“I’m Dr Jekyll and Mr Hyde”: Are GPs’ antibiotic prescribing patterns contextually dependent? A qualitative focus group study

EVA LENA STRANDBERG1,2, ANNika BRORSSON1,3, CHARLOTTA HAGSTAM3, MARGARETA TROEIN1 & KATARINA HEDIN1,4

1 Lund University, Department of Clinical Sciences, Family Medicine, Malmö, Sweden, 2 Blekinge Centre of Competence, Blekinge County Council, Karlskrona, Sweden, 3 Primary Health Care, Region Skåne, Malmö, Sweden, 4 Unit for Research and Development, Kronoberg County Council, Växjö, Sweden

Abstract
Objective. To explore factors and circumstances contributing to prudent antibiotic prescribing for respiratory tract infections in primary care. Design. Two focus groups representing rural and urban areas. A semi-structured interview guide with open-ended questions and an editing analysis style was used. They were examined to identify meaning units that were sorted into categories in an iterative process throughout the analysis. Setting. Primary health care in two counties in southern Sweden. Subjects. Two groups including seven and six general practitioners (GPs) respectively, men and women of different ages with different professional experiences. Main outcome measures. Exploration of categories, determination of themes, construction of models. Results. The decision to prescribe antibiotics takes place in the encounter between GP and patient, initially characterized by a harmony or fight and the subsequent process by collaboration or negotiation, resulting in agreement, compromise, or disagreement. Several factors influence the meeting and contribute to enhancing the conditions for rational prescribing. These conditions are connected to the GP, the relationship, and the setting; organization as well as professional culture. The findings indicate synergies between the factors, and that one factor can sometimes compensate for lack of another. Continuity and mutual trust can make a brief consultation successful, but lack of continuity can eliminate the effects of knowledge and professional skills. Conclusions. The findings emphasize the importance of the encounter between the GP and the patient for prudent antibiotic prescribing. Furthermore, the importance of an appropriate organization of primary care, which promotes continuity and encourages professional autonomy, is demonstrated.

Key Words: Antibiotic prescribing, consultation, doctor-patient relationship, general practice, primary health care, respiratory tract infections, Sweden

Introduction
Respiratory tract infection (RTI) is still one of the most common reasons for encounters in primary health care. Most respiratory infections are viral, and many of the bacterial infections are self-limiting, but antibiotics are frequently prescribed [1]. This overuse has increased antibiotic resistance, and there is evidence that resistance develops not only on the aggregated level but also in the individual [2].

The reasons for prescribing antibiotics contrary to current guidelines have been discussed and studied extensively [3–6]. In a Canadian historical cohort it was shown that inappropriate antibiotic prescribing increased with time in practice and was also more frequent among foreign medical graduates and among primary care physicians with a high practice volume [3].

A well-known problem is the constant prescribing pattern on an individual basis. Cars and Håkansson concluded that “Doctors have an individual and very constant pattern of prescribing antibiotics, and it seems that the diagnoses are often given to justify the treatment, rather than the other way around” [4]. Some other studies concluded that a high frequency of prescriptions of antibiotics may reflect a general disposition among GPs to give priority to maintaining good relations with the patients [5,6]. They suggest that low antibiotic prescribing and high patient
satisfaction could be combined if sufficient time were spent on listening to patients. Patient satisfaction was not related to the prescription of antibiotics, but to a better understanding of their illness.

Numerous efforts have been made to reduce unnecessary and potentially harmful antibiotic prescribing. These include education for providers, near-patient tests, and the introduction of financial incentives, as well as information to patients and public [7–10]. Case-based and interactive education has been proved to be effective in improving prescribing policies [2,7]. Attitudes were considerably changed, and this corresponded with altered prescribing patterns [2]. A Cochrane Review from 2005 advocated combined education for physicians, patients, and the public [11]. In a Swedish follow-up study after education, an overall reduction in the prescription of antibiotics was seen, and the results were persistent several years later [12].

