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Authors

Tarn, Derjung M
Wenger, Ariela
Good, Jeffrey S
et al.

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ORIGINAL RESEARCH ARTICLE

Do physicians communicate the adverse effects of medications that older patients want to hear?

Derjung M. Tarn · Ariela Wenger · Jeffrey S. Good · Marc Hoffing · Joseph E. Scherger · Neil S. Wenger

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Abstract

Background and objectives Physicians routinely discuss the adverse effects of medications but whether these discussions match older patients' desire for information is an area that has not been explored. This study compares patient preferences for adverse effect discussions with reported physician practice.

Methods A cross-sectional survey of a convenience sample of 100 practicing primary care physicians from nine medical groups, and 178 patients recruited from 11 senior centers in the Los Angeles metropolitan area. Physicians listed the adverse effects they typically discuss when prescribing an ACE inhibitor. Patients were given a hypothetical scenario about a new medication prescription and, from a list of adverse effects, they were then asked to circle the three they most wanted to hear about.

Results More than 90 % of patients wanted a physician to discuss medication adverse effects; they wanted information about both dangerous (75 % of patients) and common (66 % of patients) adverse effects. However, patients most commonly chose to hear about adverse effects occurring for <1 % of patients, and selected a wide range of adverse effects for discussion. Physicians most frequently reported educating patients about adverse effects which were more common and life-threatening. Patients wishing to discuss additional adverse effects were more worried about adverse effects than those wishing to hear fewer (4.0 vs. 3.4 on a 5-point Likert scale; $p = 0.02$).

Conclusions For the studied medication, there was little concordance between the medication adverse effects physicians say they discuss and what patients want to hear. Physicians cannot practically verbally satisfy patients' information desires about the adverse effects of new medications during time-compressed office visits. Innovative solutions are needed.

D. M. Tarn (✉) · A. Wenger
Department of Family Medicine, David Geffen School of Medicine at UCLA, University of California–Los Angeles, 10880 Wilshire Blvd, Suite 1800, Los Angeles, CA 90024, USA
e-mail: dtarn@mednet.ucla.edu

J. S. Good
Department of Communication and Rhetorical Studies, Syracuse University, Syracuse, NY, USA

M. Hoffing
Desert Medical Group, Palm Springs, CA, USA

J. E. Scherger
Eisenhower Medical Center, Eisenhower Argyros Health Center, La Quinta, CA, USA

N. S. Wenger
Division of General Internal Medicine and Health Services Research, David Geffen School of Medicine, University of California–Los Angeles, Los Angeles, CA, USA

Introduction

In the USA, almost half of all patients and 90 % of older adults are taking at least one prescription medication [1]. Prescription medication use is associated with over 200,000 serious adverse drug events annually [2]. Because of their potential for harm and because adverse effects interfere with the initiation of and adherence to medications, experts recommend that physicians prescribing a new medication communicate with patients about adverse

effects, and that patients ask providers about potential medication adverse effects [3–5].

Patients have access to many sources of information regarding adverse effects, such as pharmacy handouts, package inserts and the Internet. In addition, pharmacists are mandated to provide adverse effect information if patients do not decline the information [6]. However, patients predominantly want their physician to educate them about medication adverse effects [7, 8]. One study showed that 76 % of patients wanted their physician to discuss all possible adverse effects of their medication [9]. Conversations about adverse effects are important; patients who discussed adverse effects with their physicians are less likely to prematurely discontinue their medications than those who did not discuss adverse effects [10]. Unfortunately, physicians prescribing new medications infrequently talk to their patients about adverse effects [11].

Guidelines specify the content of adverse effect education for medications associated with common adverse events, such as warfarin, NSAIDs and aspirin [3, 12]. In addition, according to the US FDA, prescribing information must include a Patient Counseling Information section for healthcare providers to use when counseling patients. However, the information in the FDA prescribing information is voluminous and incompatible with office discussion. Physicians have little guidance about which adverse medication reactions to discuss with patients and it is unknown which potential adverse effects are commonly discussed by physicians. The preferences of older patients with regard to hearing about specific adverse effects are also unknown.

An understanding of the adverse effect information that physicians and older patients think should be imparted for common medications is necessary to guide physician counseling regarding medication adverse effects. We queried older patients and physicians about the adverse effects of an ACE inhibitor with the aim of:

- comparing patient preferences for medication adverse effect discussions with physician practice;
- assessing patient attitudes about trade-offs between adverse effect discussions and discussions about other medical symptoms.

