ORIGINAL RESEARCH ARTICLE

Drug Saf 2012; 35 (11): 1061-1072
0114-5916/12/0011-1061/$49.95/0

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Healthcare Professionals' Self-Reported Experiences and Preferences Related to Direct Healthcare Professional Communications

A Survey Conducted in the Netherlands

Sigrid Piening,[1] *Flora M. Haaijer-Ruskamp*,[1] *Pieter A. de Graeff*,[1,2] *Sabine M.J.M. Straus*[2,3] and *Peter G.M. Mol*[1,2]

1 Department of Clinical Pharmacology, University of Groningen, University Medical Center, Groningen, the Netherlands
2 Dutch Medicines Evaluation Board, The Hague, the Netherlands
3 Medical Informatics, Erasmus Medical Center, Rotterdam, the Netherlands

Abstract

Background: In Europe, Direct Healthcare Professional Communications (DHPCs) are important tools to inform healthcare professionals of serious, new drug safety issues. However, this tool has not always been successful in effectively communicating the desired actions to healthcare professionals.

Objective: The aim of this study was to explore healthcare providers' experiences and their preferences for improvement of risk communication, comparing views of general practitioners (GPs), internists, community pharmacists and hospital pharmacists.

Methods: A questionnaire was developed and pilot tested to assess experiences and preferences of Dutch healthcare professionals with DHPCs. The questionnaire and two reminders were sent to a random sample of 3488 GPs, internists and community and hospital pharmacists in the Netherlands. Descriptive statistics were used to describe demographic characteristics of the respondents. Chi squares, ANOVAs and the Wilcoxon signed rank test were used, when appropriate, to compare healthcare professional groups.

Results: The overall response rate was 34% (N = 1141, ranging from 24% for internists to 46% for community pharmacists). Healthcare providers trusted safety information more when provided by the Dutch Medicines Evaluation Board (MEB) than by the pharmaceutical industry. This was more the case for GPs than for the other healthcare professionals. Respondents preferred safety information to be issued by the MEB, the Dutch Pharmacovigilance Center or their own professional associations. The preferred alternative channels of drug safety information were e-mail, medical journals and electronic prescribing systems.

Conclusions: Safety information of drugs does not always reach healthcare professionals through DHPCs. To improve current risk communication of drug safety issues, alternative and/or additional methods of risk communication should be developed using electronic methods and medical journals. Moreover, (additional) risk communication coming from an independent source such as the MEB should be considered. Special effort is needed to reach GPs.

Introduction

At the time of market entry, the safety profile of a drug is incomplete due to inherent and known shortcomings of pre-marketing clinical trials.[1] Recent studies have shown that 10–14% of medicinal products require a Direct Healthcare Professional Communication (DHPC in the EU; Dear Healthcare Professional letter in the US) or 'Dear Doctor' letter (hereafter referred to as a DHPC) to inform healthcare professionals of newly identified risks within the first 3 years of market approval.[2,3]

Effective risk communication is essential to prevent or minimize harm. Evaluation of communication about cisapride and selective serotonin re-uptake inhibitors (SSRI) has shown that it is not always possible to achieve desired actions by healthcare professionals through risk communication. After safety warnings were issued announcing that the use of certain medications in combination with cisapride could cause severe cardiovascular problems, prescribing of cisapride with contraindicated medication continued, leading to its market withdrawal.[4,5] Although the SSRI warnings were only aimed at reducing new prescriptions in adolescents, unintended decreases in SSRI prescribing in adults were also observed.[6-8]

Currently, the paper-based DHPC is a major tool in risk communication of drug safety issues. In the EU, DHPCs are sent to pre-specified target groups of healthcare professionals by the pharmaceutical industry as commissioned by the European Medicines Agency and national authorities.[9]

Since effectiveness of risk communication depends largely on trust in the source of the information,[10] it is important to evaluate how different sources are perceived by healthcare professionals. In addition, evaluation of the effectiveness of risk minimization measures will become mandatory in the EU with the new pharmacovigilance legislation that came into force in July 2012.[11,12]

To optimize current risk communication methods and to improve implementation of any necessary actions into clinical practice, it is important to have good insight into the preferences of healthcare professionals. A tailor-made approach that incorporates preferences of different healthcare professional groups may facilitate the uptake of the risk information as well as implementation of the desired actions.[13] To date, little information is available on preferences of different healthcare professional groups. The aim of this study was to explore healthcare providers' experiences and their preferences for risk communication of safety issues of medicines, comparing the views of GPs, internists and community and hospital pharmacists.

