

Treating Children Without Antibiotics in Primary Healthcare

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Abstract

The overuse of antibiotics in children is becoming a major public health problem. Although most of the common childhood infections such as diarrhea and upper respiratory tract infections are caused by viruses, large volumes of antibiotics are prescribed for these infections in children in the primary care settings. Excessive use of antibiotics is the fundamental risk factor for the development of antibiotic resistance. It is estimated that 90% of upper respiratory tract infections are self limiting viral illnesses and even bacterial infections like acute otitis media often run a self limiting course. Clinical trials have shown that antibiotic use to treat common upper respiratory tract infections like sore throat, nasopharyngitis and otitis media has no or minimal benefit on the clinical outcome. This report discusses two strategies considered to reduce the use of antibiotic in these conditions: i) No prescription, and ii) Delayed prescription of antibiotics for common upper respiratory tract infections. Moreover, this report calls for a significant modification of the prescribing habits of physicians, and to also extend community awareness on the harms of the misuse and overuse of antibiotics. It is imperative to educate health workers as well as the Community in a coordinated and sustainable manner about the growing public health problem of antibiotic resistance.

Keywords: Upper respiratory tract infection; Antibiotics; Antibiotic resistance.

Introduction

If the second half of the last century belonged to antibiotics, then the last three decades witnessed the misuse and overuse of these miracle drugs. No doubt antibiotics are being overused, particularly in children, and are largely an unseen major public health problem.¹ It is interesting to note that maximum levels of antibiotics are used in the community and primary care, which account for 80% of all human antimicrobial use, yet these antibiotics are inappropriately used for mostly self-limiting upper respiratory tract infections (URTI).^{2,3} Excessive antibiotic consumption is increasingly recognized as the main or rather the only cause of the emerging antibiotic resistance.⁴

Antibiotic resistance driven mainly from the overuse of antibiotics, particularly in children, is increasingly becoming a major public health problem globally.¹ In other words; the once effective and inexpensive treatment for infections will soon become increasingly ineffective; consequently increasing morbidity, mortality and healthcare costs. The evidence suggesting that antimicrobial prescribing is the core factor of resistance is overwhelming.⁵ Not only are healthcare professionals worried about this major public health issue, but antibiotic resistance has been an alarming issue among policy makers as well as the public. Various institutions have expressed pleas recommending better and limited use of antibiotics, improved infection control schemes and continued antimicrobial innovations. The International network of surveillance system monitoring data on antibiotic use in Europe through the ESAC project (European Surveillance of Antibiotic Consumption), published in the Lancet; found that the highest rates of antibiotic resistance were seen in countries with the highest consumption rate of antibiotics.⁶

Why do we overprescribe?

In primary care settings, the common diagnosis made in children with respiratory symptoms are; sore throat (acute nasopharyngitis, acute tonsillitis and acute pharyngitis), acute otitis media, acute sinusitis, common cold and acute cough/bronchitis. It is a well known fact that these common infections in children (with the exception of acute otitis media) are mostly viral and self limiting (including Bronchitis - a lower respiratory tract infection), thus antibiotics are most often unnecessary. Yet across the world, more than 50% of children with URTI are treated with antibiotics, and receive on average 2-3 prescriptions per year.⁷⁻⁹ Bear in mind that in a child recently treated with antibiotics, the resistant bacteria can reside in the throat for up to 3 months; thus posing as a potential source of spread in nurseries and day care centers.

Despite the overwhelming evidence, we still continue to overprescribe. Physicians have been reported to prescribe antibiotics based on the perception that parents or patients want them; however, this assessment has not been substantiated.¹⁰ The complex relationship between physicians and parents often leads to unnecessary antibiotic administration. Physicians in the private health sector still maintain the lowest threshold for antibiotic prescription and generally tend to use broader spectrum antibiotics than considered necessary. However, it is my opinion that the most

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important factor in overprescribing is the prescribing habits of individual physicians coupled with the lack of self confidence and ignorance. Significant efforts should be aimed towards changing such habits by making the physicians aware of current evidence and guidelines.

What other options and evidence is there?

