

Original Article

Why do GPs continue inappropriate hospital prescriptions of proton pump inhibitors? A qualitative study

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KEY MESSAGE:

- General practitioners (GPs) who often continue hospital prescriptions of PPIs were more convinced of the competence of hospital physicians than discontinuing GPs.
- Knowledge on appropriate prescription indications was higher among discontinuing GPs.
- Discontinuing GPs were more aware of a low threshold towards prescribing in hospitals.

ABSTRACT

Background: Inappropriate prescriptions of Proton pump inhibitors (PPIs) initiated in hospitals are frequently continued in primary care. No research has explored why general practitioners (GPs) continue or discontinue inappropriate drug therapy.

Objectives: This study aims to describe factors and motives associated with the continuation of inappropriate prescriptions of PPIs in primary care.

Methods: Semi-structured qualitative interviews on basis of a purposive sampling of five GPs who often continued inappropriate prescriptions and five GPs who frequently discontinued inappropriate drug therapy with PPIs (10 GPs total, of which four were female and six male).

Results: Although all GPs enrolled in the study were enthusiastic about the effectiveness of PPIs, differences between the continuing and discontinuing GPs exists in three areas: The two groups varied (1) in awareness of indications and general attitudes towards prescribing (2) in perception of the hospital physicians' competence in prescribing and (3) appreciation of general prescribing conditions in hospitals.

Conclusion: Differences between the continuing and discontinuing GPs were found in their level of knowledge and their perceptions of the hospital physicians' competence and the threshold to prescribing in hospitals. Financial pressure and possible adverse effects demand a more balanced and evidence-based prescribing of PPIs. Attempts to change behaviour should focus on the GPs' awareness of indications for PPIs, NSAID risks, and prescribing approaches in hospitals. Default prescribing in hospital demands critical examination.

Keywords: general practice, qualitative design and methods, quality of care

INTRODUCTION

Proton pump inhibitors (PPIs) are effective suppressors of gastric acid and indicated in several upper gastrointestinal disorders. They are shown to be effective in the treatment of gastro-oesophageal reflux disease (GERD), peptic ulcers, and dyspepsia (1–5). In combination with antibacterials, they are used for the eradication of *Helicobacter pylori* (6). PPIs are also prescribed as a concomitant medication to prevent non-steroidal anti-inflammatory drug (NSAID) associated ulcers in high-risk patients (7).

In the last decade, the use of PPIs has escalated from 455 to 2.272 million defined daily doses (DDD) in Germany (+ 499%). Other European countries have experienced a similar development (8). This rise of PPI usage is far beyond a change in morbidity (9,10). PPIs are frequently prescribed without a clear indication and for a longer period than recommended (10–12). Evidence exists that the prophylactic treatment of potential stress ulceration in low-risk hospital inpatients is one significant source of overprescribing (13,14). Between 40 and 70% of all hospital prescriptions of PPIs are not in

accordance with guidelines (11,15,16). Inappropriate hospital-initiated drug treatments with PPIs are often continued in primary care (17,18). The long-term use of PPIs is associated with a higher risk of community acquired pneumonia (19), hip fractures (20) and pseudomembranous colitis (21).

The enormous increase of PPI usage in Germany has resulted in an annual spend of €927 million (i.e. \$1.2 billion) in 2010 (9). As a result of a peculiarity in the German health system, this financial cost is a burden more for the health insurers and office-based physicians than hospitals. In Germany, primary and secondary care is essentially separated, and this is also true for the budget for drugs. While hospitals are allowed to negotiate drug prices directly with the manufacturers, the costs of drugs prescribed by primary care practices are fixed, and expenses for drug therapy are covered by statutory health insurance. Given this variation in drug pricing, the pharmaceutical companies usually attempt to distribute their products by offering high discounts to hospitals, while anticipating a knock-on uptake effect in primary care where the drug prices are higher. One consequence of this strategy is that hospital doctors, compared to office-based physicians, are under less pressure to consider the costs of common drugs prescribed and they do not bear financial responsibility for the costs of these drugs when continued in primary care (22).

Despite the well-established evidence of inappropriate prescribing of PPIs in hospitals and primary care, little information exists on the reasons why some GPs continue these prescriptions after discharge from hospital. The aim of this qualitative study is to explore factors that explain the continuation of non-indicated hospital initiated drug therapy with PPIs in primary care.

