RUMA-VMD Conference:
Responsible use - ideas into action

November 3rd 2015

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Professor of primary care
GO Cwm Taf University Health Board
The toxic storm

- Increasing workload
- Maintaining relationships
- Poor risk communication
- Lack of point of care testing
- Fewer resources
- Defensive medicine
- Undermining of 24 hour (OOH) care
- Undermining continuity and trust
- Diagnostic uncertainty
What the patients said…

Dissatisfaction with the consultation was not necessarily related to the prescription of antibiotics (most who really wanted them got them). The lack of a clear explanation and the feeling of being rushed in the consultation were common causes of dissatisfaction:

Interviewer: “If the doctor had to do it differently, what would you like him to do?”
Patient: “To explain to me why you can't have antibiotics, why there is no reason to give them to you, and what alternatives I can use. Because basically it was, ‘you don't need antibiotics for this and it will go away,’ and that was it. But how long does it take to go away?”

One man came for reassurance about cancer and was given an antibiotic, which he took as a reassuring signal. A teacher came for preventive advice and left with a steroid nasal spray when she had been hoping for “a method or some sort of explanation as to how I could avoid these things.” A mother came for reassurance and pain relief (under pressure from her family) and left with an unexpected antibiotic. A woman experiencing repeated episodes of sore throat apparently left without adequate explanation. A working woman, who didn't like “bothering” the doctor, received antibiotics on a second visit and wondered why she had not been given them on the first occasion.

What the clinicians said: I know the evidence…

“Almost all clinicians acknowledged that antibiotics were prescribed .. All mentioned that, on average, antibiotics modified the course of these infections only slightly, if at all, in clinical trials.”
What the clinicians said… My prescribing does not matter that much when balanced against the needs of my individual patient

Although a minority mentioned bacterial resistance as a potential problem, this was seen as a community issue whereas the general practitioners' priority was the well being of the individual patient. Most felt that prescribing narrow spectrum antibiotics could do little harm. One clinician said, “In a way it would be better for the community that so many people would not take antibiotics, but I have a feeling that for the individual it is better for him or for her to take antibiotics. So here is a little bit of conflict of interest in a way . . . now antibiotics are cheap and no harm is done if antibiotics are prescribed once or twice a year for an upper respiratory tract infection or a little bronchitis. Now why should I deprive my patients?”
What the clinicians said...I need to preserve the clinic patient relationship

Many were concerned to preserve and build relationships with their patients, and it was not worth jeopardizing this “for the sake of a prescription for penicillin V. “I really hate people leaving my room feeling really let down by not having their expectations
What the clinicians said...
Clinical uncertainty, pressure, fear of medico-legal consequences

Other commonly cited reasons for “giving patients the benefit of the doubt” were clinical uncertainty, pressure of time, not having the energy to resist demand, fear of medico legal problems if the patient deteriorated, and being perceived as “having done nothing” for patients

A GP’s voice from the Valleys…

You read all this literature and they do say that frequent antibiotic prescription, they develop resistance …. They say ‘oh… you are prescribing more of those antibiotics’… but then we are on the front line … it is an old mining area, a lot of them get so many chest infections here, and living in the small houses, infection is passed over so quickly … you have to treat them before it is too late … if you have not given antibiotics for a chest infection and if the patient develops pneumonia later on, you can not justify why you have not given an antibiotic … I know that I want my patient to get better quickly … our big problem is to help the hospital … we start ourselves a little bit stronger antibiotic to prevent the hospital load

Butler, Simpson, Wood: ongoing study

Wood, 2007 Family Practice
932 patients with lab proven E. coli UTI

- Median number of maximum reported days with at least one symptom
  - 12 days if resistant to tri
  - 7 days if resistant to ampicillin
  - 7 days if resistant to any antibiotic
  - 5 days if sensitive to all
  - Even if treatment with appropriate antibiotic, resistant infections were symptomatic for longer
  - Resistant to 1 antibiotic, re-consulting in 30 days more common (OR 1.47;1.10–2.00)
  - Resistant to ampicillin (OR 1.49;1.11–2.00)
  - Resistant to tri (OR 2.48;1.70–3.59)
What’s the point?