Methods

Study design

A research assistant recruited a convenience sample of 178 subjects (patient participants) from 11 senior centers in the Los Angeles metropolitan area. Senior centers were selected to capture socioeconomically diverse subjects, and represented heterogeneous populations. We also recruited a convenience sample of 100 primary care physicians from nine medical groups in the Los Angeles metropolitan area. At each medical group, a central contact person passed out surveys during physician meetings. All subjects completed a self-administered English-language survey, for which they received a $US15 gift card. Subjects were recruited between June 2011 and April 2012, and the sample size was determined based on available funds for subject reimbursement. The research protocol was approved by the UCLA Institutional Review Board (#11-001568).

Measures

Patient participants answered questions about a hypothetical scenario, in which they were asked to imagine that they had a routine follow-up visit with a physician to assess their high blood pressure and diabetes mellitus. During the hypothetical visit, the physician decided to prescribe a new medication called ‘Boncordin’ (the name of an ACE inhibitor that is used only outside of the US). The medication name was selected so that patients would not recognize it as an ACE inhibitor, and would not have preconceived biases about the medication. Patients were asked with whom they wanted to discuss the adverse effects of Boncordin (doctor, pharmacist, other, no-one) and what type of adverse effect information they wanted to receive (common adverse effects, dangerous adverse effects, other [write in], do not know). They were also queried with regard to the following: “How important is it for your doctor to talk to you about Boncordin’s side effects?”, and “How worried are you about Boncordin’s potential side effects?” (5-point Likert scale responses).

To assess patient preferences for discussions about specific adverse effects, we asked patients to review a table that listed some of the potential adverse effects of Boncordin. The table consisted of three columns containing ‘more common’, ‘less common’, and ‘life-threatening’ adverse effects. It indicated that the less common and life-threatening adverse effects occurred <1 % of the time and gave specific percentages of occurrence for the more common adverse effects (see Appendix). Patients who wanted their doctor to talk about any of the adverse effects were asked to circle up to three adverse effects, and to number their selections in order of importance. After patients reviewed the table, they were asked about their likelihood of experiencing adverse effects from Boncordin (5-point Likert scale responses and a ‘don’t know’ response option).

Patients were also asked to consider trade-offs between adverse effect discussions and discussions about other issues of importance to them. To do this, they were asked

to imagine that, during their hypothetical office visit, they wanted to ask their doctor about some knee pain and a 3-week history of a cough. Those who wanted to hear about Boncordin's adverse effects were asked if they preferred to completely discuss their knee pain and cough, or to discuss the adverse effects they circled and have a less complete discussion about their symptoms. They also were given the option of discussing more adverse effects than the ones they circled at the expense of not discussing their knee pain or cough at all. Patient participants were also asked about their age, sex, race/ethnicity, and education. Their health literacy was assessed by asking "How confident are you filling out medical forms?" [13, 14].

Physician participants were asked to write in the adverse effects/adverse reactions (if any) that they routinely discussed with patients when prescribing an ACE inhibitor. They were not given a list of adverse effects to reference, and were not limited in the number of adverse effects they listed. Physicians were also queried about their demographics and training.

Analysis

Stata 9.2 statistical software (StataCorp LP, College Station, TX, USA) was used for all analyses. We calculated descriptive statistics to describe patient and physician characteristics, and patient opinions about adverse effect discussions.

We examined the specific adverse effects of Boncordin that patients wanted their hypothetical physician to discuss. We grouped patient adverse effect selections by more common, less common and life-threatening adverse effects, and determined the frequency with which each adverse effect was prioritized either first, second or third. Patterns of physician responses regarding the ACE inhibitor adverse effects they routinely discussed were collated and tabulated.

Patient and physician responses regarding adverse effects were compared graphically. All adverse effects that were raised by >5 % of patients or physicians were selected for comparison, as were any adverse effects raised by both groups. Similar adverse effects were grouped for comparison purposes. For example, patients were able to select from 'worsening kidney function' and 'kidney failure', but physicians did not differentiate between the two. We, therefore, grouped the patient responses in our comparison.

