A framework for the non-antibiotic management of upper respiratory tract infections: towards a global change in antibiotic resistance

S. Essack,1 A. C. Pignatari2* 

SUMMARY

Antibiotic resistance has become a critical health issue on a global scale, with much of the problem resulting from inappropriate use of antibiotics in primary care. To change this practice, the global respiratory infection partnership has formulated a pentagonal (five P) framework for the non-antibiotic management of upper respiratory tract infections (URTIs) – one of the most common conditions in primary care for which antibiotics are prescribed. The framework presents the rationale for focusing on URTIs to promote antibiotic stewardship in primary care and elaborates on five key areas to focus on to bring about change: policy, prevention, prescribers, pharmacy and patients. The ultimate aim is to adopt a patient-centred symptomatic management strategy using a flexible framework that can be adapted across countries to create a consistent global approach to change behaviour.

Introduction

Antibiotic resistance is a critical health issue on a global scale (1,2). Much of the problem results from the inappropriate use of antibiotics, in particular their overuse, in primary care. The containment of antibiotic resistance requires a consistent and coordinated approach towards symptomatic treatment in applicable primary care conditions where inappropriate antibiotic use is a problem.

The most common reason for patients to seek medical attention in primary care is infection of the upper respiratory tract, such as sore throat, common cold, influenza, earache and cough (3). These infections also account for a large proportion of the antibiotics prescribed in primary care (Figure 1) (4). Depending on the country, 34–60% of patients with an upper respiratory tract infection (URTI) receive an antibiotic (5). Yet, the majority of these patients do not require an antibiotic because most URTIs are of viral origin and are self-limiting, complications are rare and an array of non-antibiotic treatment options are available to provide symptomatic relief (5).

To facilitate a change towards prudent use of antibiotics for the treatment of URTIs, members of the Global Respiratory Infection Partnership (GRIP) have developed a framework for the non-antibiotic management of such infections. The framework presents the rationale for focusing on URTIs to promote antibiotic stewardship in primary care and elaborates on five key areas to focus on to bring about change: policy, prevention, prescribers, pharmacy and patients. This framework has been shared with and reviewed by healthcare professionals from Australia, Austria, Brazil, Germany, Hungary, India, Ireland, Israel, Italy, The Netherlands, Romania, Russia, Singapore, South Africa, Spain, Thailand, the United Kingdom and the United States of America. The global framework is strengthened through a collaborative approach by multiple primary healthcare provider specialties and is applicable across countries and continents (Figure 2). It is envisaged as a prototype that can be adapted to other infections in the long term (5).

Policy

An environment that nurtures change enables its sustainability (6). In the context of appropriate, rational antibiotic use for URTIs, this means creating a policy environment where antibiotic use is not the norm.

At present, there is wide variation between countries in how antibiotics are used in primary care. In some countries, patients can self-treat with antibiotics by buying them over the counter, whereas in other countries antibiotics are only available on prescription. Treatment guidelines and essential
drugs lists regulate access to and use of antibiotics, particularly in the public health sectors of developing countries, while antibiotic use in the private sector is largely at the discretion of the prescriber in both developed and developing countries. The recommendations with regard to antibiotic therapy for specific conditions also vary. For example, the use of antibiotics for the treatment of acute pharyngitis is discouraged in some national guidelines and the condition is considered to be self-limiting. National guidelines in some other countries recommend antibiotics if a streptococcal infection is suspected, out of concern for complications such as acute rheumatic fever (7).

Reasons for these disparities in antibiotic use include differences in interpreting clinical evidence, influence of professional bodies/associations, characteristics of the healthcare system and cultural attitudes (7,8). Given these differences, policy measures to advance appropriate, rational antibiotic use need to be country-specific and tailored to local circumstances including, but not limited to, the prevailing burden of disease, taking into account underlying comorbidities, such as HIV and AIDS, and existing resistance rates. Commitment from central and local authorities, ideally national and local Ministries of Health, is required, as is endorsement from professional bodies/associations, and clinical communities of practice and local experts.

Tools available to health policymakers include national guidelines and national surveillance programmes monitoring antibiotic use and resistance

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**Figure 1** Inappropriate antibiotic use for upper respiratory tract infections (1). Reproduced, with the permission of the publisher, from *The evolving threat of antimicrobial resistance. Options for action*, 2012 (Fig. 2.1, page 18 http://whqlibdoc.who.int/publications/2012/9789241503181_eng.pdf, accessed 12 September 2013). ARI, Acute respiratory infection

**Figure 2** The pentagonal framework for change encompasses five key focus areas (the five ‘P’s)
patterns, both of which inform empiric therapy, as well as making antibiotics contingent on a prescription, and restricting the marketing of antibiotics (6,8). Other options include incentivising appropriate prescribing or penalising inappropriate prescribing of antibiotics (6). Education of relevant healthcare providers, such as primary care physicians and pharmacy personnel, is also a health education-related policy consideration, as is continuing professional development for primary care providers (8,9).

Implementation of national policies by primary care providers will be further enhanced by incorporating the principles into clinical decision-making and by gaining support and endorsement from local experts. For example, leading figures in antibiotic resistance from national societies could be actively involved in the development of guidelines.

Prevention

Any clinical decision in terms of URTI management needs to be driven, in part, by the aim to prevent antibiotic resistance, in line with the call by the Infectious Diseases Society of America for a greater focus on antibiotic stewardship to preserve the efficacy of current antibiotics (10). In practice, this means that antibiotics should be used only when necessary, with improving patient outcomes on an individual and community level as a core principal.

As antibiotic resistance is a function of time and use (11), inappropriate use, overuse and misuse of antibiotics should be explicitly avoided. When managing patients with a URTI, antibiotic therapy should, therefore, be reserved for patients with a serious infection, and those at increased risk of complications (12). The risk of serious infection can be determined by identifying and excluding red-flag signs and symptoms (12). Risk factors for the development of complications include age and immune status, with older patients and those who are immunocompromised being at higher risk (13).

Confirming bacterial aetiology may be of merit in some settings. Such diagnostic tests can guide prescribing decisions and facilitate discussions with the patient about the appropriate use of antibiotics (8). However, considering that most bacterial infections are also self-limiting (5), antibiotic prescription on the basis of a positive result in an otherwise healthy individual should be carefully considered.

For reassurance, it is good practice to provide patients with guidance on when to return for further investigation, to ensure that secondary infections or deteriorating conditions receive adequate attention (12).