- 7 year study
- 164,225 coliform isolates routinely submitted from 240 general practices serving 1.7 million people
- Quartile that had the greatest reduction in total antibiotic prescribing has a 5.2% reduction in ampicillin resistance
- Changes of 0.4%, 2.4% and -0.3% in other quartiles
- Decrease in trimethoprim resistance in the two quartiles that reduced prescribing the most
Effect of using an interactive booklet about childhood respiratory tract infections in primary care consultations on reconsulting and antibiotic prescribing: a cluster randomised controlled trial

Nick A Francis, medical research council health services fellow,1 2 Christopher C Butler, professor of primary care medicine, head of department of primary care and public health,1 Kerenza Hood, reader in statistics, director of south east Wales trials unit,1 2 Sharon Simpson, senior research fellow,1 2 Fiona Wood, lecturer,1 Jacqueline Nuttall, senior trial manager1 2
EQUIP

- To establish effect of use of Interactive booklet on antibiotic prescribing for RTI in children Cluster RCT
- 61 practices
- 558 children 6 months to 14 years in routine consultations with a acute RTI
- 40.8% ion control and 19.5% in intervention got antibiotics at index consultation
Effect of point of care testing for C reactive protein and training in communication skills on antibiotic use in lower respiratory tract infections: cluster randomised trial

Jochen W L Calis, general practitioner trainee and researcher,1 Christopher C Butler, professor of primary care medicine,2 Roger M Hopstaken, general practitioner and researcher,3 Jerena Hoon, reader in statistics,2,4 Geert Jan Dinant, professor of general practice1

Abstract

Objective To assess the effect of general practitioner testing for C reactive protein (disease approach) and receiving training in enhanced communication skills (illness approach) on antibiotic prescribing for lower respiratory tract infection.

Design Pragmatic, 2Ã—2 factorial, cluster randomised controlled trial.

Setting 20 general practices in the Netherlands.

Participants 40 general practitioners from 20 practices recruited 431 patients with lower respiratory tract infection.

Main outcome measures The primary outcome was antibiotic prescribing at the index consultation. Secondary outcomes were antibiotic prescribing during 28 days' follow-up, reconsultation, clinical recovery, and patients' satisfaction and enablement.

Interventions General practitioners' use of C reactive protein point of care testing and training in enhanced communication skills separately and combined, and usual care.

Results General practitioners in the C reactive protein test group prescribed antibiotics to 31% of patients compared with 55% in the no test group (P=0.02). General practitioners trained in enhanced communication skills prescribed antibiotics to 27% of patients compared with 54% in the no training group (P=0.01). Both interventions showed a statistically significant effect on antibiotic prescribing at any point during the 28 days' follow-up. Clinicians in the combined intervention group prescribed antibiotics to 23% of patients (interaction term was not significant). Patients' recovery and satisfaction were similar in both study groups.

Conclusion Both general practitioners' use of point of care test registration Current Controlled Trials ISRCTN5114057

Introduction

Contrasting broad approaches to improved management in general medicine have been emphasised.1 A disease focused approach seeks to improve diagnosis, whereas the illness focused, patient centred approach emphasises understanding the whole patient and sharing decisions, which may be more contingent on clear information about prognosis rather than making an accurate diagnosis.2 A combination of these approaches, however, may be required to achieve the best outcomes for patients. We evaluated the effect of two interventions on achieving evidence based management of lower respiratory tract infections in primary care.

Lower respiratory tract infection is one of the commonest acute reason to consult, accounting for 17 million consultations in the European Union and 11 million in the United States each year.4 Acute bronchitis accounts for 80% of lower respiratory tract infections5 and despite evidence of little or no benefit from antibiotics, up to 80% of patients consulting for this condition are prescribed them.6,8 Moreover, lower respiratory tract infection is associated with increasing use of broad spectrum antibiotics.9 Every day decisions about whether or not to prescribe for lower respiratory tract infection therefore constitute an important part of the burden of antibiotic use driven antimicrobial resistance.8,9

Diagnostic or disease focused solutions address the limited value of medical history and physical examination in differentiating between pneumonia and self limiting bronchitis.10 Diagnostic uncertainty is the chances of inappropriate antibiotic prescribing11 and general practitioners often prescribe antibiotics “the benefits of the doubt” in the face of pneumonia and possible clinical benefit.10

