Opposing expectations and suboptimal use of a local antibiotic hospital guideline: a qualitative study

Pieter-Jan Cortoos1*, Karel De Witte2, Willy E. Peetersman3, Steven Simoens1 and Gert Laekeman1

1Research Centre for Pharmaceutical Care and Pharmaco-economics, Katholieke Universiteit Leuven, O&N 2, Herestraat 49, PB 521, B-3000 Leuven, Belgium; 2Centre for Organisation and Personnel Psychology, Katholieke Universiteit Leuven, Tiensestraat 102, PB 3725, B-3000 Leuven, Belgium; 3University Hospitals of Leuven, Department of General Internal Medicine and Infectious Diseases, Herestraat 49, PB 7003, B-3000 Leuven, Belgium

Received 20 November 2007; returned 16 January 2008; revised 10 March 2008; accepted 10 March 2008

Objectives: The aim of this study was to determine the opinions and problems concerning the use of a local antibiotic hospital guideline in a 1900-bed tertiary-care, university teaching hospital.

Methods: A qualitative study using focus group discussions explored the usability and applicability of local antibiotic guidelines together with possible supportive measures. The sample included 22 physicians, deliberately divided between internal medicine (59.1%) and surgery (40.9%), and levels of experience (59.1% residents; 40.9% supervisors). Focus groups were conducted within one specific subgroup. Analysis was carried out using a framework analysis approach.

Results: General acceptance of local guidelines was high but clear differences were present between subgroups with different desires and requirements from guideline contents. Opposing views were present towards supportive measures, especially multidisciplinary collaboration. Guideline distribution and accessibility appeared to be confusing, resulting in delayed application. An important supplementary barrier was the need to collect the guideline personally. Supervisors in their role as opinion leaders were mentioned as highly influential towards residents’ practice.

Conclusions: Locally developed hospital guidelines experience the same barriers as other guidelines. Within one hospital, prescribers have to be seen as a number of different target groups instead of a homogeneous population. For an optimal effect, interventions will have to consider these differences. Also, in order to improve local guideline use and antibiotic consumption, supervisors have to be aware of how their role as opinion leaders can influence residents. Lastly, active guideline distribution and promotion remains critical to ensure efficient guideline use. Future research should focus on how to adapt interventions to these different target groups.

Keywords: antibiotic usage, antibiotic policy, guidelines

Introduction

Clinical practice guidelines are a cornerstone in the efforts to improve antibiotic prescribing. They aim to support the clinician in making decisions, decreasing treatment diversity, enhancing the understanding of clinical practice and improving patient outcome. However, physicians may perceive different barriers, which strongly influence guideline use. Several methods have been used to support guideline dissemination and implementation, but results for separate interventions often show large variations in improving guideline use. To enhance the success rate, interventions tailored to the observed problems and compromising factors have been proposed, and successful trials have been performed. However, the relative importance of these factors is still unclear, making effective interventions difficult to plan.

An important step in the development and actual use of antibiotic guidelines after their publication is their translation to hospital-specific guidelines by taking into account local healthcare settings, formularies and resistance patterns. For a large number of physicians, these hospital-specific guidelines replace the original guidelines and similar barriers against their use can
be expected. The objective of this study was the first step in a larger project to identify opinions and problems concerning local antibiotic guidelines in order to improve their use in our hospital.

Methods

This analysis is part of a larger study on the use of antibiotic guidelines (ClinicalTrials.gov Identifier: NTC00512772) and is approved by the Ethics Committee of University Hospitals Leuven, Belgium. Written informed consent was waived. This study was conducted in a 1900-bed tertiary-care, university teaching hospital. The hospital guidelines are available as a booklet, on the hospital intranet and on the internet (available in Dutch at http://www.antibioticagids.be/). They were first designed in 1993, and updated in 1996, 1999 and 2005 (version used at the time of the study), with a last review in June 2007 when treatment duration was included. For infectious diseases consulting service, a dedicated resident who reports to the infectious diseases specialist is available on demand. At the time of the study, electronic prescribing was available in about one-quarter of all wards.

A focus group discussion (FGD) study was deemed as the most appropriate qualitative research method for identifying and explaining the problems involving antibiotic guideline use. Group interaction, an important aspect of FGDs, could potentially lead to deeper insights through shared experiences between participants.