Prescribers

As part of a consultation that includes providing a full assessment of a patient’s symptoms and expectations and formulating a differential diagnosis, prescribers have a key role in guiding patients with a URTI towards seeking symptomatic relief, as opposed to antibiotic treatment. Yet many prescribers themselves have misconceptions about the use of antibiotics for the treatment of URTIs, believing that antibiotics are generally warranted (12,14). Physicians may further be inclined to prescribe an antibiotic if the patient requests such a prescription, in order to maintain a good relationship with the patient (8) or for fear of litigation. Limited consultation time may preclude a more detailed discussion with the patient about the appropriateness of antibiotics for a self-limiting illness, making antibiotic prescription an expedient option. Primary care physicians say they often feel patient pressure to prescribe antibiotics (15). Nonetheless, data suggest many doctors overestimate a patient’s wish for antibiotics, resulting in inappropriate prescribing (14).

Research by Altiner et al. (16) indicates that the overuse of antibiotics in many cases might not be attributable to a lack of knowledge on behalf of the physician but to a lack of patient-centredness (16). The authors suggest that a substantial amount of antibiotic prescriptions could be avoided if general practitioners took care to identify the real expectations and concerns of their patients.

Another factor that contributes to antibiotic prescribing is diagnostic uncertainty. It is notoriously difficult to distinguish between bacterial and viral URTIs based on clinical symptoms, and doctors may therefore err on the side of caution and prescribe an antibiotic (2,8,17).

Strategies to encourage appropriate prescribing in primary care include the development of evidence-based policies, in collaboration with local experts, who provide practical guidance on how to rule out serious infections and how to handle patient demand for an antibiotic, complemented by information on various symptomatic treatment options. Physician awareness may also be raised by more detailed information on the problems arising from over-prescription of antibiotics and their lack of efficacy in relieving patient symptoms (8).

In addition, strategies that focus on doctor–patient communication and patient empowerment will be of value (14). Guidelines and procedures that outline how to engage with patients and involve them in treatment decisions could be implemented. Finally, formal training in communication skills is invaluable (18).
Pharmacy

For many patients, the pharmacy is the first port of call when seeking advice on a common health condition. Pharmacy staff are therefore able to make a substantial contribution towards antibiotic stewardship and self-management of common self-limiting conditions, in particular URTIs, which are the most common acute problem in primary care (3).

Pharmacists are pivotal in establishing protocols for treatment and referral that support the aim of symptomatic management of URTIs without the use of antibiotics. Pharmacy staff have a fundamental stewardship role as community educators on the appropriate and rational use of antibiotics.

Pharmacy technicians and assistants are ideally placed to facilitate a decision to manage a URTI without the use of antibiotics by advising customers on symptomatic treatment options and providing information on the realistic duration of the illness. It is important to advise patients that antibiotics do not help to reduce the severity of symptoms, as they do not offer pain relief or shorten duration of symptoms (19), while highlighting that with URTIs, symptomatic relief is often all that is necessary (20).

It is important that any advice on medications and formulations is tailored to the patient’s specific symptoms and preferences. In addition, pharmacy staff need to be able to identify red-flag symptoms and other risk factors for a serious infection and refer patients to physicians where necessary.

As with prescribers, guidance and training on patient communication will be invaluable for members of the pharmacy team, and their work can be further supported by print leaflets for patients to take home.

Patient

To move towards a culture where non-antibiotic management of URTIs is the norm, it is important to mobilise the public and the patient as proponents of non-antibiotic treatment for self-limiting conditions (15). Educating the public is an important step to nurture change (6), with potential measures including media campaigns and educational projects in schools and universities, to raise awareness early in the education cycle (8). Many patients expect an antibiotic because they erroneously believe that antibiotics shorten the illness. Moreover, prescription of an antibiotic may serve to inappropriately validate the patient’s belief that their condition is serious. Most are unaware that most URTIs are usually caused by viruses and that antibiotics are therefore ineffective (Table 1) (21). The concept of a self-limiting illness can also be difficult to understand and accept, particularly if patients perceive antibiotics as the solution to getting better and resuming normal activities. In addition, many members of the public do not know that the inappropriate use of antibiotics can lead to antibiotic resistance with consequences for the individual patient, as well as the community (4).

Previous experience of having an antibiotic prescribed for a URTI reinforces any misunderstandings and false expectations that the patient may have (14). For example, if a patient receives an antibiotic when presenting with a common cold, this supports the belief that the antibiotic is necessary to clear the cold, resulting in the expectation of the same treatment approach for subsequent times when similar symptoms occur in themselves and family members.

Such misconceptions can lead to pressure on physicians to prescribe an antibiotic. There is evidence to indicate that physicians are 10 times more likely to prescribe an antibiotic if they believe that the patient expects such a prescription (15), even if this goes against their better judgement (8,22). Scott et al. (22) observed that patients use behaviours such as directly requesting an antibiotic, suggesting a diagnosis, portraying severity of illness and appealing to (non-related) life circumstances to influence prescribing decisions (22).

However, it is also important to note that patients do not expect an antibiotic as often as physicians perceive they do (14). When patients describe severe symptoms, it is important to show empathy and reassurance that a serious illness has been ruled out (14). Even if patients specifically ask for an antibiotic, they may in fact be seeking pain relief or a medical certificate (15,23). Understanding why patients feel an antibiotic will help their symptoms could be an important consideration for physicians.

These issues can be addressed by taking a patient-centred approach within consultations (14,16), which

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Table 1 Knowledge about antibiotics among Europeans (21)

<table>
<thead>
<tr>
<th>Knowledge item</th>
<th>True (%)</th>
<th>False (%)</th>
<th>Don’t know (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antibiotics kill viruses</td>
<td>53</td>
<td>36</td>
<td>11</td>
</tr>
<tr>
<td>Antibiotics are effective against colds and flu</td>
<td>47</td>
<td>46</td>
<td>7</td>
</tr>
<tr>
<td>Unnecessary use of antibiotics makes them become ineffective</td>
<td>83</td>
<td>8</td>
<td>9</td>
</tr>
<tr>
<td>Taking antibiotics often has side effects such as diarrhoea</td>
<td>68</td>
<td>15</td>
<td>17</td>
</tr>
</tbody>
</table>
includes identifying the patient’s concerns and expectations, providing education on the appropriate use of antibiotics and the natural course of the patient’s condition, reassuring patients that serious infection has been ruled out, discussing symptomatic treatment options and clarifying when a return visit is warranted (23). Any advice needs to be tailored to the specific needs and preferences of the individual patient.

Conclusions

In conclusion, a consistent and collaborative effort that encompasses policymakers, healthcare providers and patients is urgently required to prevent inappropriate antibiotic use in primary care and to contain antibiotic resistance. URTIs are a key area for concern, given their prevalence and the widespread use of antibiotics despite the viral and self-limiting nature of most infections, together with the availability of effective symptomatic treatments.