A recent study has revealed that great differences in prescribing habits remain between different countries, geographical areas, and practices [13,14]. In order to find paths to further improvement of prescribing habits, we considered it essential to deepen the knowledge concerning facilitating factors and barriers to rational prescribing.

Accordingly, the aim of this study was to explore general practitioners’ (GPs) perceptions and experiences regarding antibiotic prescribing for RTIs in Swedish primary care.

**Material and methods**

**The APO method**

This paper reports on one component of the EU project HAPPY AUDIT [13]. The Audit Project Odense (APO) method was tested to change antibiotic prescribing habits in six countries, chosen for their differing prevalence of antibiotic resistance. The audit was performed twice, with a year’s interval during which an intervention took place. Considerable changes in prescribing habits were registered [13,14]. However, in Sweden, substantial differences between practices remained after the intervention. This suggests that the application of guidelines varies due to factors other than medical.

**Study design**

Focus groups were used to explore GPs’ perceptions of antibiotic prescribing for RTIs in primary care. Focus groups are effective for exploring the meaning of conceptions and definitions of important phenomena in health care [15,16].

The interactive discussions of focus groups generate valuable details of complex experiences and reasons behind actions, beliefs, perceptions, and attitudes [17,18]. Focus-group interaction facilitates in-depth discussions through a sequence of open-ended questions that encourage participation within the group. Group dynamics create a synergy between participants contributing to discussions and descriptions of individual experiences, underlying opinions, meanings, feelings, and attitudes. A central element is not only the content of the discussion, but also the interaction between participants [19].

All authors have research experience. AB, ELS, and MT have done qualitative research using focus groups. ELS has worked with quality development and process supervision in various primary care audit projects. The other authors are general practitioners with experiences from prescribing antibiotics for RTIs.

**Data collection**

Two focus groups with six and seven participants from the Happy Audit project were arranged in September 2009 in two counties in the south of Sweden (Table I). The participants were both men and women; GPs of different ages and professional experience, and from both rural and urban areas participated. Each group met once for a 60-minute session. We used a semi-structured interview guide with open-ended questions [20]. Topics for the focus group discussions were (i) Experiences of antibiotic

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**Table I. Distribution of participating GPs.**

<table>
<thead>
<tr>
<th>Category</th>
<th>Variables</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>Women</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>Men</td>
<td>3</td>
</tr>
<tr>
<td>Age</td>
<td>18–39</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>&gt; 40</td>
<td>11</td>
</tr>
<tr>
<td>Practice type</td>
<td>Group</td>
<td>13</td>
</tr>
<tr>
<td>Location</td>
<td>City</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Town</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Village</td>
<td>6</td>
</tr>
</tbody>
</table>
prescribing for RTIs and personal behaviour, (ii) Experiences of deviating from national and local guidelines, (iii) The impact of educational interventions such as the Happy Audit project.

A moderator introduced each focus, and made sure that participants did not deviate from the research question and that everyone was able to take part in the discussion. An assistant took notes, which were added to the data from the audiotaped discussion that was transcribed verbatim. To validate the focus-group data, ELS and AB did three individual telephone interviews with Happy Audit participants from a third Swedish region.

Data analysis

An editing analysis style according to Miller and Crabtree [21] was used starting with a naive reading followed by repeated readings of all transcripts that were examined independently in order to identify meaning units or segments that both stand on their own and relate to the aim of the study, but separate from preconceptions prior to reading the data. The units or segments were sorted and organized into categories in an iterative process throughout the analysis. In the further analysis the authors explored categories, determined patterns and themes, and constructed models. The continued analysis included exemplar quotes illustrating each area (Table II). ELS and AB met on 10 occasions identifying similarities and connections and discussed until consensus was reached. Preliminary findings were presented to the participants for feedback. CH, MT, and KH read the focus-group interviews and confirmed that they contained data supporting the main findings.