We also assessed the mean amount of patient worry about adverse effects associated with preferences for discussing the adverse effects of Boncordin versus discussing medical complaints. In a separate analysis, the relationship between worry about potential adverse effects (categorized into 'not at all/a little' vs. 'somewhat' vs. 'very/extremely') and patient selection of more common, less common and life-threatening adverse effects was examined. *T* tests were used to examine the relationship between patient characteristics and worry and the perceived likelihood of experiencing adverse effects.

Results

Patient and physician characteristics

Patients had a mean age of 72.4 years (range 35–94; four patients were younger than 50 years of age), were mostly female (74 %) and were ethnically diverse (Table 1). Two-thirds had at least some college education, but one-third had inadequate health literacy. Physicians had a mean age of 52 years, were mostly male (63 %), and had practiced medicine for a mean of 24 years (Table 1).

Patient opinions about adverse effect discussions

More than 90 % of patients indicated that they wanted a physician to discuss the adverse effects of Boncordin, the medication presented in the scenario. Almost half wanted to hear about adverse effects from both the physician and the pharmacist, while 5 % felt it was sufficient to obtain adverse effect information solely from the pharmacist. When asked about the types of adverse effects that the doctor should talk about, almost half of the patients (49 %) wanted to hear about both common and dangerous adverse effects. One-quarter of the patients (26 %) felt that the doctor should only talk about dangerous adverse effects, while 17 % chose to only hear about common adverse effects. Thus, 75 % of patients indicated that physicians should convey dangerous adverse effects, and 66 % felt that common adverse effects were important (Table 2).

Patient preferences for discussions about specific adverse effects

Patients wanted the physician to discuss a wide range of adverse effects (Fig. 1). Of the 28 adverse effects listed on the survey, 25 were selected by at least six patients. Three adverse effects (flushing, joint pains/arthritis, and abnormal blood test: sodium) were not selected by any patients. Only four adverse effects were selected by >20 % of patients; these included less common adverse effects such as kidney failure (37 % of patients) and chest pain (31 %), and life-threatening adverse effects such as shortness of breath (26 %) and life-threatening rash (21 %). Of the more common adverse effects from which patients made their selections, dizziness was the most frequently chosen option (17 %).

Table 1 Patient and physician characteristics

Characteristic	No. responding	Results
Patients		
Patient age [years; mean (SD)]	176	72.4 (10.5)
Female patients [*n* (%)]	178	132 (74.2)
Patient race/ethnicity [*n* (%)]	178	
White		87 (48.9)
Hispanic		19 (10.7)
African American		44 (24.7)
Asian		20 (11.2)
Other		8 (4.5)
Education [*n* (%)]	178	
High school or less		59 (33.2)
Some college		65 (36.5)
College graduate or more		54 (30.3)
Inadequate health literacy [*n* (%)]	177	59 (33.3)
Physicians		
Physician age [years; mean (SD)]	97	51.6 (12.6)
Ratio male/female physicians [*n* (%)]	100	63/37
Physician specialty [*n* (%)]	100	
Internal medicine		32 (32.0)
Family medicine[a]		68 (68.0)
Practice setting [*n* (%)]	100	
Solo practice/small group		41 (41.0)
Large practice group		39 (39.0)
Academic practice		20 (20.0)
No. of years in practice [mean (SD)]	99	23.7 (13.0)
Percentage of duties spent on patient care activities [mean (SD)]	99	86.9 (19.7)

SD standard deviation

[a] Includes three general practice and two internal medicine–pediatrics providers

Table 2 Patient opinions about the discussion of adverse effects

Questions about discussing AEs	No. of patients responding	Response
Who should discuss Boncordin's AEs?	178	**No. of pts (%)**
Both physician and pharmacist		84 (46.1)
Physician only		80 (44.9)
Pharmacist only		9 (5.1)
No-one		4 (2.2)
Other		1 (0.6)
Types of AEs doctor should discuss	178	**No. of pts (%)**
Common and dangerous		87 (48.9)
Dangerous only		46 (25.8)
Common only		30 (16.9)
All		7 (3.9)
Other/do not know		7 (3.9)
No information needed		1 (0.6)
Other questions		**Mean score[a] (SD)**
Importance of physician discussing AEs	178	4.71 (0.8)
Worry about potential AEs from Boncordin	168[b]	3.68 (1.2)
Likelihood of experiencing AEs from Boncordin	144[c]	3.21 (1.3)

AEs adverse effects, *SD* standard deviation

[a] Importance of physician discussing AEs, likelihood of experiencing AEs and worry about potential AEs range from 1–5, with greater scores indicating greater importance/likelihood/worry

[b] Ten patients marked 'do not know'

[c] Thirty-three patients marked 'unsure'

Physician reports of typically discussed adverse effects

The number of adverse effects that physicians said they typically impart to patients ranged from 0–7 (mean 2.6; standard deviation [SD] 1.2). Physicians reported discussing 49 different combinations of adverse effects. Of these combinations, 12 physicians discussed cough and electrolyte abnormalities, 9 discussed cough and angioedema, and 8 discussed cough and allergy; most adverse effect combinations mentioned were each raised by less than five physicians (Table 3).