ICNHS
Communication method

General communication items
The general practitioner
1. Elicits patient’s concerns (worries) about the cough problem
2. Elicits patient’s expectations about management
3. Summarizes the consultation
4. Checks patients understanding of the given information
5. Reaches agreement with the patient on proposed treatment

LRTI specific communication items
The general practitioner
6. Actively asks for patient’s opinion/view on antibiotics
7. Mentions a likely duration of cough caused by LRTI
8. States that patient’s own body will overcome the illness
9. Mentions both pros and cons of antibiotic treatment to the patient
10. Mentions self management strategies (e.g. limit activities)
11. Mentions alarming symptoms, when to reconsult (e.g. high fever)
AB prescribing day 1
C-reactive protein point of care testing and physician communication skills training for lower respiratory tract infections in general practice: economic evaluation of a cluster randomized trial

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- Usual care: €35.96
- CRP: €37.58
- Communication skills training: €25.61
- Communication skills training plus €CRP: 37.78
- ICER: €5.79
- Both interventions, together and singly are cost effective to reduce antibiotic prescribing for LRTI at not or low willingness to pay
Effectiveness of multifaceted educational programme to reduce antibiotic dispensing in primary care: practice based randomised controlled trial

Christopher C Butler professor of primary care medicine, Sharon A Simpson senior research fellow, Frank Dunstan professor of medical statistics, Stephen Rollnick professor of healthcare communication, David Cohen professor of health economics, David Gillespie statistician, Meirion R Evans, senior lecturer in epidemiology and public health, M Fasihul Alam research fellow, Marie-Jet Bekkers research associate, John Evans information manager, Laurence Moore professor of public health improvement, Robin Howe consultant microbiologist, Jamie Hayes director, Welsh medicines resource centre, Monika Hare trial manager, Kerenza Hood professor and director

1Institute of Primary Care and Public Health, School of Medicine, Cardiff University, Cardiff, CF14 4XN, UK; "South East Wales Trials Unit, School of Medicine, Cardiff University, Cardiff; "Health Economics and Policy Research Unit, University of Glamorgan, Pontypridd; "Cardiff Institute of Society and Health, School of Social Sciences, Cardiff University, Cardiff; "National Public Health Service Microbiology Cardiff (Velindre NHS Trust), University Hospital of Wales, Cardiff; "Welsh Medicines Resource Centre (WelMeReC), Academic Centre, University Hospital Llandough, Penarth
What needs to happen: importance and confidence concerning change needs to be increased

People change if they think:

a) it's important, and;

b) they can implement change
The STAR Programme

- Software supported, self-directed learning, and reflecting on video and actual consultations
- Challenge: What would you do?
- Portfolio tasks: Reflections on GPs’ own consultations
- Practice based seminar after part 2 of the online training
- Web forum discussion
- Booster session
Behaviour change
among patients
- more appropriate self-care
- fewer antibiotics

among clinicians
- enhanced communication skills
- reduced prescribing
PART 1 - The Challenge

What Would You Do?

Case 1 - Sore throat - 10 yrs old
Case 2 - LRTI - Cough - 85 yrs old
Case 3 - Ctitis media - 3 yrs old
Case 4 - Sinusitis - 40 yrs old

Module 2
Progress through Part 1
PART 1 - The Challenge

Some Perspectives

Clinicians
Expert
Patients

Click on an image to listen to their perspectives.
Your practice in relation to your LHB and Wales

Total antibiotic dispensing

Rate per 1000 patients p.a.
Total antibiotic prescribing – your practice compared to your LHB & Wales, averaged over 7 years.
Resistance – your practice compared to your LHB and Wales.