METHODS

Context and setting

This study is part of a larger research project examining the continuation of prescriptions of PPIs at the interface between primary and secondary care. Details of this project have been reported elsewhere (23,24).

Design of the current study

Given the lack of information on GPs' views on the continuation of PPI prescriptions after hospital discharge, we opted for a qualitative study design, which allowed us to study the GPs' attitudes in detail. A semi-structured interview guide was developed from the literature to provide a flexible framework to accommodate pre-defined as well as newly emerging topics. The main themes of the interview guide were: general attitude toward PPIs; experiences with discharge letters from hospital; views on hospital prescribing; and knowledge of adverse effects and risks associated with PPIs.

GP sampling

The sampling of this research is based on a preceding cross-sectional observational study in which we rated the appropriateness of prescriptions of PPI in hospital discharge letters and the continuation in primary care. We describe the rating procedure to facilitate an understanding of our sampling strategy, which is described in detail elsewhere (24). Hospital discharge letters received of 506 patients from a health insurance company (AOK, Allgemeine Ortskrankenkasse) together with patient documentation from GPs' offices represented the data sources for the GP recruitment. Two of the authors (GB and DA) rated the PPI-recommendation in hospital discharge letters. The rating and, therefore, the definition of whether a prescription was appropriate or inappropriate was based on current guidelines, the official product information and a profound literature review. This resulted in a list of applicable criteria (Table 1). On the basis of these criteria, two of the authors (GB and DA) reviewed whether or not an inappropriate medication was continued by GPs within six months after hospital discharge. We calculated the proportion of inappropriately continued prescriptions for each GP.

For the current study, we divided our sample into three subgroups:

- Continuing GPs: those who continue inappropriate prescriptions of PPI in 50% or more of all discharged patients (8 of 31 GPs, 26%);

Table 1. Rating of indications for proton pump inhibitors. For details and further literature see (23).

Indications rated as appropriate
Gastro-oesophageal reflux disease
Treatment of peptic ulcer and prophylaxis of recurrence
Eradication of <i>Helicobacter pylori</i>
Pathologic hypersecretory conditions (e.g. Zollinger–Ellison Syndrome)
Histological proven diagnosis of gastritis
Prevention of medication induced ulcers:
• NSAID at patients >65 years
• NSAID and corticosteroid
• NSAID and warfarin/Coumadin
• NSAID and patient history of ulcer/GI bleeding
• Aspirin and corticosteroid
• Aspirin and warfarin/Coumadin
• Aspirin and NSAID
Indications rated as uncertain
Dyspepsia
Barrett—oesophagus
Oesophageal varices
Ulcer prophylaxis with clopidogrel and low-dose aspirin
Patient underwent upper gastrointestinal endoscopy and biopsy, result outstanding at discharge
History of gastritis, no endoscopy, no further information
Anaemia, no endoscopy

NSAID, non-steroidal anti-inflammatory drug.

- Ambivalent GPs: those who continued drug therapy in 26% to 49% of discharged patients (14 of 31 GPs, 45%); and
- Discontinuing GPs: those who continued drug therapy in only 25% or less of discharged patients (9 of 31 GPs, 29%).

Subsequently, we interviewed two groups: continuing and discontinuing GPs, five GPs in each group, so that we ended up with a total of 10 interview partners. The aim of this strategy was to ensure maximal representation of the different patterns of therapy continuation. Selected GPs were invited to participate by a letter containing information of the study and subsequent telephone calls to arrange the interviews.

Data analysis

The 'framework' approach was used for analysis (25). One author (MW) coded the interviews and then charted the data according to the emerging thematic framework. The framework consisted of predefined themes derived from our research questions and issues raised by the GPs during the interviews. In order not to confound the qualitative analysis with any preconceptions, the researcher was blinded as to which category (continuing or discontinuing) the interview partners belonged. Objective prescribing data were disclosed when the analysis was finished. The coding process was accompanied by repeated discussions within the research team.