While guidelines exist in many countries on the use of antibiotics for URTIs, further work is required to elicit a change in antibiotic prescribing practice. Policymakers are called upon to create an environment where the use of antibiotics is not the norm, by introducing disincentives to antibiotic use and surveillance programs, along with guidance that encourages and promotes self-management with symptomatic medications as the treatment in the first instance.

Prescribers, pharmacists and other primary care providers will benefit from increased knowledge in treating respiratory tract infections, with or without antibiotics. Such knowledge must be anchored by a solid understanding of patient needs and evidence-based treatments to meet these needs. Antibiotic use should be reserved for patients with a severe infection and those with risk factors for complications. Improved communication skills will be of great value to healthcare providers, so that they can effectively encourage behavioural change in patients by increasing their knowledge.

It is paramount that patient concerns and needs are taken seriously. Healthcare practitioners should work in partnership with their patients to develop an individualised treatment plan and empower patients to self-manage URTIs with non-antibiotic treatment options for symptomatic relief, with the pharmacy as the first point of call.

Adopting these recommendations at the local level will reinforce the recognition that antibiotic resistance is a grave and growing global health issue, for which behavioural change in the daily practice of all roleplayers, including patients, is imperative.

Disclosures

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Author contributions

The authors provided substantial contributions to the development and revision of the manuscript and approved the final version of the manuscript.

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Sore throat: effective communication delivers improved diagnosis, enhanced self-care and more rational use of antibiotics

A. W. van der Velden,1 J. Bell,2 A. Sessa,3 M. Duerden,4 A. Altiner5*  

SUMMARY

The majority of throat infections are of viral origin and resolve without antibiotic treatment. Despite this, antibiotic use for sore throat infections remains high, partly because it is difficult to determine when antibiotics may be useful, on the basis of physical findings alone. Antibiotics may be beneficial in bacterial throat infections under certain clinical and epidemiological circumstances; however, even many of those infections in which bacteria play a role do resolve just as quickly without antibiotics. Furthermore, non-medical factors such as patient expectations and patient pressure are also important drivers of antibiotic use. To address these issues, a behavioural change is required that can be facilitated by improved communication between primary healthcare providers and patients. In this article, we provide doctors, nurses and pharmacy staff, working in primary care or in the community, with a structured approach to sore throat management, with the aim of educating and empowering patients to self-manage their condition. The first component of this approach involves identifying and addressing patients’ expectations and concerns with regard to their sore throat and eliciting their opinion on antibiotics. The second part is dedicated to a pragmatic assessment of the severity of the condition, with attention to red-flag symptoms and risk factors for serious complications. Rather than just focusing on the cause (bacterial or viral) of the upper respiratory tract infections as a rationale for antibiotic use, healthcare providers should instead consider the severity of the patient’s condition and whether they are at high risk of complications. The third part involves counselling patients on effective self-management options and providing information on the expected clinical course. Such a structured approach to sore throat management, using empathetic, non-paternalistic language, combined with written patient information, will help to drive patient confidence in self-care and encourage them to accept the self-limiting character of the illness – important steps towards improving antibiotic stewardship in acute throat infections.

Introduction

In the first part of this supplement, the Global Respiratory Infection Partnership (GRIP) proposed a global framework for the non-antibiotic management of upper respiratory tract infections (URTIs). Here, we apply the outlined principles to the management of sore throat (as an example of a common symptom of URTIs), offering practical advice to primary care teams on how to implement the guidance in their daily practice.

Sore throat is one of the top 10 reasons for patients to visit ambulatory care (1), and the use of antibiotics for the treatment of sore throat is widespread (2). However, up to 95% of infections in adults are of viral origin (3). These infections are usually self-limiting, with symptoms typically resolving within 1–2 weeks (4), and complications are rare (5). For the vast majority of throat infections, antibiotics do not have any impact on the severity of symptoms or the course of the disease, and do not prevent complications (6). A recent review assessing the effect of antibiotics in sore throat at one week, preventing within 1 week (4), and complications are rare (5). For the vast majority of throat infections, antibiotics do not have any impact on the severity of symptoms or the course of the disease, and do not prevent complications (6). A recent review assessing the effect of antibiotics in sore throat at one week, described that 21 patients have to be treated in order to see one patient benefitting from a course of antibiotics (7). Moreover, a systematic review found that antibiotics are among the least effective treatment options for sore throat (8). By contrast, the efficacy...
of symptomatic treatments, such as NSAIDs and paracetamol, was up to 93% higher than placebo. Group A beta-haemolytic streptococcus infections are the most common bacterial cause of sore throat, yet they are responsible for only 10% of sore throats (3). It is these infections where antibiotics may be beneficial in shortening the clinical course and preventing complications (e.g. rheumatic fever), notably in settings where risk of complications may be high (9). However, in clinical practice it is notoriously difficult to distinguish between URTIs of viral and bacterial origin, as physical signs and symptoms are similar in both types of infection (9–11). Diagnostic certainty can only be achieved with a throat culture (3,9). As this delays treatment and does not accurately predict benefit from antibiotics, physicians in many countries tend to base their treatment decision on other (non-medical) factors.

Many authors therefore recommend the management of sore throat based on the severity of the infection, combined with how unwell the patient appears and on the risk profile of the patient (4). Several prediction rules have been developed that use a combination of signs and symptoms to evaluate the risk of bacterial infection, where antibiotic treatment may be indicated. The most commonly used is the Centor score (1,9). This score incorporates the following symptoms: tonsilar exudate; tender anterior cervical adenopathy; absence of cough and history of fever (> 38.0 °C). Patients meeting three or four Centor criteria have a higher likelihood of streptococcal infection (12); however, although the Centor criteria predict the likelihood of streptococcal infection, they do not predict the patient’s response to antibiotic treatment.

There are also certain patient subgroups that should be monitored more closely, or treated, because they have an elevated risk of severe respiratory disease. Factors associated with an increased risk include advanced age, respiratory or immunocompromising comorbidity and long duration of symptoms (13,14).

Diagnostic certainty can be increased by the use of point-of-care testing, the rapid Strep A test for sore throat, if available. A point-of-care test may also prove useful as a tool to reassure patients and increase their understanding of the prescribing decision (2,15).

Finally, any prescribing decision needs to include consideration of the risks and disadvantages associated with antibiotic therapy. These include side effects such as diarrhoea, nausea and rash (4,16,17), and disturbance of the microbiota. Wilton et al. reported an increased risk of developing vaginal candidiasis after antibiotic therapy (17). In addition, bacteria may become resistant to the antibiotic used (16,18); resistant bacteria can be found for up to one year in the individual (18). This could make future infections more difficult to treat, not only in this individual patient but also in the community, because resistant bacteria can be passed on to family members, work colleagues and friends. Antimicrobial resistance is a major public health threat, as it makes infections more difficult to treat or even untreatable (18,19).