% resistance

- Amoxicillin
  - GP
  - LHB
  - Wales

- Trimethoprim
  - GP
  - LHB
  - Wales
Identify any core tasks which you think the practitioner skillfully achieves during this consultation by clicking the corresponding check boxes.
### Key messages

<table>
<thead>
<tr>
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<th>Practical examples</th>
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<tbody>
<tr>
<td>1. Duration/prognosis</td>
<td>1. What’s your understanding of how long these infections can go on for?</td>
</tr>
<tr>
<td>2. Treatment</td>
<td>2. Apart from antibiotics, there are quite a few things that you can do to help.</td>
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<tr>
<td></td>
<td>What do you generally do to help you feel better when you get sick like this?</td>
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<tr>
<td>3. Pros and cons of antibiotic treatment</td>
<td>3. Can we spend a moment just focussing on the advantages and disadvantages of antibiotics for infections like this?</td>
</tr>
<tr>
<td>4. Reasons to re-consult</td>
<td>4. If you feeling basically well, then no need to worry too much. But if you begin to breathe fast, develop pain in your chest...</td>
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</tbody>
</table>
Delivery Style

1. Ask patients what they know
   Elicit

2. Give them information
   Provide

3. Find out what sense they make of it
   Elicit

Patient uptake and adherence is affected by how it is delivered.

Information should be exchanged with the goal of activating the patient e.g. asking questions, contemplating, thinking aloud.
Results

- After controlling for baseline dispensing rate, there was a 4.2% (95% CI=0.6%, 7.7%) reduction in total oral antibiotic dispensing for the year following the intervention in the intervention group compared to the control group (p = 0.02).
- Larger reductions in Phenoxymethyl penicillin and erythromycin

- There was no significant difference in hospitalizations (increase = 1.9%, 95% CI = -8.2%, 13.2%) or re-consultations (control group median (IQR) = 3.4 (2.0, 4.4), intervention group median (IQR) = 2.7 (1.7, 4.5), p=0.45).
Results: Cost Effectiveness

- The mean cost of the STAR Educational Program was £2,922 ($4,417) per practice (SD = £1,187 ($1,793)).

- There was a 5.5% reduction in the cost of dispensed antibiotics in the intervention group compared to the control (p = 0.07).
Effects of internet-based training on antibiotic prescribing rates for acute respiratory-tract infections: a multinational, cluster randomised, factorial, controlled trial

Paul Little, Beth Stuart, Nick Francis, Elaine Dougall, Sarah Lordon-Green, Sibyl Antinnes, Jason W.L. Cof, Hauke Methys, Minora Sante, Michael Moore, Samuel Coussens, Chris Batch, Karenas Hood, Mark Jeffry, Maciej Golgota-Cook, Artur Marzuci, Antoni Tiana, Carl Loe, Michael Davis, Mark Motter, Cary Trickey, Akiko van der Velden, Adam W. Gaughray, Yvonne Conovers, Tony Verheij, Lucy Vandervis on behalf of the GRACE consortium

Summary
Background High-volume prescribing of antibiotics in primary care is a major driver of antibiotic resistance. Education of physicians and patients can lower prescribing levels, but it frequently relies on highly trained staff. We assessed whether internet-based training methods could alter prescribing practices in multiple health-care systems.

Methods After a baseline audit in October to December 2010, primary-care practices in six European countries were cluster randomised to usual care, training in the use of a C-reactive protein (CRP) test at point of care, in enhanced communication skills, or in both CRP and enhanced communication. Patients were recruited from February to May 2011. This trial is registered, number ISRCTN79972124.

Results The baseline audit, done in 259 practices, provided data for 6714 patients with lower-respiratory tract infections (73% [55–75]), and upper-respiratory tract infections (146 [20–90]), of whom 3535 (51–71%) were prescribed antibiotics. After randomisation, 246 practices were included and 4124 patients were recruited. The antibiotic prescribing rate was lower with CRP training than without (33% vs 48%), adjusted risk ratio 0.54, 95% CI 0.42–0.69, and with enhanced communication training than without (36% vs 45%), 0.69, 0.54–0.87. The combined intervention was associated with the greatest reduction in prescribing rate (CRP risk ratio 0.53, 95% CI 0.36–0.74, p < 0.0001; enhanced communication 0.68, 0.50–0.90, p = 0.03; combined 0.38, 0.25–0.55, p < 0.0001).

Interpretation Internet-based training achieved significant reductions in antibiotic prescribing for respiratory infections across language and cultural boundaries.

Funding European Commission Framework Programme 6, National Institute for Health Research, Research Foundation Flanders.

