Thorax

Editorials

Management of adult lower respiratory tract infection in primary care

K Steele, G Gormley, C H Webb

Acute lower respiratory tract infection (acute bronchitis) refers to the onset of productive cough in a patient with no history of chronic obstructive pulmonary disease and no evidence of pneumonia. The Fourth National Morbidity Survey (1991–2) from general practice claims that acute cough is the most common reason given for consulting a GP in the UK.[1] Population based estimates of the incidence of acute bronchitis range from 33 to 45 cases/1000 per year.[2 3] Descriptive epidemiology of common symptoms and their natural history and outcome is an area which the MRC highlights as a priority for primary care research.[4] In this issue of *Thorax* Macfarlane *et al* report a large prospective case series detailing the incidence, aetiology, management, and outcome of previously well adults presenting to their general practitioner with symptoms of acute lower respiratory tract infection.[5] They found there was no relationship between the doctor's initial clinical assessment that the patient had an infection warranting antibiotics and the outcome or with subsequent laboratory confirmation of a bacterial/atypical infection.

Quantitative systematic reviews of randomised controlled trials of antibiotic prescription for acute bronchitis do not support antibiotic treatment.[6 7] The most beneficial effect seen in some patients is balanced by adverse side effects in others.[6] Given this body of evidence, why is it that up to 80% of patients presenting with an acute cough in the UK and an even higher proportion in the USA still receive antibiotic treatment?[8 9]

The decision to prescribe is a complex interaction of doctor/patient factors and consultation dynamics. Hong *et al* state that patients' desires influence physicians to prescribe even when the doctor sees no clinical indication.[10] They also found that this desire may be for a prescription based medicine, not necessarily an antibiotic.[10]

This is important as previous experiences affect future habits and expectations and prescription of symptomatic remedies may reduce demand for antibiotics for the next episode of illness. No association has been found between antibiotic prescribing and patient satisfaction. Satisfaction does correlate with patients being involved in decision making and with adequate explanation.[11] This takes time, given the average consultation time of 9.4 minutes, but is vital as the morbidity associated with bronchitis impacts on patients' well being and daily activities for several weeks.[12]

A common reason for a prescription is the mistaken belief that antibiotics reduce re-attendance. Informing patients about the natural history and course of lower respiratory tract illness symptoms, on the other hand, has been shown to reduce reconsultations.[13] Doctors themselves may have misinterpreted the evidence and there are studies which show that practitioners are more likely to prescribe antibiotics when discharge or phlegm is purulent.[14] This belief is also incorporated into the patient's perception. Diagnostic uncertainty and the variable relationship between clinical findings and subsequent diagnosis further influences prescribing habits. When faced with diagnostic uncertainty, the balance of prescribing a relatively harmless medication (with potential benefit) compared with the risk of patient dissatisfaction and litigation may tip the balance towards defensive practice.[15]

Macfarlane *et al* claim that microbiological investigations did not influence the clinical outcome and their routine use in acute bronchitis in healthy adults would not be justified. However, such investigations have an epidemiological value in providing local data on antibiotic resistance and seasonal variation in pathogen prevalence. Both are important considerations in deciding on the empirical management of more severe lower respiratory infections in the community. This could be achieved by investigating a representative sample of patients or through the use of sentinel practices. The prevalence of ampicillin resistance in *Haemophilus influenzae* and *Streptococcus pneumoniae* infections show local and regional variations[16 17] and that recorded by Macfarlane *et al* is exceptionally low. The volume of antibiotic use drives antibiotic resistance and this correlation has been shown to occur in local practice communities.[18–20] Recent antibiotic prescription increases the prevalence of carriage and infection due to penicillin resistant *S pneumoniae*. Since 50% of human community antibiotic use in the UK is for respiratory infections, prudence in their management carries with it the greatest potential to reduce the pressure which drives resistance.[21] This applies not only to the agents prescribed, but also to simultaneous co-selection of resistance to other valuable antibiotics.[22]

We suggest three strategies for disseminating the evidence base for management of acute bronchitis in the community. Firstly, a public education campaign to support doctors' prescribing practice. Secondly, education of GPs to provide them with the evidence to reassure them that antibiotics are not warranted. Dissemination of evidence, particularly if supported by laboratory liaison, decreases prescribing of antibiotics.[23–25] We also need to spend time, which is valued by patients,[11] to explain why antibiotics have been used in the past and why they are not being given for the current illness. The use of delayed prescriptions and patient information leaflets have both been shown to decrease prescribing of antibiotics and to reduce reconsultations.[26 27]

The optimum course in previously well adults will be to redefine acute bronchitis as an illness rather than infection, to educate patients and physicians about the natural history and outcome, and to reassure both parties that antibiotics are unlikely to alter the disease process. As with

most consultations, practitioners should also insert a safety net into the consultation to encourage patients to seek further advice if symptoms do not settle as expected.[28]

The paper by Macfarlane *et al* should encourage GPs, enabling them to reassure patients that withholding antibiotics has a positive outcome for this self-limiting condition.