Participants

Focus groups were conducted according to the recommendations by Krueger and Casey. Lists of potential participants were retrieved and all were contacted by mail explaining the purpose of the study. Further contacts were made in person or by phone or e-mail. Only physicians who had confirmed their participation were notified of a fee of €75 upon completion of the study. At first, focus groups were planned for physicians from internal medicine only. However, following the first group discussions, we decided also to include physicians from the surgical department who prescribe about one-third (excluding prophylaxis) of all antibiotics in our hospital (pharmacy data). Being a university teaching hospital, a high percentage of physicians involved in antibiotic prescribing are residents. In order to allow residents to speak without any reservation, FGDs were separately conducted for residents and staff members. This approach also allowed a comparison between groups with differing opinions. Staff members were intentionally sampled to reflect different specialties of internal medicine and surgery. No such sampling was needed for residents as they regularly rotate between different wards and specialties.

Data collection

All discussions were moderated by an experienced social scientist (K. D. W.) and field notes were taken by an independent hospital pharmacist (P.-J. C.). Each participant was given an interview guide (Figure 1; original version available upon request from the authors), based on a review summarizing the most important barriers against the use of guidelines. This interview guide consisted of eight open-ended questions assessing the importance of guidelines, guideline use, resources, guideline contents, issues in actual practice interfering with guideline use and suggestions for supportive measures. While reading the interview guide, participants were asked to write down for themselves on cards all issues that emerged regarding the use of the local antibiotic guidelines. All cards were collected, grouped by topic, presented and discussed by all participants. New themes emerging from the discussion were also probed for in subsequent groups. Each session took between 1.5 and 2 h. All discussions were audio recorded and transcribed verbatim, with anonymization of the participants.

Figure 1. Interview guide used for focus group discussion.

- What do you understand by a good local antibiotic policy?
- What is the importance of local guidelines in such a policy? Are they the basis or are they given too great weight?
- To what extent do you use the local guidelines? And what method is the most practical to you: a booklet or the intranet version?
- How did you find out about these local guidelines? Did someone tell you where to find these guidelines?
- Which other sources do you use to decide upon the empirical therapy?
- To what extent do you think there are problems with the contents of these local guidelines? Do you have any suggestions to improve them?
- Is it sometimes difficult to follow these guidelines? What are the major problems for using these local guidelines?
- Do you have suggestions for extra support?
  - Audit and feedback with or without any incentive
  - Clinical pathways
  - Organization
  - Reminders

- (Lack of) experience
- Patient
- Medical companies

- Multidisciplinary collaboration
  (together with outline, e.g. clinical pharmacist or not...)
- Education or training

Underlying items were not shown to the participants. If these items did not emerge during the discussion, these were probed for by the moderator or sceptor.

Original Flemish-Dutch version available upon request from the authors.
Analysis

A framework analysis approach was used because of the visible and systematic stages of the analytical process and because it was specifically developed for applied policy research that aims to provide recommendations. In a first step, transcripts and field notes were re-read (familiarization) after which, in a second step, a thematic framework was identified from issues emerging from the data as well as a priori issues. This framework was refined during subsequent steps. In the third step, the data were coded (indexing) using the framework. This indexing was done by P.-J. C. and independently repeated by G. L. to improve validity. When there were discrepancies in the coding, consensus was sought. In the fourth stage, data were sorted according to the different themes (charting) and in the fifth stage, data were interpreted as a whole. When a code was used by three or more different persons within one group, this code was compared more in-depth between groups. The software package ATLAS.ti was used to facilitate indexing and charting of the data. For presenting the data, we used the themes as they emerged in order to reflect how, within one theme, different issues were interrelated.

Results

In total, five focus groups were conducted between October 2006 and March 2007: two FGDs among internal medicine residents, one FGD for internal medicine staff members, one for surgical staff members and one for surgical residents. In total, 22 physicians participated, with ages ranging from 26 to 60 years. The characteristics of each group are presented in Table 1. No major differences in opinions were present between the two internal medicine resident groups and, therefore, these opinions were merged into one group. None of the participants were excessively dominant.

General attitude and interpretation

There were no objections in principle against the use of guidelines. All participants personally agreed with the need for evidence-based antibiotic guidelines. Guideline interpretation, however, showed differences between groups (Figure 2, Q1–4). Internal medicine staff members emphasized interpretation of existing guidelines together with their reliability. Internal medicine residents, however, tended towards a more strict interpretation and a demand for clear directives and complete answers. The surgery groups also showed a rather strict interpretation of antibiotic guidelines although it was felt that most guidelines were not adapted to their situation (see Guideline contents and agreement).