Comparison of physician-listed and patient-selected adverse effects

Physicians reported that they discussed only 11 of the 28 adverse effects listed on the patient survey. Cough was raised by 89 % of physicians but was selected by only 4.4 % of patients. More than 40 % of physicians said they discuss electrolyte abnormalities. This category was not specifically listed on the patient survey, but patients were able to select 'abnormal blood test: sodium'; no patients chose this option. A similar percentage of patients and physicians mentioned wanting to know about, or discussing, adverse effects such as swelling of the head, neck and intestines (angioedema), dizziness, allergic reaction/rash, and headache. However, some adverse effects noted by patients, such as worsening kidney function/kidney failure, chest pain and shortness of breath, were mentioned much less frequently or not at all by physicians. As seen in Fig. 2, there was little relationship between what physicians say they tell patients and what patients say they want to hear. Of the 12 adverse effects that ≥10 % of patients wanted to hear about, only four were raised by >10 % of the physicians in the study.

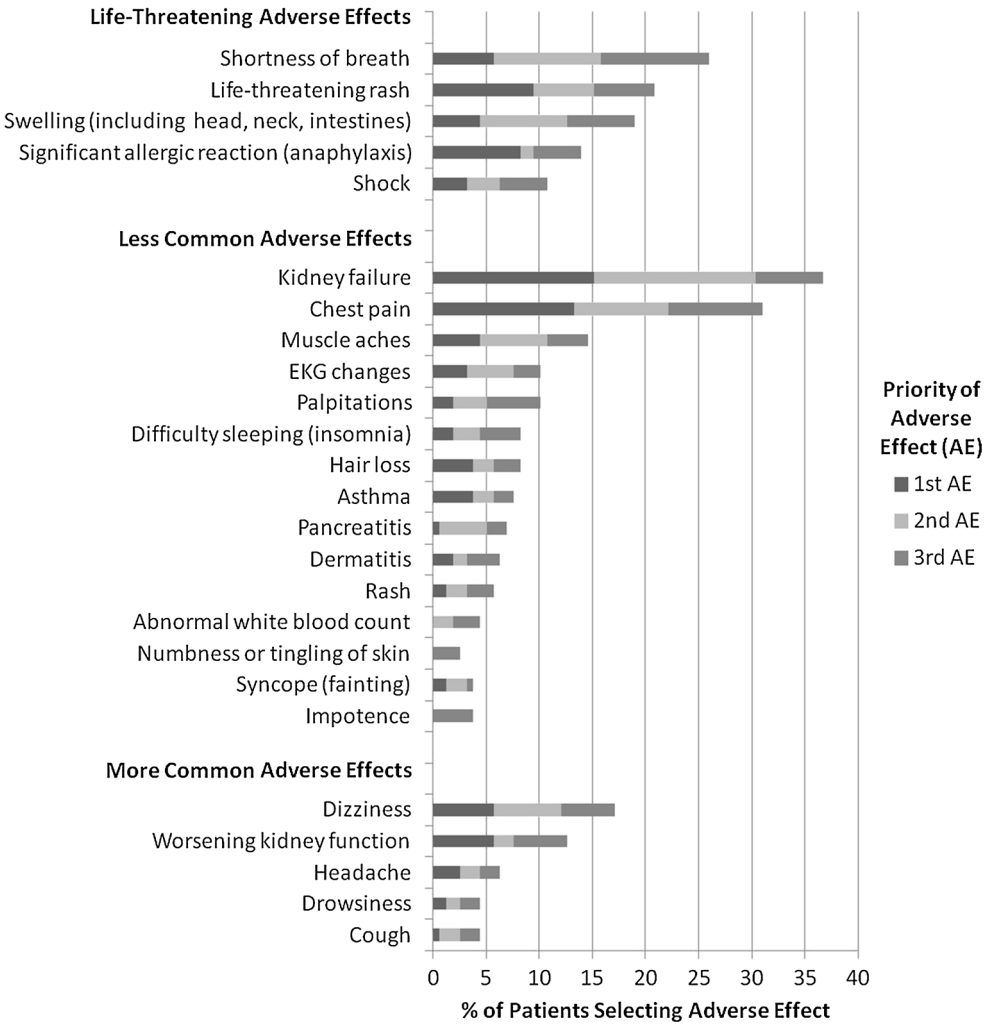

Fig. 1 Proportion of patients selecting 'adverse effect', and the order in which the adverse effect was selected

Patient preferences for adverse effect discussions based on amount of worry

Patients who wanted the doctor to talk about the adverse effects of Boncordin ($n = 154$) expressed significantly more worry about adverse effects (mean worry score 3.75 on a scale of 0–5; SD 1.20) than those who did not want the doctor to talk about the adverse effects ($n = 14$; mean worry score 3.00; SD 1.57; $p = 0.03$). Among the 154 patients who wanted physicians to discuss adverse effects with them, the level of worry about adverse effects was directly related to the portion of the office visit that patients wanted dedicated to adverse effect discussion. Forty-eight of the 154 patients who wanted to hear about the adverse effects of Boncordin subsequently chose to talk about knee pain and cough at the expense of adverse effect discussions. They had a mean worry score of 3.60 (SD 1.16), compared with 3.81 (SD 1.22) for 104 patients who chose to limit their discussion about knee pain and cough in favor of discussing up to three medication adverse effects. Of the 104 patients who prioritized adverse effect discussions over complete conversations about knee pain and cough, 67 patients further decided they wanted to hear about more than three adverse effects, even if they were unable to discuss the knee pain and cough. These patients had the greatest amount of worry (mean worry score 4.03; SD 1.23; $p = 0.003$).