Methods

Questionnaire Development

An explorative literature search did not result in any validated questionnaires that could be used in our study. Hence, a questionnaire with open-ended and closed questions was developed using the 'knowledge, attitudes, behaviour' framework introduced by Cabana et al.[14]

The attitude of healthcare professionals towards risk information was assessed with a number of statements (table I). All attitude-related statements were rated on a 5-point Likert scale ranging from (1) strongly disagree to (5) strongly agree.

The healthcare professionals were then asked various knowledge-related questions, and were

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Table I. Questionnaire overview[a]

Section/question	Answer categories
Attitude	
1. I think information about drug safety is important	1: Strongly disagree – 5: strongly agree
2. It takes too much time to remain up to date on new drug safety issues	1: Strongly disagree – 5: strongly agree
3. I think the MEB is knowledgeable about drugs	1: Strongly disagree – 5: strongly agree
4. I think information from the MEB is trustworthy	1: Strongly disagree – 5: strongly agree
5. I think the pharmaceutical industry is knowledgeable about drugs	1: Strongly disagree – 5: strongly agree
6. I think information from the pharmaceutical industry is trustworthy	1: Strongly disagree – 5: strongly agree
Knowledge	
7. Have you ever seen a DHPC?	Yes No, I have heard of DHPCs, but I have never seen one No, I have never heard of DHPCs
8. Do you read the DHPCs you receive?	No, I do not read any letters from the pharmaceutical industry, either in an orange hand envelope[b] or not Yes, if they contain safety information that is important to me Yes, only if they are sent in an orange hand envelope Yes, only when the envelope indicates it contains important, non-commercial information Yes, I read all letters from the pharmaceutical industry
9. Do you visit the MEB website for specific information on drug safety issues?	Never, I never heard of the MEB Never, I did not know the MEB had a website Never, I did know the MEB has a website Yes, every 6 months Yes, monthly Yes, weekly Yes, daily Other, namely…
10. Are you aware of the safety issues of the following drugs for which information was sent in 2007/2008 (rimonabant; moxifloxacin; clopidogrel; etoricoxib)?	Yes No
11. If yes; how did you receive this information (DHPC; Website MEB; Media; Specialist journal; electronic mailing/internet; other, namely)?	Yes No – Several answers possible
Behaviour	
12. Can you estimate in which percentage of the received DHPCs you undertook action (e.g. adjusting therapy, inform colleagues, discuss with patient)?	Visual analogue scale ranging from 0% to 100%
Preferences for alternative methods	
13. What do you think of the current method (DHPC) with which you are informed of new drug safety issues?	1: Very poor – 10: very good
14. How useful do you consider repetition is of the safety information (e.g. repetition of the letter or e-mail)?	1: Not at all useful – 10: very useful
15. How useful do you consider receiving safety information is through several methods at the same time (e.g. both postal and by e-mail)?	1: Not at all useful – 10: very useful
16. Which of the following information *channels* do you think are suitable for fast information about new drug safety issues (e-mail; text message; twitter; electronic newsletter; medical journals; RSS feed; computerized prescription system)?	1: Not all useful – 10: very useful. Separately rated for each channel
17. Which of the following *senders* do you think are suitable for fast information about new drug safety issues (physician/pharmacist; professional association; Lareb; pharmacotherapy meetings; media; drug compendium)?	1: Not at all useful – 10: very useful. Separately rated for each sender

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Table I. Contd

Section/question	Answer categories
18. Are you willing to provide the MEB with your e-mail address and/or mobile phone number to receive specific information about drug safety issues?	Yes, but only my e-mail address Yes, but only my mobile phone number Yes, both my e-mail address and my mobile phone number No

a Eighteen of the 25 questions posed in the survey are represented. Seven questions are not included here as they did not provide directly relevant information or they produced responses that demonstrated the so-called 'halo effect'.

b Orange hand envelope: safety issues requiring immediate action (e.g. in case of contaminated batches of drugs) are sent in envelopes with an orange hand printed on them, to attract the attention of the healthcare professional.

