of excellent quality to demonstrate that 3 days of TMP/SMX had the same outcome for sinusitis as 10 days of TMP/SMX.
- The problem required 14 days to resolve with no difference in recurrence rate between the two durations of treatment.
- Like otitis media, use of antibiotics is likely much less effective than drainage of the sinus cavity.

Williamson in the UK

- Conducted a randomized controlled trial on 241 persons presenting to their family physician with sinusitis.
- **Williamson IG**, **Rumsby K**, **Benge S**, **Moore M**, **Smith PW**, **Cross M**, **Little P**. Antibiotics and topical nasal steroid for treatment of acute maxillary sinusitis: a randomized controlled trial JAMA. 2007 Dec 5;298(21):2487-96.

Cure as defined by patient's reported scores (no or very little problem on all diary symptoms)



Other References

- Williams J, Simel D. Does the patient have sinusitis? Diagnosing acute sinusitis by history and physical examination. JAMA 1993;270:1242-1246.
- Williams J, Holleman D, Samsa G, Simel D. Randomized controlled trial of 3 vs.10 days of trimethoprim/sulfamethoxazole for acute maxillary sinusitis. JAMA 1995 ; 273:1015-1021
- Morris P, Leach A.Antibiotics for persistent nasal discharge (rhinosinusitis) in children. Cochrane Database Syst Rev. 2002;(4):CD001094

Discussion

- Fever is the most common reason for children under 5 to seek medical advice.
- The six most common infections represent approximately 8% of the family physicians work load.
- There are likely to be at least one of these six infections seen in every office session that you participate in during night clinic sessions at the FMC or during clerkship.

Discussion

- The strategies outlined in this presentation are practical, evidence based approaches to fever and common infections.
- You may find that some physicians do not agree with these approaches as there remain a number of controversies as to the best approach
- The most controversy remains around the watchful waiting approach to treat otitis media and sinusitis.

Discussion

- If these five problems were universally treated according to the evidence, there would be a dramatic reduction in antibiotic use. Estimates are as high as 70% reduction in antibiotic use.
- Holland has by far the lowest antibiotic resistance rate in Europe even though it is surrounded by high resistance countries.
- Twenty five years of “watchful waiting” for otitis media (which is what the public expect) and adoption of other antibiotic reduction strategies are the likely explanation for this finding.

Discussion

- The great benefit of “conservative prescribing strategies”, beyond reducing the risk of allergic reactions and side effects from antibiotics, is the reduction in antibiotic resistance in the community.
- There has been greater than a 10% decline in antibiotic use in Ontario over the past 3 years suggesting widespread adoption of evidence based conservative use of antibiotics.
- There is also evidence that the public is willing to be more cautious about antibiotic use.

Conclusion

- It would be wise for all physicians to become familiar with the evidence based approach to managing these common infections .
- This approach needs to be applied to individuals, keeping in mind the population based evidence .
- All of you can join in contributing to reduced antibiotic use and thus help in reducing resistance to these valuable drugs