There are two possible alternatives available for physicians treating a child with uncomplicated URTI; i) Not prescribing antibiotics, or ii) Delaying antibiotic prescription. There is strong evidence to suggest that this treatment approach is both safe and effective in reducing antibiotic prescribing from major clinical trials.¹¹⁻¹³ These treatment options have been tried in many developed nations including UK and USA. Sharland et al. in their article assessing the time trend analysis of antibiotic prescription in general practice and hospital admissions for peritonsillar abscess, mastoiditis and rheumatic fever in children, found that there was no increase in hospital admissions with rheumatic fever or peritonsillar abscess in the UK following a policy of restricted antibiotic prescribing.¹⁴ According to their report and the editorial column by Little published in the same issue of the British Medical Journal; the use of antibiotics in children with URTI halved in the last decade in the UK, mainly due to the widespread adoption of delayed prescribing policy.^{11,14} While the Cochrane database Meta-analysis of randomized controlled trials demonstrated that antibiotic use to treat acute otitis media, rhinitis and acute sore throat has no or minimal benefit on the outcome.¹⁵⁻¹⁷ Furthermore, Little et al. suggested that the benefit from immediate antibiotic prescription in acute otitis media was limited to symptomatic relief after the first 24 hours when symptoms are already resolving, concluding that delayed prescribing appears to be a reasonable approach for both patients and carers.¹³ Moreover, Thompson et al. showed that one will have to treat almost 4800 children with otitis media in order to prevent just one case of mastoiditis.¹⁸

In 2010, the National Institute for Health and Clinical Excellence (NICE) guidelines endorsed this policy and recommended either delayed or no prescribing for five common diagnoses; acute otitis media, acute sore throat, acute cough/bronchitis, acute sinusitis and common cold.¹⁹ The evidence supporting the guidelines suggests that delayed prescribing can reduce antibiotic use for the above conditions by up to 80%.¹⁹ Similarly, the guidelines are also applicable for adult patients.¹⁹

No antibiotics vs. Delayed prescribing

Currently, there is overwhelming evidence to follow one of these treatment options when treating a child with one of the conditions previously outlined. Otherwise, in a child who is well with no pre-existing co-morbidities such as heart/ lung/ liver diseases or Immunosuppression; it would be advised not to prescribe any antibiotic, however the natural course of the illness and advice pertaining to the course of action if symptoms persist must be

clearly communicated. A description of the illness is more vital than the prescription of an antibiotic in most cases. Thus delayed prescribing is a very safe alternative and offers a safety net; the policy is likewise important in the sense that it can protect physicians in the rare occurrence of complications. With respect to the waiting period for delayed prescription; approximately two to three days of wait- and -see approach is safe for acute otitis media, five days estimated for sore throat, and 10-14 days for acute cough.^{20,21} Young children (less than 2 years) with bilateral otitis media or otorrhoea with otitis media may require an immediate antibiotic prescription. For the most part, it was interesting to note in most trials on delayed prescribing, that only a few patients resorted to antibiotic therapy.

How can the policy be implemented?

In an era of universal conjugate pneumococcal and HIB (*H. influenza*) vaccination in Oman; it is reassuring to physicians that a virological diagnosis can probably be made in virtually all cases of URTI in children. In Oman, most primary care physicians are trained in IMCI (Integrated Management of Childhood Illnesses). Hence it may be a lot easier to convince the physicians and to implement these guidelines. It is a well recognized fact that larger volumes and broader spectrum of antibiotics are overprescribed in the private health sector; therefore, there is urgent need to also educate health workers in this sector. However, it is my opinion that creating awareness amongst policy makers and the community as a whole about the risks of excessive use and misuse of antibiotics is even more important. The public must be conscious of the immediate and long term problems associated with antibiotic misuse. Examples from European countries have shown that carefully structured national campaigns can be successful, particularly when electronic and print media take leading roles.²²

Conclusion

Let us also initiate a National Campaign to educate and remind our healthcare professionals about this growing public health problem. Close monitoring of guidelines, antibiotics use, disease patterns and complications are vital to reassure both the physician and the community. Let us request and implement restrained use of antibiotic prescribing, in addition to educating the community to prevent and limit the unnecessary demand of antibiotic prescription, simultaneously. Otherwise, we risk losing the miracle drug of the 20th century.