Ethical approval and data protection

This study was approved by the Ethics Committee of the medical school of the University of Göttingen (no. 21/9/07). All doctors who participated in the main study were informed about the aims of the study and the tasks they had to perform. All participants gave signed consent. The subsample of doctors for the present study was additionally informed about the procedure of the interview. All interview transcripts were anonymized, including the names of hospitals, doctors and other persons.

RESULTS

The samples consisted of four female and six male GPs. The interviews were carried out by one of the authors (GB) between July and August 2009 in the GPs' practices and lasted 32 min on average (range: 17–54 min). The interviews were videotaped and transcribed verbatim. All participants gave written consent.

All interview partners showed a consistency in their general evaluation of the effectiveness of PPIs. They used PPIs for a range of upper gastro-intestinal disorders,

especially GERD. Both continuing and discontinuing GPs appreciated the broad scope of PPIs and came to an all-around positive evaluation:

[It] does not really matter what you have, whether you have an irritable stomach, a gastric mucosal inflammation, duodenal or gastric ulcer, these days it is great, everything is treated similarly, [...] but PPIs are a blessing. [...] very reliable, very dependable (Discontinuing GP, ID 8, male).

While their attitudes towards PPIs were positive throughout, differences between continuing and discontinuing GPs emerged in three areas: (1) General attitudes toward prescribing and indication-awareness, (2) perception of the hospital physicians' competence, (3) the GPs' awareness of different financial conditions in hospitals.

(1) Awareness of indications and general attitudes towards prescribing

The first area of difference between continuing and discontinuing GPs is with respect to their knowledge of the licensed indications for PPI usage. It appeared that discontinuing GPs were more aware of prescription guidelines, which specify the necessity of PPI usage. This was most obvious when PPIs were a co-medication. All GPs evaluated PPIs as highly effective in the prevention of NSAID induced ulcers. However, while discontinuing GPs would maintain hospital-recommended PPIs for high-risk patients taking NSAID mainly, continuing doctors seemed to use PPIs almost every time a NSAID is prescribed and not, as we stated above, only in patients at risk.

I: When do you prescribe PPI to protect the stomach?

GP: With NSAID, I give PPI to protect the stomach (Continuing GP, ID 10, female).

This GP reported using PPIs on every occasion when a NSAID is given. She justified the prescription of PPIs as a general concomitant medication of the potential harm that might arise during NSAID treatment. Another continuing GP reported prescribing a PPI not only in combination with NSAID but also together with Paracetamol.

When I see that the patient is receiving ibuprofen, then I say to myself: yes, ok. And if he has Pantozol 40s, then I say to myself: yes, ok. [...] For paracetamol or a non-steroidal anti-inflammatory drug I already actually give a PPI. I have always respect - wouldn't want to burn a hole in anyone's stomach (Continuing GP, ID 33, male).

Not only the indication of PPIs as a co-medication, but also the general attitude towards prescribing

turned out to be relevant for the prescribing behaviour. Continuing GPs felt confident to prescribe PPIs for a variety of reasons, while many of the discontinuing GPs appeared to be more concerned about the general use of drugs. Personal experience might have influenced the perception on the therapeutic value of PPIs as a GP justified his opinion to prior experiences:

I: Why would you say, PPIs are a good medication?

GP: Because it helped me a good deal, when I was suffering myself. I know, my opinion is affected by subjective experiences. Together with antibiotics, PPIs cured a condition from which I was suffering 20 years (Continuing GP, ID 33, male).

Some discontinuing GPs also emphasized the role of the pharmaceutical industry in stimulating unnecessary drug consumption.

I always tell myself the Lord God created us without medication and his idea about that wasn't necessarily the pharmaceutical industry (Discontinuing GP, ID 11, male).

According to a minority of GPs, patients sometimes asked for PPIs without a medical indication. When this happened, one GP mentioned that she refused such a request on principle.

Some patients say you prescribed me a pill at some point and that they would like to have it again now, because the grilling season is starting again, and, so, if I then eat grilled meat and down a few shots [of spirit], then somehow it's better with the pill. They then get a lesson about diet and, uh, I just brush them off (Discontinuing GP, ID 9, female).

Discontinuing GPs emphasized the need for a definitive diagnosis. These GPs seemed to be more aware of the evidence-based indications and also more readily appreciated economic considerations.

I: You just mentioned economic considerations.