There was no relationship between the amount of patient worry and patient preferences for the types of adverse effects they wanted to discuss (more common, less common, or life-threatening). Patients presented with the scenario about receiving a new prescription for Boncordin overwhelmingly chose less common adverse effects for

Table 3 Physician reports of adverse effects they typically discuss when prescribing an ACE inhibitor (results of a survey of 100 physicians)

Adverse effects typically discussed by physician	No. of physicians
No adverse effects	3
One adverse effect	
Cough	7
Other	2
Two adverse effects	
Cough + electrolyte abnormalities	12
Cough + angioedema	9
Cough + allergy	8
Cough + hypotension	4
Cough + dizziness	3
Cough + renal effects	2
Cough + other	2
Electrolyte abnormalities + hypotension	1
Three adverse effects	
Cough + electrolytes + renal effects	7
Cough + dizziness + other	6
Cough + electrolytes + hypotension	3
Cough + two other adverse effects	3
Cough + electrolytes + angioedema	3
Cough + angioedema + other	2
Cough + renal effects + edema	2
Angioedema + hypotension + dizziness	1
Angioedema + electrolytes + renal effects	1
Four adverse effects	
Cough + electrolytes + renal effects + other	3
Cough + renal effects + dizziness + other	3
Cough + electrolytes + two others	3
Angioedema + hypotension + renal effects + other	2
Five adverse effects	
Cough + electrolytes + renal effects + hypotension + other	2
Cough + angioedema + three others	2
Five other adverse effects	2
Six adverse effects	
Cough + electrolytes + renal effects + hypotension + angioedema + allergy	1
Seven adverse effects	
Cough + hypotension + dizziness + fatigue + palpitations + headache + teratogenic	1

ACE angiotensin-converting enzyme

discussion. For each type of adverse effect, there were only small differences in the percentage of patients expressing different amounts of worry.

Discussion

This study demonstrated some striking differences between the adverse effects physicians say they convey when prescribing a new ACE inhibitor and the ones that older patients want to discuss. While almost 90 % of physicians said that they discussed cough when prescribing an ACE inhibitor, <5 % of older patients felt this adverse effect was important. Many primary care physicians reported discussing similar adverse effects, such as cough and electrolyte abnormalities. However, there was great variation in the number of adverse effects they typically discussed, as well as in the actual adverse effects mentioned. Older patients' preferences for discussions were extremely diverse; at least six patients selected each of the 28 adverse effects on the list. These results suggest that uniform physician counseling about adverse effects will not satisfy patient preferences for discussions. Given the time constraints of office visits [15], it may be impossible for physicians to verbally satisfy patient adverse effect information needs when prescribing a new medication.