When referring in the results to the participants’ statements, these are written in the past tense, while interpretations of statements are in the present tense.

Ethical considerations

According to Swedish legislation, ethical approval was not necessary for this study since it was considered a quality improvement project. All participants were informed that participation was voluntary, that they could withdraw at any time, that all data would be handled confidentially, and that the results would be presented in a non-identifiable way.

Results

We found that the most significant and important factor concerning antibiotic prescribing for RTIs is what happens when the GP meets the patient (Table II). Our main finding concerns two dimensions of this encounter: characteristics of the meeting depending on the interaction with the patient (Figure 1) and influencing factors (Figure 2).

Characteristics of the encounter

When the expectations of the GP and the patient are congruent, the encounter is recognized as smooth and in harmony with collaboration until agreement or compromise is reached. When the expectations do not match, it is characterized as a fight where negotiation is needed. Sometimes negotiation leads to a compromise, sometimes it ends in disagreement.

Factors influencing the encounter

When looking closer into the encounter between the GP and the patient and factors influencing the meeting, we found that the participants talked about three main factors: the GPs themselves, the relationship with the patient, and the setting in which the encounter takes place, each with two to six sub-factors (Table III).

GPs themselves. Our interpretation is that clinical skills and knowledge of guidelines are important factors for making decisions about whether to prescribe antibiotics for RTIs or not. Self-efficacy, i.e. not losing confidence in one’s own capability, is important in spite of all possible tests, near-patient tests and others. Such clinical tests are not always used. Professional autonomy was expressed to be of importance for prudent prescribing of antibiotics, as was the GP’s professional authority in the clinical situation for trustworthiness with the patient. Prudent prescribing is not always about reducing prescribing rates, but prescribing for the right indications. All GPs have their own strategies for making the consultation a success. Our participants talked about short cuts – being lazy and obedient to guidelines for treating RTIs, and guidelines and rules of thumb could save time and energy. It was considered useful to give the patient a couple of minutes’ extra time for reasoning about antibiotics and resistance problems. Safety netting through possible follow-up was mentioned as a strategy in itself, but difficult when meeting the patient in the emergency centre. Information about the risks of excessive use of antimicrobial drugs was considered a useful strategy.

Relationship with the patient. The participants expressed views on the relationship between the GP and the patient. Our interpretation is that continuity of care and mutual trust between the GP and the patient are also very important factors in the matter of antibiotic
Table II. The Encounter between the General Practitioner and the patient and the different steps of the analysis.

<table>
<thead>
<tr>
<th>Meaning units</th>
<th>Categories</th>
<th>Patterns</th>
<th>Themes</th>
<th>Connections</th>
</tr>
</thead>
<tbody>
<tr>
<td>“... if you have a solid relationship with the patient, when I know that he trusts me, you can say ‘Well, you have paid 130 Kronor to get my best advice, here it is, take it.’”</td>
<td>Harmony</td>
<td>Collaboration → Agreement</td>
<td></td>
<td></td>
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<tr>
<td>“... this bright and alert little girl... I took a Strep A test, and it was negative. There was nothing else to do.”</td>
<td></td>
<td></td>
<td>Compromise</td>
<td>Characteristics</td>
</tr>
<tr>
<td>“I was so taken aback when a patient said, ‘But I want it anyway.’ I held this long lecture saying that it won’t help here at all, it will pass just as quickly whether you get antibiotics or not. And they say, ‘Well, I want it anyway, thanks, please write a prescription’, as if it was a human right, you know.”</td>
<td>Fight</td>
<td>Negotiation → Disagreement</td>
<td></td>
<td></td>
</tr>
<tr>
<td>“I think more and more often that you rely on the clinical picture and do no tests at all.”</td>
<td></td>
<td>Clinical skills</td>
<td></td>
<td>Encounter</td>
</tr>
<tr>
<td>“You shouldn’t lose your self-confidence now that there are so many different ways of testing. You should feel that you actually can make a clinical assessment, so that it’s kind of going back to that.”</td>
<td></td>
<td>Self-efficacy</td>
<td>GP</td>
<td></td>
</tr>
<tr>
<td>“Trust doesn’t come ready-packaged; somewhere you have to start building that trust.”</td>
<td>Mutual trust</td>
<td>Relationship</td>
<td>Influencing factors</td>
<td></td>
</tr>
<tr>
<td>“But when she comes here, she’s sick, you know.”</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>“I think you create a culture... but still you end up with some kind of general consensus at a health centre, that this is what we do, and I think we’ll get a return for that in the population.”</td>
<td>Professional culture</td>
<td>Setting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>“But it’s also about, if you can, if I can, you know, see the patient again, or if I can arrange an opportunity to talk to the patient again.”</td>
<td>Organization</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
prescribing in general and for RTIs in particular. Continuity promotes diagnostic accuracy through personal knowledge, and a time-consuming explanation could be a wise investment. In contrast, anonymous and temporary physician staff, who only stay for a short while, are considered not trustworthy. Unnecessary antibiotic prescribing creates future demands. The patient becomes “mislearned”, i.e. learning the wrong behaviour and expectations. Mutual trust is necessary for the patient to understand when he/she is advised to “wait and see” and for the GP to advocate a delayed prescription.