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References

1. Tenover FC, Hughes JM. The challenges of emerging infectious diseases. Development and spread of multiply-resistant bacterial pathogens. *JAMA* 1996 Jan;275(4):300-304.
2. Wise R. The relentless rise of resistance? *J Antimicrob Chemother* 2004 Aug;54(2):306-310.
3. Harnden A, Perera R, Brueggemann AB, Mayon-White R, Crook DW, Thomson A, et al. Respiratory infections for which general practitioners consider prescribing an antibiotic: a prospective study. *Arch Dis Child* 2007 Jul;92(7):594-597.
4. Bronzwaer SL, Cars O, Buchholz U, Mølsted S, Goettsch W, Veldhuijzen IK, et al; European Antimicrobial Resistance Surveillance System. A European study on the relationship between antimicrobial use and antimicrobial resistance. *Emerg Infect Dis* 2002 Mar;8(3):278-282.
5. Livermore DM. Minimising antibiotic resistance. *Lancet Infect Dis* 2005 Jul;5(7):450-459.
6. Goossens H, Ferech M, Vander Stichele R, Elseviers M; ESAC Project Group. Outpatient antibiotic use in Europe and association with resistance: a cross-national database study. *Lancet* 2005 Feb;365(9459):579-587.
7. Finkelstein JA, Metlay JP, Davis RL, Rifas-Shiman SL, Dowell SF, Platt R. Antimicrobial use in defined populations of infants and young children. *Arch Pediatr Adolesc Med* 2000 Apr;154(4):395-400.
8. Finkelstein JA, Davis RL, Dowell SF, Metlay JP, Soumerai SB, Rifas-Shiman SL, et al. Reducing antibiotic use in children: a randomized trial in 12 practices. *Pediatrics* 2001 Jul;108(1):1-7.
9. Nyquist AC, Gonzales R, Steiner JF, Sande MA. Antibiotic prescribing for children with colds, upper respiratory tract infections, and bronchitis. *JAMA* 1998 Mar;279(11):875-877.
10. Mangione-Smith R, McGlynn EA, Elliott MN, Krogstad P, Brook RH. The relationship between perceived parental expectations and pediatrician antimicrobial prescribing behavior. *Pediatrics* 1999 Apr;103(4 Pt 1):711-718.
11. Little P. Delayed prescribing of antibiotics for upper respiratory tract infection. *BMJ* 2005 Aug;331(7512):301-302.
12. Spiro DM, Tay KY, Arnold DH, Dziura JD, Baker MD, Shapiro ED. Wait-and-see prescription for the treatment of acute otitis media: a randomized controlled trial. *JAMA* 2006 Sep;296(10):1235-1241.
13. Little P, Gould C, Williamson I, Moore M, Warner G, Dunleavy J. Pragmatic randomised controlled trial of two prescribing strategies for childhood acute otitis media. *BMJ* 2001 Feb;322(7282):336-342.
14. Sharland M, Kendall H, Yeates D, Randall A, Hughes G, Glasziou P, et al. Antibiotic prescribing in general practice and hospital admissions for peritonsillar abscess, mastoiditis, and rheumatic fever in children: time trend analysis. *BMJ* 2005 Aug;331(7512):328-329.
15. Del Mar CB, Glasziou PP, Spinks AB. Antibiotics for sore throat. *Cochrane Database Syst Rev* 2006;(4):CD000023.
16. Arroll B, Kenealy T. Antibiotics for the common cold and acute purulent rhinitis. *Cochrane Database Syst Rev* 2005;(3):CD000247.
17. Glasziou PP, Del Mar CB, Sanders SL, Hayem M. Antibiotics for acute otitis media in children. *Cochrane Database Syst Rev* 2004;(1):CD000219.
18. Thompson PL, Gilbert RE, Long PF, Saxena S, Sharland M, Wong IC. Effect of antibiotics for otitis media on mastoiditis in children: a retrospective cohort study using the United Kingdom general practice research database. *Pediatrics* 2009 Feb;123(2):424-430.
19. National Institute for Health and Clinical Excellence. Prescribing of antibiotics for self-limiting upper respiratory tract infections in adults and children in primary care. Clinical guidance CG 69, July 2008. <http://www.nice.org.uk/Guidance/CG69> accessed on 29th Oct 2010.
20. Little PS, Williamson I, Warner G, Gould C, Gantley M, Kinmonth AL. Open randomised trial of prescribing strategies in managing sore throat. *BMJ* 1997 Mar;314(7082):722-727.
21. Little P, Rumsby K, Kelly J, Watson L, Moore M, Warner G, et al. Information leaflet and antibiotic prescribing strategies for acute lower respiratory tract infection: a randomized controlled trial. *JAMA* 2005 Jun;293(24):3029-3035.
22. Goossens H, Guillemot D, Ferech M, Schlemmer B, Costers M, van Breda M, et al. National campaigns to improve antibiotic use. *Eur J Clin Pharmacol* 2006 May;62(5):373-379.