GP: Well, it will of course quickly be an expensive therapy, when I give the analgesic plus a PPI. But that happens only, when it's necessary. I need to have an appropriate indication (Discontinuing GP, ID 13, male).

(2) GPs' perception of the hospital physicians' competence in prescribing

Continuing and discontinuing GPs varied in their evaluation of the quality of prescriptions from hospitals. Most of the discontinuing GPs complained about 'PPI medication by default' that was not justified by concrete indications.

It's my opinion that the standard of care is devoid of any scientific basis (Discontinuing GP, ID 8, male).

A critical attitude towards hospital medication was in some cases associated with a feeling of self-confidence, autonomy and trust in the GPs' own decision making. For the discontinuing GPs, it was not a major issue to stop the medication, as it was unlikely there would be any significant consequences. A PPI could easily be resumed if a patient developed problems,

It's not as if the life of the patient is suddenly at risk because I take away a pill, yes. [...] in the worst case heartburn may re-occur or there is upper abdominal discomfort, but that will not immediately cause a bleeding ulcer (Discontinuing GP, ID 9, female).

In contrast, most of the continuing GPs saw no difference between their own and the clinicians' prescribing patterns. They valued the competence and experience of hospital physicians who initiated the treatment with PPIs. Sometimes a lack of knowledge of the current evidence-based recommendations seemed to enhance this positive view of hospital recommendations.

Well the PPI is recommended similarly, because we know that with NSAIDs, that PPIs are given, which is also our opinion [...], there are practically the same circumstances (Continuing GP, ID 10, female).

Confidence in the hospitals doctors' prescriptions seemed to be not a matter of professional experience or the GP's age since we found this opinion also in interviews with well experienced GPs in our sample. In other cases, a hospital colleague's competence was not doubted because some GPs suspected that a discontinuation would evoke the patients' distrust towards hospitals.

The [hospital doctors] have also thought about it, and that is also the belief of the patient (Continuing GP, ID 21, female).

This GP reported how she prepared the continuing medication in advance—a strategy that might be a consequence of her trust in hospital directed medication.

If we know that this is the discharge day then we call ahead so they can let us know the medication so it can be prepared already. [...] And then we just call and prepare it so that when the patient comes, he can get his prescription and we have been able to prepare it in peace (Continuing GP, ID 21, female).

The quote above is remarkable insofar as one could have assumed that well experienced GP rather value

their own competence higher than those of hospital physicians who are younger on average. The expression 'in peace' also allows for the interpretation that this GP favours a smooth discharge transition without logistic effort. This may also influence some GPs' tendency to continue inappropriate hospital prescriptions.

(3) The GPs' awareness of general conditions in hospitals

Discontinuing GPs appeared to be more aware of the factors that influence prescribing in hospitals. According to some interview partners, the costs of medication in hospitals were lower so that the economic barrier to prescribing such drugs is low. This was particularly the case for expensive branded drugs. Based on this 'informed' perspective, some GPs' motivation to quit an inappropriate prescription was high.

I have the impression that PPIs are carted free in crates to clinics, and they must empty these crates (Discontinuing GP, ID 14, male).

Different prescribing policies in primary and secondary care are not necessarily due to a cheap drug supply in hospitals. They can also be traced back to different compensation systems in primary and secondary care. According to discontinuing GPs, prescribing budgets are rigorous in primary care, whereas the hospital is less exposed to these pressures. One discontinuing GP explained this difference with regard to her husband who works in a municipal hospital.

With every single prescription I immediately have the cost before my eyes and I think, must that be how it's prescribed now [...]. I am married to a surgeon who works in the hospital, [...] and he says we do not have this cost consideration (Discontinuing GP, ID 9, female).

DISCUSSION

Main findings

All GPs were enthusiastic about the effectiveness of PPIs, but we recorded several differences between continuing and discontinuing GPs. These differences included the GPs' awareness of indications for PPI usage, general attitudes towards prescribing, and the perception of hospital physicians' competence. GPs that were aware of both the reduced financial pressures and readiness to prescribe in hospitals due to different conditions there were also more eager to quit inappropriate medication after discharge. In contrast, the continuation of PPI prescriptions from the hospital was often driven by the risk that patients would develop stress ulcer syndrome with NSAID treatment.