The participants said that to fit the individual, the care provided must be characterized by flexibility. Rigid adherence to guidelines was not regarded as a correct interpretation of evidence-based medicine, as a GP always has to take into account the patient in front of him/her. Professional performance is about being able to judge what is best for the patient.

Setting of the encounter. The organization of the work may facilitate or complicate the rational use of antibiotics for RTIs.

A facilitating factor that was mentioned is the overall consensus at the primary health care centre (PHC) about how to treat patients with RTIs. Overall consensus and a common professional culture are achieved through local professional discussions and exchange of experience. Teamwork with primary nurse assessment and return visits for follow-up are also considered facilitating.

The availability of ordinary GPs is a facilitating factor as well. A primary care practice with ordinary GPs promotes continuity of care. Many Swedish physicians today are hired for a shorter period of time without a list of patients of their own and they are, according to our participants, the ones who usually meet the RTI patients, a kind of fragmentation of the workload. According to the participants, they seem to have a tendency to prescribe more antibiotics for RTIs than the ordinary GP.

GPs who reported that they normally follow the guidelines admitted that they prescribe more antibiotics when on call or at the emergency centre. This is due to lack of time and possibility to follow up but also to the absence of personal knowledge of the patient: “I’m Dr Jekyll and Mr Hyde.”

Discussion

Summary of main results

The decision to prescribe antibiotics or not takes place in the encounter between the GP and the patient. This is initially characterised by harmony or fight and the ensuing process by collaboration or negotiation, resulting in agreement, compromise, or disagreement. Several factors influence the meeting and contribute to enhancing the conditions for
rational prescribing. These conditions are connected
to the GP, the relationship with the patient, and the
setting; the latter comprises the organization as well
as the professional culture. The findings indicate that
there are synergies between the factors.

Strengths and limitations
This study is part of a multi-method approach to
deepen the understanding of circumstances favour-
able to rational antibiotic prescribing. Focus groups
were chosen for data collection. We planned for and
conducted two groups and were prepared for a third
if the data achieved proved to be insufficient. This
method has the advantage of producing ample data
in a limited time, and the group process between the
participants stimulates the sharing of experiences.
The participants were strategically chosen among
those who participated in both registrations in the
Happy Audit project, indicating that they were
actively and practically engaged in rational prescrib-
ing and thus could be expected to prescribe antibiot-
ics more prudently. We recruited participants to get
as broad a representation as possible from the Happy
Audit material, which means that the invited par-
ticipants represented both urban and rural areas as
well as low-prescribing and high-prescribing districts/
areas. According to the literature there is no magic
number concerning sample size in focus-group inter-
views. A common recommendation is two to five
groups [22]. Sample size is not, according to Crab-
tree and Miller [21], “the determinant of research
significance in a qualitative study; the major concern
is with information richness”.