**Interaction between prescriber/pharmacy team and patient**

Treatment decisions are not only influenced by medical factors; non-medical factors such as cultural issues or patient expectations and pressure also affect prescribing behaviour (20). Tackling the overuse of antibiotics in the management of sore throat therefore requires a broader approach that focuses on the relationship between healthcare provider and patient.

In this interaction it is the responsibility of the prescriber to firstly identify the need for an antibiotic, bearing in mind that most URTIs are of viral origin and self-limiting (14,21). Prescribers can help combat the overuse of antibiotics for sore throat management by addressing any misperceptions and expectations about antibiotics that the patient may bring to the consultation (2,20,22). In fact, antibiotic demand may not be the main reason patients consult their healthcare provider for sore throat. Primary reasons for patients with respiratory tract infections visiting healthcare providers include:

- To establish the cause of symptoms and disease
- To exclude serious illness (and seek reassurance)
- To obtain symptomatic relief
- To gain more information on the course and duration of the disease (20).

Pharmacy staff tend to see patients who have already chosen the self-management route. Their role is important and diverse. They need to support this approach by offering reassurance and advice on appropriate treatment to increase the chances of optimum symptomatic relief and patient satisfaction. Furthermore, they need knowledge for patient-centred advice on when to consult another healthcare provider.

Applying a structured approach to patient consultations may help healthcare providers to fulfill these roles in a time-efficient manner. Such a structured approach could have the following components: (i) Address patient’s concerns; (ii) Be vigilant; assess severity; (iii) Counsel on effective self-management.
Address patient’s concerns
The first task for prescribers and pharmacy staff is to identify the concerns and expectations of the patient (4). It is crucial not to trivialise patient complaints, to listen with interest and to react to the patient with tailored advice (23).

For prescribers, it is particularly important to determine the primary reason for patients presenting with sore throat and what their treatment expectations are. In practice, fewer patients want an antibiotic than some physicians believe (4). In a study by van Driel et al., over 80% of patients who visited a doctor for sore throat did so first and foremost to be examined for the cause of their symptoms, to obtain pain relief and/or to gain information on the course of their condition (20). Antibiotics ranked 11th out of 13 reasons in total. Further analysis indicated that many patients who request an antibiotic may, in fact, want an effective medication to relieve their pain, yet mistakenly believe that they can achieve this quickly with an antibiotic.

Be vigilant: assess severity
As the next step, primary care providers should evaluate the severity of the infection and the risk of complications. This involves physical examination for red-flag symptoms, asking questions about risk factors for complications and symptom duration. Pharmacy staff do not conduct a full consultation; they should, however, be aware of an increased risk for serious infection and, if necessary, refer the patient to the primary care physician for further evaluation, i.e. if symptoms get worse or last longer than 2 weeks.

Medical-history taking and physical examination by prescribers can be complemented by point-of-care testing where this is available, to reassure both themselves and the patient that a non-antibiotic treatment strategy is appropriate. A Dutch study reported that patients with respiratory tract symptoms who were carefully examined during a GP consultation were more likely to be satisfied with their visit to the GP, regardless of whether or not they had received antibiotics (13).

Counsel on effective self-management
At this point of the consultation, after having addressed patients’ concerns, history-taking and physical examination, the key tasks for primary care providers are to reassure patients that their condition is self-limiting, to recommend symptomatic relief and to advise on next steps.

Prescribers should encourage patients at low risk to self-manage their condition without using antibiotics. Depending on the patient expectations identified at the beginning of the consultation, a more detailed discussion about appropriate use of antibiotics may be helpful, also highlighting the advantages of not taking antibiotics, such as avoiding side effects and a reduced likelihood that antibiotics will fail if needed to treat a serious illness in future (23). Another helpful approach is to stress the self-limiting nature of the condition and explain that the patient’s own immune system can deal with the infection. Patients will also need and appreciate specific advice on symptomatic treatment options and formulations (Table 1) that meet their individual preferences. Finally, patients benefit from information on the expected course of the illness and on red-flag symptoms that warrant a return visit (4,23). Written information can aid in this process by reinforcing the GP’s face-to-face explanation.

The value of spending time with the patient and providing information and reassurance is not to be underestimated (23,24). In a survey by Welschen et al., these factors were strongly linked to patient satisfaction (25). In addition, directing patients to effective self-care and providing information on the expected duration of symptoms reduces re-consultation rates (23,26).

In a similar manner, pharmacy staff should reassure patients that symptoms typically resolve within one week. They should provide reassurance to patients by offering more detailed advice on symptomatic treatment options in line with the patient’s primary concerns (fever, pain, swelling) and preferences. This will include information on suitable formulations (Table 1) and on the correct use of any purchased medication.

Patient communication
To facilitate a cultural change towards the appropriate use of antibiotics for sore throat management, healthcare providers need to communicate effectively about self-limitedness of disease, appropriate treatment and antibiotic resistance, and work towards creating a partnership with the patient (22). Research has shown that the way healthcare providers communicate with their patients has a strong impact on treatment outcome and patient satisfaction. For example, Thomas et al. report that better doctor–patient communication – with an increase in consultation time from 6 to 10 minutes and improved courtesy from the doctor – resulted in improved sore throat management (8). In another study among patients who visited a physician because of respiratory tract symptoms (24), there was no link between...
a prescription for antibiotics and patient satisfaction; however, satisfaction was associated with patients’ understanding their illness and the physician spending enough time with them, confirming the importance of effective communication and explanation.

Many patients lack awareness of when antibiotics are appropriate. A useful strategy on which to focus is the effect treatment has on symptoms, rather than explaining bacterial or viral aspects. Nonetheless, it is important to state that antibiotics will not clear a viral infection, reduce symptoms or help the patient recover more quickly—even in most cases of bacterial infection; moreover, antibiotics may do more harm than good by causing side effects (23). Many patients are also not aware of the connection between overuse of antibiotics and antibiotic resistance (18). Healthcare providers need to inform patients that antibiotic resistance can have serious consequences both for the individual patient and for the community, owing to the spread of resistant bacteria to family members, work colleagues and friends (19).

In addition to providing patient education about the appropriate use of antibiotics, healthcare providers and patients should work together to agree on a treatment plan around patients’ individual needs and concerns.

The use of non-paternalistic, patient-centred language by both prescribers and pharmacy staff is a key to the process of establishing such a partnership approach. Communicating with empathy reassures patients that their concerns have been taken seriously and supports confidence in self-care. Patients will be more likely to accept the rationale for a symptomatic treatment approach and understand the risks of antibiotic use.