K STEELE
G GORMLEY

Department of General Practice,
Queens' University,
Dunluce Health Centre,
Belfast BT9 7HR
k.steele@qub.ac.uk

C H WEBB

Bacteriologist,
Royal Hospitals Trust,
Belfast

1 Royal College of General Practitioners, Office of Population Censuses and Surveys. *Department of Health. Morbidity statistics from general practice. 4th national study, 1991–1992*. London: HMSO, 1995.
2 Ayres JG. Seasonal pattern of acute bronchitis in general practice in the United Kingdom 1976–83. *Thorax* 1986;**41**:106–110.
3 Mainous AG, Zoorob RJ, Hueston WJ. Current management of acute bronchitis in ambulatory care. *Arch Fam Med* 1996;**5**:79–83.
4 MRC. *Primary health care research review*. 1997.
5 Macfarlane J, Holmes W, Gard P, *et al*. Prospective study of the incidence, aetiology and outcome of adult lower respiratory tract illness in the community. *Thorax* 2001;**56**:109–14.
6 Fahey T, Stocks N, Toby T. Quantitative systematic review of randomised controlled trials comparing antibiotic with placebo for acute cough in adults. *BMJ* 1998;**316**:906–10.
7 Orr PH, Scherer K, McDonald A, *et al*. Randomised placebo controlled trials of antibiotics for acute bronchitis: a critical review of the literature. *J Fam Pract* 1993;**36**:507–12.
8 Davey P, Rutherford D, Graham B, *et al*. Repeat consultations after antibiotic prescribing interactions: a survey in one general practice. *Br J Gen Pract* 1994;**44**:509–13.
9 Mainous AG, Hueston W, Clark JR. Antibiotics and upper respiratory infection. *J Fam Pract* 1996;**42**:357–61.
10 Hong JS, Philbrick JT, Schorling JB. Treatment of upper respiratory infections: do patients really want antibiotics? *Am J Med* 1999;**107**:511–5.
11 Hamm RM, Hicks RJ, Benben DA. Antibiotics and respiratory infections: are patients more satisfied when expectations are met. *J Fam Pract* 1996:**43**:56–62.
12 Verheij T, Hermans J, Kaptein A, *et al*. Acute bronchitis: course of symptoms and restrictions in patients daily activities. *Scand J Primary Health Care* 1995;**13**:8–12.
13 Holmes WF, MacFarlane JJ, MacFarlane RM, *et al*. The influence of antibiotics and other factors on reconsultation for acute lower respiratory tract illness in primary care. *Br J Gen Pract* 1997;**47**:815–8.
14 Gonzales R, Barrett PN, Steiner JF. The relationship between purulant manifestations and antibiotic treatment of upper respiratory tract infections. *Gen Intern Med* 1999;**14**:151–6.
15 Verheij T, Hermans J, Kaptein A, *et al*. Acute bronchitis: general practitioners' views regarding diagnosis and treatment. *Fam Pract* 1990;**7**:175–80.
16 Felmingham D, Grüneberg R N, and the Alexander Project Group. The Alexander Project 1996–1997: Latest susceptibility data from this international study of bacterial pathogens from community-acquired lower respiratory tract infections". *J Antimicrob Chemother* 2000;**45**:191–203.
17 Goldsmith CE, Moore JE, Murphy PG. Pneumococcal resistance in the UK. *J Antimicrob Chemother* 1997;**40**(Suppl A):11–18.
18 Arason VA, Kristinsson KG, Sigurdsson JA, *et al*. Do antimicrobials increase the carriage rate of penicillin resistant pneumococci in children? Cross sectional prevalence study. *BMJ* 1996;**313**:387–91.
19 Austin DJ, Kristinsson KG, Anderson RM. The relationship between the volume of antimicrobial consumption in human communities and the frequency of resistance. *Proc Natl Acad Sci USA* 1999;**96**:1152–6.
20 Magee TJ, Pritchard EL, Fitzgerald KA, *et al* on behalf of the Welsh Antibiotic Study Group. Antibiotic prescribing and antibiotic resistance in community practice: retrospective study 1996–8. *BMJ* 1999;**319**:1239–40.
21 Department of Health, Standing Medical Advisory Committee, Subgroup on Antimicrobial Resistance. *The path of least resistance*. London: Department of Health, 1998: 29–32.
22 Goldstein F. Penicillin resistant *Streptococcus pneumoniae*: selection by both β lactam and non β lactam antibiotics. *J Antimicrob Chemother* 1999;**44**:141–4.
23 Temte JL, Shult PA, Kirk CJ, *et al*. Effects of viral respiratory disease education and surveillance on antibiotic prescribing. *Family Med* 1999;**31**:101–6.
24 Gonzales R, Steiner J, Lunn A, *et al*. Decreasing antibiotic use in ambulatory practice. *JAMA* 1999; **281**:1512–9.
25 Seppala H, Klaukka T, Vuopio-Varkila J, *et al*. The effect of changes in the consumption of macrolide antibiotics on erythromycin resistance in group A streptococci in Finland. *N Eng J Med* 1997;**337**:414–6.
26 Little P, Gould C, Williamson I, *et al*. Reattendance and complications in a randomised trial of prescribing strategies for sore throat: the medicalising effect of prescribing effect of prescribing antibiotics. *BMJ* 1997;**315**:350–2.
27 MacFarlane JT, Holmes WF, MacFarlane RM. Reducing reconsultations for acute lower respiratory tract illness with an information leaflet: a randomised study of patients in primary care. *Br J Gen Pract* 1997;**47**:719–22.
28 Neighbour R. *The inner consultation*. Berkshire, UK: Petroc Press, 1996.