Guideline familiarity and awareness

According to the residents and surgical staff members, communication on how to obtain copies of the guidelines was lacking. This resulted in low awareness and a confusion between the local guidelines and the well-known Sanford guide, which ultimately delayed adoption of local guidelines. Training in guideline use was reported to be low, but was felt to be important for raising awareness and efficiency (Figure 2, Q5–7). The requirement to collect the guideline booklet personally was mentioned by all resident groups several times as a supplementary barrier against local guideline use. Although several participants opted firmly for the electronic version, the booklet was not completely abandoned because of its potential use on other sites with less infrastructure (Figure 2, Q8). The use of the booklet appeared to be lower in surgery. Internal medicine staff members stressed the use of the electronic version that provided in-depth information sources and could be easily updated. The presence of other guidelines (literature, other hospitals) and different practices between wards was a potential source of confusion (Figure 2, Q9–10).

Guideline contents and agreement

Internal medicine residents felt that the guidelines were incomplete, covering neither all diseases relevant to them nor aspects concerning actual use (drug monitoring, intravenous–per os switch, allergies). Having up-to-date guidelines was also considered important by this group. This contrasted with other groups, and more specifically with surgeons, where conciseness and ease of use prevailed (Figure 2, Q11–14). Both surgery groups felt that antibiotic guidelines were not adapted to their practice and that use of antibiotic guidelines in their wards could hamper efficient patient flow (Figure 2, Q15–16).

Table 1. Demographics of focus group participants

<table>
<thead>
<tr>
<th></th>
<th>Internal medicine residents</th>
<th>Surgery residents</th>
<th>Internal medicine staff</th>
<th>Surgery staff</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1st group</td>
<td>2nd group</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of participants</td>
<td>3</td>
<td>4</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Male/female</td>
<td>1/2</td>
<td>2/2</td>
<td>6/0</td>
<td>6/0</td>
</tr>
<tr>
<td>≤3 years of residency</td>
<td>2</td>
<td>0</td>
<td>1</td>
<td>NA</td>
</tr>
<tr>
<td>≥4 years of residency</td>
<td>1</td>
<td>4</td>
<td>5</td>
<td>NA</td>
</tr>
<tr>
<td>Age ≥40 years</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>3</td>
</tr>
</tbody>
</table>

NA, not applicable.

*a*Composition of internal medicine staff group: emergency department, pulmonology, geriatrics, infectious diseases, intensive care, general internal medicine.

*b*Composition of surgery staff group: traumatology, urology, vascular surgery.
Social influence

When focusing on the role of the supervisors, both internal medicine and surgical residents emphasized their importance as role models because supervisors’ practice strongly determined the subsequent prescribing behaviour of residents. Furthermore, they stressed the supervisors’ importance in clarifying when and
how to diverge from antibiotic guidelines. The influence of the supervisors was also quoted by residents who had trained previously in regional hospitals. When confronted, staff members acknowledged being of great influence but sometimes giving bad examples (Figure 2, Q17–19).

The role of other players was far less clear. The influence of the pharmaceutical industry drew a mixed response. The opinions of nurses or the patient were felt to have little influence on antibiotic practice.

Multidisciplinary approach

All groups were in favour of a multidisciplinary approach, comprising the availability of a second opinion, in the treatment of infections and as a support for the improved use of guidelines. Infectious disease specialists were highly approved, whereas microbiology specialists had somewhat lower acceptance (Figure 2, Q20–21).

A possible involvement of clinical (antimicrobial) pharmacists generated conflicting opinions. Surgeons and staff members from internal medicine showed a high approval of their potential role. In contrast, internal medicine residents were more resistant to the presence of a clinical pharmacist or wished to restrict their role to training (Figure 2, Q22–26).

Organizational constraints

Working pressure was mentioned by both resident groups as a cause of not being able to consult guidelines. In the surgery residents group, working pressure was also used to stress the need for more interdisciplinary collaboration and support (Figure 2, Q27–28). Information transfer was stated to be deficient on several levels. Internal medicine stated the low familiarity of other specialties with the ID consultancy, whereas other groups mentioned the suboptimal follow-up and documentation of cultures and treatments (Figure 2, Q29–30).