The differences between physician adverse effect reports and patient desires appear to relate to different sets of goals. The adverse effects discussed by physicians relate to management of the medication. These include symptoms that the patient should watch out for so the patient can stop a medication to prevent additional harm (i.e. rash), symptoms related to overtreatment (i.e. hypotension, dizziness) and potential physiological problems that require monitoring (i.e. renal insufficiency, electrolyte abnormalities). While there is some overlap with what the patients wanted to know, patients largely desired to hear about rare, life-threatening adverse effects and symptomatic concerns. The latter were not related to frequency of occurrence and represent idiosyncratic, subjective responses rather than information to inform a risk/benefit analysis.

To complicate things more for physicians, patients exhibited disconnect between the types of adverse effects they said they wanted to hear about and the specific adverse effects they selected for discussion. The majority of patients surveyed wanted their physician to talk about common and dangerous adverse effects, but when asked to select specific adverse effects for discussion they mostly selected less common adverse effects. We speculate that this discrepancy resulted because patients wanted to hear about adverse effects that they thought would affect them the most or that frightened them the most, regardless of the frequency of occurrence or life-threatening nature of the adverse effect. Some patients were willing to sacrifice discussions about symptoms such as knee pain and a 3-week history of cough for more discussions about adverse effects.

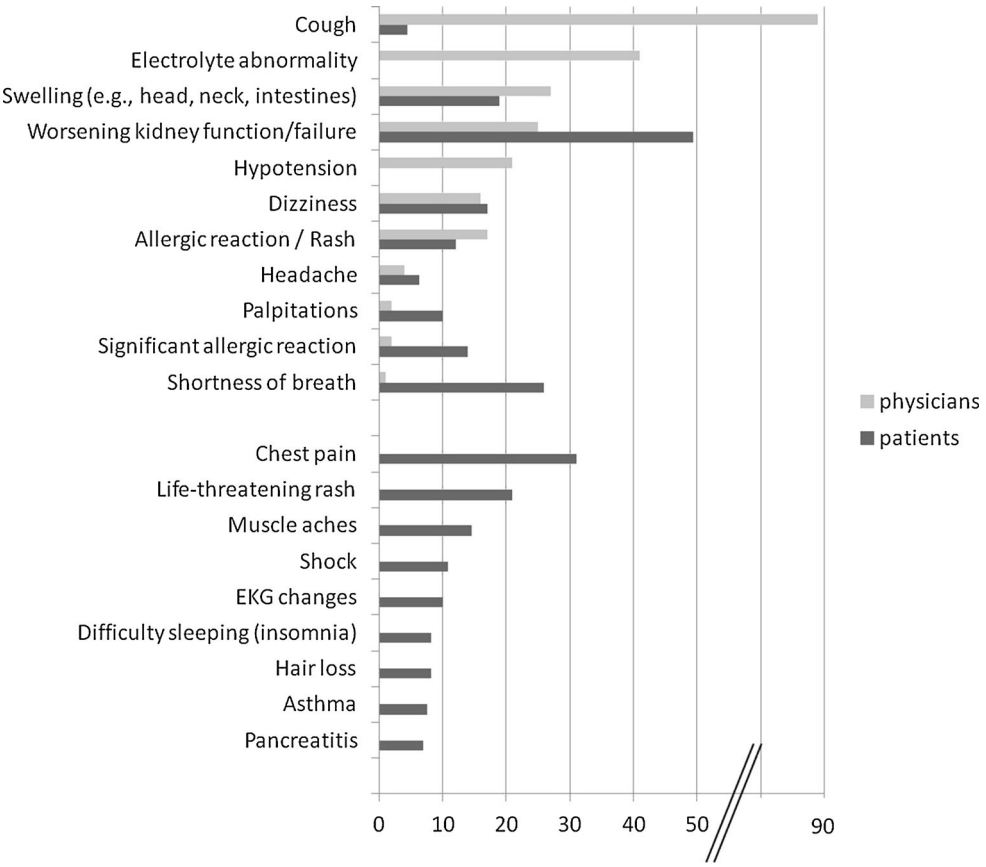

Fig. 2 Proportion of physicians and patients selecting/listing individual adverse effects. Other physician-listed adverse effects include gastrointestinal effects ($n = 4$), non-specific swelling ($n = 4$), teratogenicity ($n = 3$), weakness/fatigue ($n = 3$), dry mouth ($n = 1$), throat clearing ($n = 1$), jaundice ($n = 1$), anxiety ($n = 1$), and increased urination ($n = 1$). Hypotension and electrolyte abnormalities were not on patients' lists, although patients could select 'abnormal blood test—sodium'