To be a participating partner in the management of their sore throat symptoms, patients should be empowered to:

- Assess their symptoms,
- Beat their symptoms and
- Care for themselves.

In practice, this means that patients should be encouraged to assess their symptoms to be able to give their primary care provider a good description of their condition and any concerns.

In addition, patients should be encouraged to seek the best medicines for their specific symptoms. To help them in this process, primary care providers need to help patients understand that there is a wide range of therapeutic options available that provide symptomatic relief and that pharmacy staff can help in determining the medicines and formulations that best suit their needs and preferences.

Finally, patients should be encouraged to take care of themselves. Besides advice on effective symptomatic relief, rest and/or staying home from school or work can possibly be advised.
A successful intervention may then mean that the patient will be able to self-manage sore throat symptoms in future.

**Local education and support for primary care providers: the 1,2,3 toolkit**

The campaign towards appropriate use of antibiotics for the management of sore throat will only be effective if the outlined strategies are implemented in line with local needs, with a consistent approach from healthcare providers. There is a strong need for targeted education of primary care providers in line with local management, advice and prescribing practice. Secondly, patients visiting the GP or pharmacy should be informed with written information about non-antibiotic management of sore throat. Finally, commitment from government and/or local health authorities is required to support and promote the benefits of self-management by symptomatic care and the concept of antibiotic stewardship when managing acute throat infections.

Nationwide recommendations and media campaigns for appropriate use of antibiotics in URTIs can be used as tools to communicate this issue to patients. At the end of the 1990s, Finland demonstrated that the campaign reduced not only the amount of antibiotics prescribed but also decreased the rate of erythromycin resistance (27).

It is also desirable to promote local educational programmes where healthcare providers can share data about prescription and consumption of therapies for URTIs, and find out about the evidence and information strategies that should be adopted. Healthcare providers should use consistent communication with patients to promote patient confidence in the advice they are given. Incongruent messages among healthcare providers would likely result in patients seeking a second opinion from another healthcare provider, which could result in ineffective management of the URTI and frustration.

To provide practical support in this complex process, the GRIP team has developed a toolkit (Figure 1) with template materials for healthcare providers and patients that can be adapted to meet local needs. The materials include:

- A continuing professional development module for primary care teams
- A pharmacy education tent cart (flip chart-style booklet), which can be used by pharmacists when training pharmacy staff, or serve as a general resource on the management of URTIs for pharmacy teams
- Various patient-oriented materials (leaflet and poster) providing guidance on URTIs including expected duration of symptoms and information on self-management
- A patient pressure conversation guide with pictograms to support the text, for prescribers when

![Figure 1 GRIP Toolkit including template materials for healthcare providers and patients that can be adapted to meet local needs](image-url)
explaining to patients the non-prescribing of antibiotics
- A ‘non-prescription’ tear-off pad to be used by prescribers to offer patients general information, as well as individualised advice

The toolkit materials and further information on GRIP are available on the GRIP website (www.GRIP-initiative.com).

Conclusions

To address the problem of inappropriate antibiotic use in primary care, many countries are now promoting a self-care approach for the management of self-limiting illnesses (4,23). Sore throat is a prime example as the condition is caused by a virus in the majority of patients, resolves within one week without the need for antibiotics, and effective treatment options are available to provide symptomatic relief.

As the first port of call for patients who seek medical attention for sore throat, and other self-limiting URTIs, primary care physicians and pharmacy team members need to take an active approach to direct patients towards self-management strategies. They have an important role in educating patients on the appropriate use of antibiotics; providing reassurance that the condition is not serious, but self-limiting; and advising that symptomatic treatment is the most appropriate course of action. They need to work with patients to create a personal self-management plan in line with patient preferences. For this purpose, patients’ expectations and concerns should be identified and addressed and serious infection must be ruled out. A structured approach to patient consultations – (i) Address patient’s concerns; (ii) Be vigilant; assess severity; (iii) Counsel on effective self-management – will help healthcare providers to take a consistent approach to the management of sore throat and to put the patient at the centre of the consultation. This approach, complemented by the use of written patient information, will help to drive patient confidence in self-care and, ultimately, augment efforts to reduce antibiotic prescribing in primary care for URTIs.

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Author contributions

The authors provided substantial contributions to the development and revision of the manuscript and approved the final version of the manuscript.

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Sore throat: encourage self-care, reduce antibiotic use


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More action, less resistance: report of the 2014 summit of the Global Respiratory Infection Partnership

Attila Altinera, John Bellb, Martin Duerdenc, Sabiha Essackd, Roman Kozlov,e, Laura Noonanf, John Oxfordg, Antonio Carlos Pignatarih, Aurelio Sessai and Alike van der Veldenj

aInstitute of General Practice, University of Rostock, Rostock, Germany, bGraduate School of Health, University of Technology, Sydney, NSW, Australia, cSchool of Medical Sciences, Bangor University, Bangor, dQueen Mary’s School of Medicine and Dentistry, Barts and The London School of Medicine and Dentistry, St Bartholomew’s and the Royal London Hospital, Queen Mary’s School of Medicine and Dentistry, London, UK, eSchool of Health Sciences, University of KwaZulu-Natal, Durban, South Africa, fInstitute of Antimicrobial Chemotherapy, Smolensk State Medical Academy, Smolensk, Russian Federation, gSchool of Medicine, National University of Ireland, Galway, Ireland, hDepartment of Medicine, Division of Infectious Diseases, Federal University of Sao Paulo, Sao Paulo, Brazil, Società Italiana di Medicina Generale, Arcisate, Italy and jUniversity Medical Center, Utrecht University, Utrecht, The Netherlands

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Abstract

‘Antimicrobial resistance is a global health security threat that requires concerted cross-sectional action by governments and society as a whole,’ according to a report published by the WHO in April 2014[1]. On 24–25 June 2014, the Global Respiratory Infection Partnership (GRIP) met in London, UK, together with delegates from 18 different countries to discuss practical steps that can be taken at a local level to address this global problem in an aligned approach.

This was the second annual summit of GRIP. The group, formed in 2012, includes primary care and hospital physicians, microbiologists, researchers, and pharmacists from nine core countries. GRIP aims to unite healthcare professionals (HCPs) around the world to take action against inappropriate antibiotic use, focussing on one of the most prevalent therapy areas where antibiotics are inappropriately prescribed – upper respiratory tract infections (URTIs).

Chaired by GRIP member, Professor John Oxford (UK), the 2014 summit included engaging presentations by guest speakers examining the latest science regarding the impact of inappropriate antibiotic use.