The GPs had voluntarily participated in the
Happy Audit project including the intervention. It is
therefore likely that they have more knowledge and
are more reflective concerning antibiotics than the
average practitioner. In spite of this, they share
numerous examples of acting contrary to the guide-
lines. Thus, we believe that these experiences are
transferable at least in a Swedish context.

The data reflect the views and experiences of the
participating GPs. The expectations and experiences
of the patients are illustrated only indirectly. The find-
ings cannot be generalized, but this is never the inten-
tion in qualitative studies, the main aim of which is to
contribute to increased understanding. It is nevertheless
reasonable to assume that our findings can be
transferred to similar contexts in general practice.

Comparison with existing literature
The findings of this study indicate that beliefs con-
cerning the demands and expectations of patients
influence the prescribing pattern. This is corrobo-
rated by similar results in previous studies [5,23].

One result was the importance of the knowledge
level of the GP, also corroborated in a previous study
[24]. The findings indicate that continuity is favour-
able for the relationship between GP and patient, but
it is obvious from another study [25] that when
patients do not get well, continuity is not sufficient.

The participants in this study revealed experi-
ences concerning the consequences of the organiza-
tion for prescribing of antibiotics. The organization
of primary care may be important in at least two
ways. It can facilitate a good relationship between the
GP and the patient by promoting continuity. A stable
relationship based on continuity increases the chances
of a smooth encounter. Thus, inappropriate organiza-
tion may indirectly contribute to increased antibi-
otic resistance.

Second, stable staff at a PHC is a prerequisite for
the formation of a professional culture with a local
common policy. This can be labelled continuity on
the aggregated level. The findings of this study indi-
cate that a common policy in a primary care centre
is a success factor in the task of improving prescrib-
habits. Corresponding results have been found in
previous research as well as in a focus-group study
on similar topics among Happy Audit participants in
Lithuania and the Kaliningrad region [26,27].

A professional culture with a common policy may
not simply be regarded as a result of adherence to
guidelines, but also as an autonomous attitude: a
genuine desire to do things right and make a differ-
ence [28].

An alternative path to achieving a common policy
might be to have professional meeting places outside
the PHC, for instance continuing medical education
(CME) groups. We believe that this also may improve
the autonomous attitudes of GPs. A common profes-
sional policy combined with skill and knowledge of
guidelines entails synergies between the bottom-up
and top-down approaches. If this process includes
both GPs and nurses, a feasible way to optimal anti-
biotic prescribing for RTIs is created.

In several countries pay for performance is used
as a tool to improve quality in practice, for instance
regarding antibiotic prescribing. The results are
ambiguous, and there is widespread debate about
whether financial incentives are effective for this pur-
pose [29,30].

In future research we intend to deepen the under-
standing of a professional culture and continuity. We
also plan to study the effects of the freedom-of-choice
reforms in Sweden and the increase in drop-in clin-
ics in the PHCs.

Our findings emphasize the importance of the
encounter between the GP and the patient for
decisions concerning antibiotic prescribing. A stable relationship between the two and the GP’s knowledge of guidelines contribute to prudent prescribing. Furthermore, the importance of appropriate organization of primary care, which promotes continuity of care and encourages professional autonomy, is demonstrated.

Authors’ contributions
ELS and AB were equally involved in study design, conducted and analysed the focus groups and interviews, wrote the paper, and will serve as guarantors for the integrity of the data. CH and KH did the literature search. MT contributed to editing the manuscript. All authors have read and approved the final manuscript.

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Declaration of interest
The authors report no conflict of interest. The authors alone are responsible for the content and writing of the paper.

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