This study raises questions about best practices for verbally conveying adverse effect information to older patients. Patients want their physicians to provide information about adverse effects [16], and verbal communication at the time of prescribing may prevent unnecessary medication non-adherence [17]. However, these results, consistent with a study in which 76 % of patients surveyed wanted to be told about every potential adverse effect [9], demonstrate the impossibility of verbally completely satisfying patient information needs. The problem may be that many patients do not understand that every medication has many potential adverse effects. In that drug labels, on average, list 70 adverse effects [18], it is clear that physicians cannot describe them all, and asking a patient the general pattern of adverse effects that they want to hear may provide little guidance.

Future studies should investigate how physicians can best balance counseling about medication adverse effects with the time constraints of an office visit. Rather than attempting to satisfy patients' personal preferences for counseling, physicians might instead focus on orienting patients to the type of information they are conveying. For example, effective physician verbal communication regarding adverse effects might include a discussion about a medication's risk–benefit profile, a statement about the types of adverse effects that the physician is conveying (e.g. 'the most common adverse effects are [xx]', or 'the most dangerous adverse effect is [xx]'), a disclaimer that there are other potential adverse effects, and a comment about where the patient can get more information regarding potential risks if they are interested (e.g. pharmacist, written pharmacy materials).

This study has several limitations. Most of the patients in the study had at least some college education and adequate health literacy. It is therefore unknown whether results can be generalized to other types of patients. Surveyed physicians and patients were samples of convenience, although they represent many heterogeneous sites, and the patient and physician samples were not related to each other. As patients were queried about a hypothetical scenario, their responses may differ when faced with a real-world situation. The survey questions and hypothetical scenario were not pilot-tested, and it is possible that patients' responses regarding how worried they were about the adverse effects of Boncordin was related to how likely they thought they were to experience adverse effects. The study did not assess patients' medical problems or experience with medications, which could have altered their perceptions about medication adverse effects. Furthermore, physician responses were based on self-report and may not

reflect what they actually do in practice, while patient responses were based on responses to a hypothetical scenario.

Conclusions

This study demonstrated significant gaps between older patients' preferences for medication adverse effect information and actual physician counseling. It is likely physicians do not have the resources to verbally provide the comprehensive counseling that many patients seek. Furthermore, it is not clear that what older patients want to hear is most likely to inform them about how to use the medication or to make an informed decision about whether to take the medication. The content of physician counseling may need to focus less on providing the specific adverse effect information that patients want to hear and more on helping guide patients to understand the sorts of information that might be most useful to them, as well as communicating the broader risk–benefit profile. Ancillary providers, computerized decision-support materials and written materials are likely required to provide the information patients want and to help older patients make informed decisions about their medications.

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Appendix: List of adverse effects provided to patients

The following table lists some of Boncordin's potential adverse effects. Adverse effects are grouped into non-life-threatening adverse effects that are more or less common, as well as life-threatening adverse effects.

List of potential adverse effects of Boncordin presented to patients		
More common adverse effects (% of occurrence)	Less common adverse effects (occur <1 % of the time)	Life-threatening adverse effects (occur <1 % of the time)
Cough (1–10 %)	Hair loss	Significant allergic reaction (anaphylaxis)
Headache (6 %)	Flushing	Swelling (including of head, neck and intestines)
Dizziness (4 %)	Joint pains/arthritis	
Drowsiness (2 %)	Asthma	Shortness of breath
Worsening kidney function (reversible; doctor will check for this) (2 %)	Dermatitis (itchy skin)	Shock
	Rash	Life-threatening rash in which your skin falls off
	Numbness or tingling of skin	
	Muscle aches	
	Chest pain	
	Palpitations	
	Syncope (fainting)	
	EKG changes	
	Pancreatitis	
	Kidney failure	
	Impotence	
	Difficulty sleeping (insomnia)	
	Abnormal blood test: sodium	
	Abnormal white blood count	

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