Guest Speaker Presentations

Antibiotic stewardship: more action, less resistance

Opening the meeting, guest speaker Professor Stuart Levy, Professor of Molecular Biology and Microbiology and of Medicine, and Director of the Centre for Adaptation Genetics and Drug Resistance at Tufts University School of Medicine, made a strong case for antibiotic resistance being an environmental and societal problem, as well as a medical one.

Professor Levy reinforced the fact that resistance to multiple antibiotics is now not just a problem in the hospital but common in the community, making it difficult to control its spread. The consequences of this spread are alarming. Resistance leading to treatment failure and/or deaths affects a vast array of medical conditions and procedures including cancer, pneumonia, infant bloodstream infections and organ transplantsations. Use of a single antibiotic can result in multidrug resistance, as bacteria tend to accumulate resistances. Once selected, a drug resistance will not disappear again, he emphasised, although it may drop in frequency.

Antibiotic resistance develops wherever antibiotics are used – in agriculture as much as in healthcare. A major contributor is the use of antibiotics at subtherapeutic doses to promote growth in food animals. ‘Given enough antibiotic and time, resistance will appear,’ said Professor Levy.

The effect of antibiotic resistance on both humans and agriculture – and their interaction – makes this an environmental problem. Resistant bacteria are transmitted from humans to animals and vice versa; they also enter water and soil; are dispersed to fruit, vegetables and wildlife; and are transferred back to humans and food animals (Figure 1).
‘Antibiotics are societal drugs,’ said Professor Levy. People in close contact with a person using antibiotics have been found to carry bacterial strains resistant to both single and multiple antibiotics, he explained. This implies that individual use of antibiotics affects family, the community and society as a whole.

Professor Levy called for greater antimicrobial stewardship by preventing infections, tracking resistance patterns, developing rapid diagnostic methods, and improving the use of antibiotics. Conversely, regarding the frequent use of the term ‘war on antibiotics,’ Professor Levy suggested an alternative view of the challenge: ‘We have to make peace with bacteria. They are the ones that have survived and that will survive.’

The human microbiome and antibiotics

Professor Thomas MacDonald, Professor of Immunology and Dean for Research at Barts and The London School of Medicine and Dentistry, gave a presentation on the effects of antibiotics on the highly balanced ecosystem of the commensal bacteria in the gut.

The huge surface area of the gut is populated by some 500 species of bacteria, with the whole microbiome having a population of approximately $10^{14}$ organisms. The specific composition of the microbiota community differs from individual to individual and is imprinted early in life.

The commensal bacteria in the gut have a variety of structural, metabolic and protective functions including barrier fortification, vitamin synthesis, salvage of energy from food and pathogen displacement. They are also essential for a healthy immune system, with gut-associated lymphoid tissue comprising 70% of the entire human immune system. Evidence from germ-free mice shows that bacterial colonisation of the gut is prerequisite for the development of the immune system, in particular the early induction of immunoglobulin A in neonates. ‘There is absolutely no doubt that the activation and development of systemic and mucosal immunity and the tissues involved in it are driven by the presence of the microbiota,’ said Professor MacDonald.

What does this mean for treatment with antibiotics? Professor MacDonald presented research showing that the use of antibiotics leads to a loss of diversity and a shift in community composition of the gut microbiota. The microbiota stabilise again once the antibiotics have stopped, but it never returns to its original state.

The exact consequences of this shift are unknown, but there is mounting evidence that the composition of the gut microflora has a direct impact on the body’s ability to fight infections, said Professor MacDonald. For example, signals from the microbiota promote the differentiation of T cells residing in the intestinal epithelia – in particular the population of Th17 cells. Ironically, this subset of T helper cells is responsible for protecting the body against bacteria and fungi.

This implies the paradox that taking antibiotics to clear an infection will simultaneously destroy the body’s natural defence mechanisms against infection, and in some individuals, this damage may be permanent. It is therefore crucial to...
avoid the use of antibiotics unless this is clearly indicated by the nature and severity of the infection.

**Sessions Led by GRIP Members**

**Global guidance in URTI management**

GRIP’s approach to tackling antibiotic resistance is based on the premise that inappropriate use of antibiotics for URTIs, in particular sore throat, is a key driver for increasing antibiotic resistance rates in the community and that effective action requires a consistent approach across healthcare professions and countries.[6,7] GRIP members, Dr Alike van der Velden (the Netherlands) and Professor Roman Kozlov (Russia), addressed the challenges that make it necessary to establish a unified approach.

**The challenges to a unified approach**

National guidelines on the management of sore throat vary enormously between countries to the extent that different strategies are recommended for the symptoms around the world. For example, the American Association of Family Practitioner guidelines[8] recommend that patients with positive throat cultures should be treated with antibiotics regardless of severity of infection or ability of the patient to fight off the infection, whereas guidelines in the Netherlands (NHG guideline) focus on the distinction between mild and severe throat infections.

A second challenge is the variation in antibiotic resistance rates between countries, highlighting the influence of social and cultural factors on attitudes towards antibiotic use.

Thirdly, there is a gap between the knowledge and skills required by HCPs and the education they receive on prudent antimicrobial prescribing. Topics such as bacterial resistance; diagnosis, treatment and prevention of infection; antimicrobial stewardship and communication skills receive insufficient attention in the curricula of HCPs’, said Professor Kozlov.

Additional challenges include differences between countries in time allocated for patient consultations and variations in knowledge level regarding antibiotics and the natural course of URTIs among the general public.

**5P framework – a global collaborative approach**

To address the variation in global antibiotic use guidelines, GRIP has developed a framework for the management of URTIs in primary care that can be adapted across countries. The framework involves a collaborative approach by multiple stakeholders and focuses on five key areas: policy, prevention, prescribers, pharmacy teams, and patients (Figure 2).[9]

GRIP believes that much can be achieved by addressing the interaction between HCPs and their patients. The group has developed the 1, 2, 3 approach in order to provide a structured approach for the consultations, and to help the HCP effectively treat and communicate with their patients (Table 1).

Briefly, step 1 involves identifying and addressing patient concerns and expectations. During step 2, the severity of the condition is assessed, with attention being paid to risk factors for complications. In step 3, the HCP provides counselling on effective self-management options.

Dr van der Velden emphasised that this universal approach can be adapted for use in any local environment, regardless of guideline variations between countries, resistance patterns or medical curricula. She presented to the delegates a consultation algorithm designed to assist prescribers and pharmacists in applying the 1, 2, 3 approach when engaging with sore throat patients. The algorithm includes questions and prompts for each step of the approach and is developed in line with the structured 1, 2, 3 approach. The algorithm – along with other GRIP materials – is available on the GRIP website at www.grip-initiative.org.