Introduction
Physicians prescribe antibiotics for many patients with acute uncomplicated lower-respiratory tract infections, which are among the most common acute presentations in primary care. Most of these infections are viral, and evidence from CRP testing shows the rate of antibiotic prescribing. The IMAPCOT study showed that the training of physicians in advanced communication skills by seminar role-playing and peer feedback on consultation transcripts reduced antibiotic prescribing rates by 29%. The STAR programme involves five stages of web-based training in advanced communication skills that include recording of reactions to scenarios, sharing of accounts of clinical experience, and expert-led face-to-face seminars. This approach led to a 4% reduction in global antibiotic use over 1 year in practices across Wales. Nevertheless, because such outreach interventions are generally performed by small groups of highly trained staff based at research centres of excellence, the generalisability of delivery and the potential effects on real-world practice are questionable. Novel techniques are, therefore, needed to lead to changes at national and international levels. Internet training has the advantage that it can be disseminated widely at low cost and does not require highly trained outreach facilitators to be on site. In one study of internet training for general practitioners, the use of an interactive booklet for consultations with children attending for...
GRACE INTRO Trial
(Internet Training for antibiOtic use)

• **Aim:** To develop a web based intervention, to be delivered in six countries, to encourage more prudent prescribing of antibiotics for acute cough by general practitioners.

• **Countries:** Belgium, Poland, Spain, the Netherlands, England and Wales

• **Intervention development:** Experienced researchers and health professionals from the six participating countries
GRACE INTRO Trial
Design

**Intervention** = two training programmes for GPs
- C-Reactive Protein (CRP) training
- Communication training
- 2x2 factorial design:

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<tr>
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<th>Usual care</th>
<th>Communication</th>
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<tr>
<td><strong>Usual care</strong></td>
<td>Usual care</td>
<td>Communication training</td>
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<tr>
<td><strong>CRP</strong></td>
<td>CRP training</td>
<td>CRP + Communication training</td>
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IMPACT: Cals et al. *BMJ* 2009;338:b1374-
EQUIP: Francis *et al.* *BMJ* 2009;339:b2885-
STAR: Simpson *et al.* *BMC Fam Pract* 2009;10:20
GRACE: www.grace-lrti.org & CHAMP: www.champ-antibiotics.org
1. Introduction (for all intervention groups)

• Background to the problem of unnecessary prescribing for healthcare delivery, patients, and GPs

• How training can be effective at reducing antibiotic prescriptions in primary care

• Optional “Learn More” links available
2. CRP Training

- Background of the test
- Using the test in an LRTI consultation
- Guidance on interpretation of CRP values

CRP Training supported by:
- on-site training by Orion Diagnostica
- CRP desk reminders sent upon completion of training
3. Communication Training

- An overview of the accompanying booklet

- An outline of three key elements of effective consultations

- Short video clips demonstrating effective use of the booklet in a consultation in the general practice setting.
Flow diagram INTRO trial

- Practices identified
- Eligible
- Not eligible
- Baseline patients 30 LRTI/5RTI/practice
- Practices randomised*

Potential interventions:

- Normal care
- Web CRP training
- Web communication training
- Web CRP + communication training

- recruit 30LRTI/5RTI/practice
- recruit 30LRTI/5RTI/practice
- recruit 30LRTI/5RTI/practice
- recruit 30LRTI/5RTI/practice

- 1/12 outcomes Ab;Sx;QOL;resources
- 1/12 outcomes Ab;Sx;QOL;resources
- 1/12 outcomes Ab;Sx;QOL;resources
- 1/12 outcomes Ab;Sx;QOL;resources
What does this mean?
%antibiotic use

<table>
<thead>
<tr>
<th></th>
<th>LRTI</th>
<th>Other RTI</th>
<th>All</th>
<th>Cals</th>
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<tbody>
<tr>
<td>Control</td>
<td>62%</td>
<td>45%</td>
<td>58%</td>
<td>67%</td>
</tr>
<tr>
<td>CRP</td>
<td>37%</td>
<td>27%</td>
<td>35%</td>
<td>39%</td>
</tr>
<tr>
<td>Comm’n</td>
<td>43%</td>
<td>28%</td>
<td>41%</td>
<td>33%</td>
</tr>
<tr>
<td>Both</td>
<td>33%</td>
<td>24%</td>
<td>31%</td>
<td>23%</td>
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Communication package not quite so effective as in Cals approx. 2/3 (NB internet - not Cals et al workshops)
Diolch yn fawr