Attitudes about specific interventions

Regarding other regularly used specific interventions, clinical pathways were generally reckoned as not useful since they were too rigid in empirical treatment. Audit and feedback showed overall positive reactions if the physician who actually prescribed the antibiotics could be identified correctly, and if used timely and non-punitive. The use of posters was found to be a good tool to provide reminders (Figure 2, Q31–35).

Discussion

Our FGD participants reported a large array of possible barriers to the local antibiotic guideline. First, there is evidence for a heterogeneous medical corps in our hospital. Internal medicine residents felt a strong desire for information on all aspects of disease management. They were reluctant to interference from non-medical disciplines and wanted exhaustive information to cover all possible situations. Internal medicine staff members, some of whom contributed to the guideline, stressed its relative character and the need for clinical interpretation. Surgeons showed a more ‘cookbook’ attitude where speed of decision-making and ease of use prevailed. They also favoured multidisciplinary support. In the light of these differences in attitudes and expectations, physicians can be divided into different target groups. A single intervention to improve antibiotic guideline use is therefore unlikely to be effective. Similarly, a Dutch study pointed to differences in opinions and approach between staff and residents.14 Our results showed that these differences can also be found between different specialties. Additionally, there is a similar limited guideline familiarity, confusion with other
existing practices and the impact of supervisors on residents’ practice. Another Dutch study revealed similar issues and also pointed to several external problems that hinder compliance. Working pressure, deficient communication and lower acceptance of non-medical support could be seen there as well. Both Dutch studies mention possible interventions, such as group discussions on appropriate prescribing, enhanced participation in guideline development and more active communication. These should be considered here too, together with the interventions that already showed approval from our physicians, such as audit, posters and specialists’ support.

For a better understanding, we can apply the Theory of Planned Behaviour to our results. Basically, according to this theory, behaviour (i.e. guideline use) is the result of an intention to actually perform this behaviour. In turn, this intention is the result of three interconnected factors: the attitude towards the behaviour, the presence of others who could approve or disapprove the behaviour (subjective norms) and the presence of factors that appear to enable or prevent to perform the behaviour (perceived behavioural control). In our results, the latter two appear to be the most important factors.

Subjective norms can be seen specifically in the emphasis that residents place on the role of the supervisors. In our results, supervisors are considered by residents as opinion leaders. As a consequence, they are influential for guideline use. First, they are mentioned as a communication channel to improve guideline awareness. Secondly, their influence on attitude and motivation is clearly identified. If supervisors’ practices are not in line with the guidelines, it negatively influences residents’ attitude and practice. A clear distinction between the antibiotic opinion leaders and other members of staff, together with clear communication on the reasons to divert from the guideline, is of primary importance and could be an effective intervention.

The opinions about multidisciplinary collaboration can be seen in the same perspective. The overall demand for multidisciplinary collaboration is complicated by the apparent reluctance of internal medicine residents towards clinical pharmacists. This contrasts with recommendations made for good antimicrobial stewardship. According to these recommendations, an infectious diseases physician together with a clinical pharmacist with infectious diseases training should be the core of a multidisciplinary team. Also, the clinical pharmacist should participate in prospectively auditing antibiotic prescriptions. This reluctance can be explained by non-familiarity of the residents with clinical pharmacists. Inexperience with this new position in our hospital probably triggered this defensive reflex. Similarly, this can explain the somewhat lower acceptance of microbiology support, which is also a recent initiative. Conversely, the high approval in surgery departments could result from the fact that the clinical pharmacist service was started there, resulting in higher familiarity. The main conclusion here is that contact with other disciplines has great potential for improved guideline use, but that familiarity with this intervention is a determinant for success which should be addressed first.

The aspect of perceived behavioural control can be seen clearly in the various problems regarding guideline awareness. Limited guideline use through the intranet and the need for personal initiative to obtain the booklet exemplify that passive distribution of information usually has little effect on physicians’ practice. Communication and distribution of the guidelines require a more active approach as they now only reach the residents slowly. Another issue appears to be uncertainty about the contents of the guidelines and their use, as shown by the tendency to a strict interpretation among residents. If guidelines are precisely defined, they show a higher usage. Making guidelines less defined to enhance clinical interpretation could in fact lower their use. In contrast to what is stated in the literature, guidelines can appear ‘not cookbook enough’, as stated by several physicians. Time to consult guidelines is considered limited and, thus, requires direct retrieval of the needed information. Development of a concise version next to a more extended one could be considered.