**More action – the latest support from GRIP**

Throughout the past 3 years, GRIP has developed a series of resources for HCPs and patients to support their initiative. GRIP members Dr Martin Duerden (UK) and Professor Sabiha Essack (South Africa) provided an overview of these materials and how they can help support HCPs in managing patients with URTIs (Figure 3).
GRIP’s 1, 2, 3 toolkit resources – launched last year – provide a plethora of useful materials that help educate the HCP on the need to change behaviour, the value of managing symptoms and guidance on communicating with patients in line with the GRIP 1, 2, 3 approach. The resources also included patient materials, which help provide guidance on the realistic duration of URTI symptoms, reassurance that appropriate symptomatic relief can meet their needs and guidance on when to seek further advice. The resources are designed to be adaptable for local use while maintaining the consistency of GRIP’s approach.

Dr Duerden and Professor Essack launched new GRIP 2014 materials, which aim to complement the existing 2013 materials. The new 2014 materials included continuing professional development (CPD) modules, covering antibiotic resistance, URTI management in primary care and communication skills – the activities of which can be logged as part of healthcare provider personal development points. Patient materials were also launched, further helping to shape shared decision-making during the consultation. Much of these patient materials not only helped provide the relevant reassurance and reasoning for why antibiotics do not help manage symptoms in the majority of cases, but also empowered the patients in providing the right tools to help HCPs choose the most appropriate treatment for their condition.

Consultation skills

An interactive session run by GRIP members Dr Duerden and Mr John Bell (Australia) looked into consultation skills. Dr Duerden emphasised that effective communication between the HCP and the patient is a skill that can be learnt, just as much as other medical skills. He recommended giving a structure to the consultation, for example using the Calgary–Cambridge model: (1) initiating the session; (2) gathering information; (3) building the relationship; (4) explaining and planning; and (5) closing the session.  

Mr Bell discussed the role of pharmacy engagement in treating patients with URTIs, emphasising the need for pharmacy teams to move away from a paternalistic approach to a collaborative partnership that endeavours to place the patient at the centre of the decision-making process. He re-enforced the importance of explaining symptom duration – along with reasoning as to why a visit to the doctor was not important—and how it is vital to advise the patient on the most effective symptomatic relief options in order to cater for specific symptoms and preferences. Mr Bell touched on the importance of medicine optimisation when antibiotics are needed, re-enforcing messaging on antibiotic resistance with reasoning for appropriate course fulfilment.

Observation of certain ground rules can also help to make the interaction more effective by helping elicit the patient’s problems and concerns. Tips included sitting at a right angle from the patient, maintaining a comfortable level of eye contact and using verbal signposting to separate listening from note reading. A particularly powerful skill is to allow the patient to complete the opening statement without interruption – this can lead to a significant reduc-

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Table 1  Using the 1, 2, 3 step approach for sore throat

1. Address the patient’s concerns
   - Identify the patient’s main symptom or concern and ascertain how unwell they are
   - Doctors should perform a clinical assessment of the head and neck. Check glands and tonsils
2. Be vigilant – assess severity
   - For doctors: use the Centor criteria to identify risk of group A beta-haemolytic streptococci (GABHA) and identify potential risk factors
   - For pharmacy: identify risk factors, co-morbidities and/or red flag symptoms and refer when needed
3. Counsel on effective self-management
   - Provide reassurance for the patient with information on the duration of symptoms, recommend symptomatic relief and, if required, advise the patient when they should see a doctor or return for a reconsultation
   - Explain why antibiotics are not needed together with the benefits that symptomatic relief can provide
   - The pharmacy can help explain to patients the range of symptomatic relief products available

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Figure 3  Global Respiratory Infection Partnership (GRIP)’s 1, 2, 3 toolkit materials, available on the GRIP website: www.grip-initiative.org.

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tion in late-arising problems. After a review of the phrases that HCPs can use to explore patient’s ideas, concerns and expectations (the ICE approach), the speakers demonstrated in two role play scenarios how physicians and pharmacists can apply GRIP’s 1, 2, 3 approach during a patient consultation for sore throat.

**Interventions in practice**

In another interactive session, GRIP members Dr Laura Noonan (Ireland) and Dr Aurelio Sessa (Italy) encouraged delegates to implement and evaluate interventions to reduce antibiotic prescribing in their local community practices.

Dr Noonan described her experience of testing the effectiveness of a take-home patient information leaflet that contained information on viral illnesses, antibiotics and antibiotic resistance, the likely duration of symptoms, and information on when to reconsult; the leaflet could be personalised and signed by the general practitioner (GP).

**What were the results of the study?**

Use of the leaflet resulted in a reduction of immediate antibiotic prescriptions from 47.5% to 13.3%; it also reduced the mean duration of consultations from 11 min to 10 min, and reconsultation rates dropped from 7.5% to 6.6%. These are the results of a study Dr Noonan conducted at two rural GP practices in Ireland, involving a 1-week control period during which consultations for URTIs proceeded as usual, and a 1-week intervention period during which the information leaflet was used. The findings confirmed the value of giving patients something tangible to take home to support a nonantibiotic management approach.

Dr Sessa reported on the impact of introducing the use of the GRIP toolkit materials in his GP group practice in northern Italy. He conducted a study in which GPs could choose to use materials from the GRIP toolkit or to conduct the consultation without such materials. The results found that the use of the toolkit materials halved the number of antibiotic prescriptions, as shown in Table 2.

The study protocol used by Dr Sessa, together with template data collection forms, is available from the GRIP website (www.grip-initiative.org). The group are keen for other practitioners to use it to gather further data on the differences that the materials can make in actual practice. The study results can also help GP practices to evaluate whether their current level of antibiotic use is appropriate.

**Local Activation**

In this session, practitioners from three different countries shared their efforts to promote the principles of antibiotic stewardship at a local level. These talks gave insight into how strategies can be tailored to local needs and opportunities, and how successful implementation can result in substantial success within localities.

**Brazil**

In Brazil, a new regulation was introduced in 2010 to stop the widespread sale of antibiotics without prescription. Given this relatively recent change in policy, GRIP member Professor Antonio Pignatari and ENT specialist Professor Mônica Menon decided to target opinion makers and prescribers by holding interactive symposia at key congresses in the country. The first symposium took place at a national congress for ENT specialists in November 2013 and the second at a regional congress for GPs in April 2014. Delegates received information about appropriate antibiotic prescribing and the GRIP initiative (Table 3).