Strengths and limitations

Although qualitative investigations cannot ensure that results are representative, our sampling strategy based on a prior review of the appropriateness of continued prescriptions, enabled maximal variation and allowed us to compare directly the attitudes of continuing and discontinuing GPs. Despite this advantage, there are some limitations of our strategy to be considered. First, the study is limited by the small sample size of only 10 GPs. Therefore, our results provide only a first explorative view that needs validation on an extensive database. Second, our decision to contrast two rather extreme groups, i.e. the GPs who more or less always continued inappropriate hospital-initiated prescription versus those who mostly did not, may have been justified by the aims of this study but neglects the ambivalent GPs and limits our understanding of the more subtle aspects of prescribing behaviour. Third, the sampling is based on data from only one health insurance Company. We did not determine, whether the composition of those patients insured by this company was representative for the total population. Finally, although it seems logical that the three themes identified in this study may be the key issues to understand why some GPs tend to continue, others to discontinue inappropriate prescriptions, other variables such as sex, age, and work experience (within the hospital and outpatient care) may also influence the decision to continue drug therapy from hospital. In our quantitative analysis, a PPI medication prior to admission was also associated with the continuation of non-indicated PPI prescriptions (24). This factor was not investigated in this qualitative study.

Comparison with existing literature

To our knowledge, this is the first qualitative study exploring GPs' attitudes and reasons to continue or discontinue inappropriate hospital-induced PPI prescriptions. In so far as general attitudes towards PPIs are concerned, the results are largely in line with other studies on GPs' perceptions on this subject. Grime et al., found out that GPs rate the efficacy of PPIs more highly than their patients (26,27). Most of the interview partners believed PPIs to be almost free of side effects and some even pictured them as a 'wonder weapon' against a variety of gastrointestinal complaints. This throughout positive opinion that PPIs are safe and almost free of adverse effects might be one crucial factor for the enormous increase of PPIs in Europe (8).

However, continuing and discontinuing GPs had different options on PPI if it was a co-medication. According to evidence-based indications, peptic ulcer prophylaxis is necessary only in high-risk patients (28). All continuing GPs in our sample were not aware of this restriction in PPI use and reported prescribing PPIs on

almost every occasion a NSAID is given or even in combination with completely innocuous drugs such as Paracetamol. This may reflect a lack of knowledge or exaggerated cautiousness.

Investigating prescribing in general, Jaye and Tilyard compared different prescribing profiles and concluded that high-cost prescribers frequently showed an activist approach and have a positive attitude towards medical intervention (29). This view was also held by continuing GPs from our study who sought to avoid potential gastrointestinal conditions. The dramatic picture of analgesics burning a 'hole in the stomach' provided by one GP not only represents this fear, but also reflects the dubious pathophysiological beliefs that underlie co-medication. However, since peptic ulcer prophylaxis in hospitals is often unlicensed, discharge letters might back or even reinforce this irrational prescribing behaviour (15).

Hospital physicians may have a more liberal attitude towards prescribing than their colleagues in primary care. Doctors interviewed by a British research team reported the impact of hierarchies and prescribing etiquettes on their prescribing behaviour that sometimes deviates from evidence-based medicine (30,31). Some GPs in our sample were aware that several hospital prescriptions reflected the financial and situational circumstances and did not apply after discharge.

GPs are requested to prescribe in a cost-effective and rational way. Awareness on licensed indications should be the target of further interventions. In a British study, standardized guidelines have been shown to be effective in reducing irrational use of PPIs in hospital and outpatient services (32) and should be further disseminated in primary care practices. GPs should also spend sufficient time to examine discharge letters from hospital, especially when a diagnosis that requires a prescription is lacking.

Conclusion

Differences between continuing and discontinuing GPs were found regarding their awareness of indications, general attitudes towards prescribing, and their perception of the hospital physicians' competence in prescribing. Moreover, some GPs were aware that during the hospital stay, other general conditions may lower the threshold for prescription of acid-suppressing therapy. Attempts to change behaviour should focus on the GPs' awareness of indications for PPIs, NSAID risks, and prescribing approaches in hospitals. Additionally, default prescribing in hospital demands critical examination.

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