Regarding attitude, acceptance of the guideline principle is high. However, for specific topics, questions about the guideline applicability and interpretation emerge among less experienced users and effect guideline attitude. A problem of self-efficacy appears low but cannot be ruled out.

Strengths and limitations

This paper identified barriers against the use of local antibiotic guidelines. Our findings add to the Dutch study that investigated the implementation of a national treatment guideline for community-acquired pneumonia. Problems with the local translation of pneumonia-specific recommendations emerged as a main issue in that study. Our results, however, relate to local antibiotic guidelines for several different indications and recommendations, adapted to local policy and other factors. We opted for a general approach towards antibiotic guidelines, which offers a broader applicability to other pathologies, as studied by Mol et al. Still, in an ideal situation, both approaches should be combined to cover all relevant factors.

A qualitative approach is the preferred method for categorizing barriers and factors promoting guideline use. However, this method has several limitations. First, its results are not generalizable and are only valid for our hospital. There is also a potential bias because only interested physicians would have participated. However, the large array of problems mentioned makes a bias unlikely. The fact that we used focus groups allowed us to obtain a broader and more in-depth view through group interaction on the perceived problems in addition to a discrete estimation of their relative importance. This is not possible in direct interviews as done in previous studies. Also, the use of focus groups gives the possibility to create a non-hostile environment with colleagues sharing their experiences and problems with the moderator and note-taker, both having no formal connection with the hospital board. For the same reason, residents and staff were separated, which enabled us to detect and confront opposing opinions. It should be noted that the small size of the surgical staff group does not permit a reliable picture of their opinions. However, we think this is of limited importance as there was little difference in opinions between this group and the surgical residents group. Few new aspects came up in the surgical staff group, indicating that the point of theoretical saturation was reached and that the majority of opinions had been mentioned. Although the internal medicine residents groups were small, their opinions were very similar between the two groups, therefore confirming each other. In our opinion, excessively dominant speakers were absent and their possible influences would have been countered by our methodology. From the beginning, all participants were able to express their personal opinions through the use of the individually written
barriers against a local antibiotic guideline explored

Local antibiotic guidelines are an important tool to enhance quality of care and to improve the use of antibiotics. However, they experience the same barriers as other guidelines. Within one hospital, different target groups can be present with diverging opinions on and requirements from guideline contents, interpretation and supportive measures. On the basis of this study, we recommended that interventions to improve guideline use take into account different attitudes and expectations of various groups within medicine. Multidisciplinary collaboration has a high potential, depending on familiarity with this intervention. All supervisors have to be aware of how their role as opinion leaders can influence residents, in order to improve local guideline use and antibiotic consumption. Lastly, active guideline distribution and promotion remains critical to ensure their efficient use. Future research should focus on how to tailor interventions in order to address different groups.

Acknowledgements

We would like to thank all participants of the focus groups who contributed to this study and Prof. Dr P. Broos, Department of Surgery, for his logistic support.

Funding

This study was funded by a fellowship training grant for P.-J. C. by the Faculty of Pharmaceutical Sciences, Katholieke Universiteit Leuven, Belgium.

Transparency declarations

None to declare.

References


cards. However, in order to gain deeper insight and quantify the possible target groups and factors that moderate guideline use, a survey based upon the Theory of Planned Behaviour will be conducted in the near future before making more definite recommendations for improving guideline use.30

For future research, we would recommend a double approach looking at both hospital- and disease-specific factors to cover all possible aspects. Qualitative analysis of disease-specific guidelines together with an inventory of possible barriers included within the guideline could improve the disease-specific aspects. However, the hospital-specific aspects will still need to be determined individually.

Conclusions

Local antibiotic guidelines are an important tool to enhance quality of care and to improve the use of antibiotics. However, they experience the same barriers as other guidelines. Within one hospital, different target groups can be present with diverging opinions on and requirements from guideline contents, interpretation and supportive measures. On the basis of this study, we recommended that interventions to improve guideline use take into account different attitudes and expectations of various groups within medicine. Multidisciplinary collaboration has a high potential, depending on familiarity with this intervention. All supervisors have to be aware of how their role as opinion leaders can influence residents, in order to improve local guideline use and antibiotic consumption. Lastly, active guideline distribution and promotion remains critical to ensure their efficient use. Future research should focus on how to tailor interventions in order to address different groups.

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