Both symposia were well received, and Professor Menon and Professor Pignatari are planning further talks at congresses and other relevant meetings, in addition to introducing the concept of antibiotic stewardship in training programmes for hospital staff. There are also plans to reach

**Table 2** Impact of GRIP toolkit use on antibiotic prescribing at a GP group practice in Italy

<table>
<thead>
<tr>
<th>Toolkit use</th>
<th>Antibiotic prescription, n = 70 (%)</th>
<th>No antibiotic prescription, n = 115 (%)</th>
<th>P value (χ²)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>22 (31.4)</td>
<td>53 (46.1)</td>
<td>0.056 (3.55)</td>
</tr>
<tr>
<td>No</td>
<td>48 (68.6)</td>
<td>62 (53.9)</td>
<td></td>
</tr>
</tbody>
</table>

GP, general practitioner; GRIP, Global Respiratory Infection Partnership.

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Table 3 Feedback of the GRIP message in Brazil

- **ABORL Symposium**
  - National ENT congress – 19–22/11/2014*  
    - 100% of the audience rated the GRIP idea as a very good idea
    - 49.9% like GRIP as every step helps to combat the inappropriate use of antibiotics
    - 50.1% think it is crucial for GRIP to develop good material
    - 94.6% would like to receive more information for their patients to help them use antibiotics correctly for the treatment of URTI
  - Regional Congress for GPs in São Paulo – 4–5/4/2014 †  
    - 78% rated the presentations as excellent to very good
    - 85% stated that antibiotic resistance is a problem in their daily practice
    - There was a 100% agreement towards the statement that it is not always necessary to prescribe an antibiotic for an URTI

- **Clinica Medica Symposium, São Paulo**  
    - 78% rated the presentations as excellent to very good
    - 85% stated that antibiotic resistance is a problem in their daily practice
    - There was a 100% agreement towards the statement that it is not always necessary to prescribe an antibiotic for an URTI

*Sixty participants filled in a questionnaire. †A total of 107 participants filled in a questionnaire.

GRIP, Global Respiratory Infection Partnership; ABORL, Associação Brasileira de Otorrinolaringologia e Cirurgia Cérvico-Facial; ENT, Ear, Nose and Throat; GP, General Practitioner; URTI, Upper Respiratory Tract Infection.
wider audiences by publishing short articles in professional journals and hospital magazines.

**United Kingdom**

Dr Terry Maguire, a community pharmacist and health commissioner from Northern Ireland, spoke about the promotion of antibiotic stewardship collaborating with existing public health initiatives. Examples for Northern Ireland include the Minor Ailments Scheme (promoting self-management of minor ailments) and the Choose Well campaign (promoting better use of medicines, including antibiotics).

In addition, the Primary Care Intranet and other health authority websites in Northern Ireland are being used to give GPs access to relevant patient information leaflets. GPs can also download an audit template that has been adapted for the audit of antibiotic prescribing.

Finally, Antibiotics Awareness Day 2013 offered the opportunity to launch a CPD module for pharmacists and to send antibiotic awareness resources to GP surgeries across the UK; the materials had been adapted from the GRIP 1, 2, 3 toolkit and were rated as good or excellent by 98% of responders.

**5P Debate**

The meeting ended with a stimulating debate that focussed on the question ‘which of the five Ps in GRIP’s pentagonal framework for change will have the biggest impact on countering inappropriate antibiotic use in management of URTIs in primary care’. In an election panel style, each P was represented by two GRIP members seeking to show the merits of their P over the other Ps.

In an audience vote before the debate, there was a clear winner, with 33% of the audience feeling that the ‘prescriber’ has the most influence on inappropriate antibiotic use, ahead of ‘patients’ (27%), ‘policy’ (23%), ‘prevention’ (10%) and, finally, ‘pharmacy’ (6%) (Figure 4).

Subsequently, the discussion began with a short opening presentation for each P, followed by a debate in which each team defended its P.

- **Policy**: The policy team argued that it is not possible to substantially affect antibiotic prescribing and purchasing behaviours without national guidelines supported by regulation and antibiotic surveillance systems.
- **Prevention**: Those campaigning for prevention called for a greater ‘use of prevention strategies (so that) you won’t need to treat the patient’.
- **Prescriber**: The prescriber team said that ‘[d]octors hold the key’, and that ‘[t]hey are the ones who stand between the patient and the antibiotic’.
- **Pharmacy**: The defenders of pharmacy asserted that pharmacists are more accessible than any other health professionals and are most suited to provide individualised and tailored treatment advice.
- **Patients**: Arguments in favour of the P for patients included the fact that patients are often driving prescribing, and ultimately, they make the decision of whether to take the antibiotic. ‘If we teach [a patient] to treat one sore throat infection symptomatically, a large number of subsequent infections will also be treated without antibiotics.’

The debate ended with another vote by the audience, which resulted in a tie between prescribers and patients (26% each), followed closely by pharmacy (23%) and policy (19%), and finally prevention (6%) (Figure 5).

**Figure 4** The results from the initial vote on which ‘P’ was considered the strongest driver.
‘We have seen an equalisation and that’s a very good result,’ said GRIP member Professor Attila Altiner (Germany). He emphasised that all Ps are important, confirming the need for partnership – a topic that came up repeatedly during the debate and in audience contributions. ‘We have to work hand in hand,’ concluded Professor Altiner.

You can access the edited recordings of the debate from the GRIP Summit at www.grip-initiative.org.

Localisation of Approach

The GRIP 2014 materials were reviewed by the assembled audience of international HCPs. The attendees were broken down into regions and discussed in detail how these materials could be utilised and implemented in order to engage and deliver a sustainable message to enact change. Feedback from all the materials was positive, with many countries discussing how to adapt and evolve the existing materials in order to cater for their region’s specific barriers to change.

The GRIP patient leaflet, URTI guide for patients and GRIP video brought significant praise from the audience. It was felt that the GRIP patient leaflet and URTI guide for patients (a guide which the patient fills out prior to the consultation and allows them to detail their symptoms, durations and reasons for visiting the HCP) were excellent tools to help drive the joint decision-making process. It was felt that the GRIP video – which follows the character of Bob who is suffering from an URTI – resonates with the apprehension felt by many patients and greatly explains the importance of effective symptomatic relief in a clear, concise and humorous format.

The GRIP resources are available for download by all HCPs on the GRIP website: www.grip-initiative.org. There are additional resources on the website including the 2013 GRIP materials, podcasts (Table 4) and the debate footage. A bespoke GRIP YouTube channel page has also been launched, which includes interactive footage on the GRIP members’ thoughts on the 5P framework and the 1, 2, 3 approach, the threat of antibiotic resistance, and the challenges facing effective and appropriate URTI management (Table 4).

Declarations

Conflict of interest

The Author(s) declare(s) that they have no conflicts of interest to disclose.
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**Authors’ contributions**

All Authors state that they had complete access to the study data that support the publication. All listed individuals were attendees at the meeting and members of the Global Respiratory Infection Partnership.

**References**