DHPC = Direct Healthcare Professional Communication; **Lareb** = Netherlands Pharmacovigilance Center; **MEB** = Dutch Medicines Evaluation Board; **RSS** = Really Simple Syndication.

presented with four specific drugs with safety issues (rimonabant and depression, moxifloxacin and skin reactions and hepatoxicity, clopidogrel and interaction with proton pump inhibitors, etoricoxib and hypertension).[15] These four drugs were chosen because DHPCs regarding these issues were sent to all groups of healthcare professionals included in this study within the 23 months preceding the first questionnaire.

The respondents were asked if they were aware of these safety issues and, if so, what their source of information was (DHPC, Dutch Medicines Evaluation Board [MEB] website, lay media, medical journal, electronic mailing/internet and/or other).

With regard to the behaviour component of the questionnaire, respondents were asked in what percentage of DHPCs was action taken. Respondents rated this question using a visual analogue scale ranging from 0% to 100%.

Preferences for improved risk communication were assessed on a 10-point Likert scale ranging either from (1) very poor to (10) very good or from (1) not at all useful to (10) very useful. The respondents' preferences for alternative channels (e-mail, text message, twitter, electronic newsletters, medical journals, RSS[1] feeds and computerized prescription system) and sources (physician/pharmacist, professional association, Netherlands Pharmacovigilance Centre, MEB, pharmacotherapy meetings, media, drug compendium) of risk communication were explored using a 10-point Likert scale ranging from (1) not at all useful to (10) very useful. The most appropriate answering scale was chosen for each individual question.

The following demographic aspects were collected: specific profession, sex, period of registration as a healthcare professional, full-time or part-time employment.

Face validity of the questionnaire was evaluated by five professionals (two physicians, two pharmacists, one regulator), after which changes were made to the layout, wording and predefined answers. The questionnaire was then sent to a random sample of 50 healthcare professionals to test its feasibility. Further changes were made to improve the clarity of the questionnaire. The pilot test data were not included in the final data analysis.

Study Population

Healthcare professionals living in the Netherlands were surveyed. GPs and internists (doctors of internal medicine) were included since they prescribe a wide range of drugs and therefore have a high likelihood of dealing with risk communications of drug safety issues. Hospital and community pharmacists were included because of their central role in drug dispensing and information. Respondents were excluded if they were no longer actively working as a physician or pharmacist (n = 11).

Addresses of the healthcare professionals were obtained from the Dutch Internist Association

1 RSS (Really Simple Syndication) feeds make it possible to see when websites have added new information, such as, for example, news headlines and press releases. RSS feeds make checking separate websites unnecessary.

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(NIV) and the Dutch Pharmacist Association (KNMP). Most (~90%) of the Dutch internists and pharmacists are members of their professional association, partly because accreditation of training is arranged within these associations. The Netherlands Institute for Health Services Research (NIVEL) provided a random sample of Dutch GPs. A sample size calculator[16] was used to determine the number of respondents that would be needed to obtain the appropriate sample size to result in 80% power to detect a 10% difference in healthcare providers' ratings of individual questions.

We adjusted the sample size based on the response rates observed in the feasibility study, where response ranged from 20% to 80% for internists and community pharmacists, respectively (see table II). This resulted in sending questionnaires to 3488 healthcare professionals (700 randomly selected GPs, 700 randomly selected community pharmacists, all 1696 Dutch internists and all 392 hospital pharmacists) in the Netherlands in December 2009.

The anonymous questionnaire was sent with a cover letter and a prepaid return envelope. To maximize the response, a total of two reminders accompanied by the questionnaire were sent at month 1 and 2 after the initial mailing.[17]

Data Entry and Analysis

Data were entered by three data entry assistants using structured data entry forms. Data entry was checked by examining duplicate entries of 10% of all returned questionnaires for errors. The duplicate data entry resulted in less than 0.1% error in the entered variables. The majority of the data entry errors (83%) were related to questions 10 and 11 (table I). All entries of these two questions were therefore compared with the original returned questionnaires and corrected when appropriate.

Assuming that the respondents who returned the questionnaire only after a reminder were most comparable to non-responders, sensitivity analyses were performed to explore possible differences between initial and late responders, on the main questions of trust, knowledge and preferences. Descriptive statistics were used to describe demographic characteristics of the respondents. Chi squares, ANOVAs and the Wilcoxon signed rank test were used when appropriate to compare

Table II. Demographic characteristics of the respondents

Characteristic	Total [N (%)]	GP [N (%)]	Internist [N (%)]	Community pharmacist [N (%)]	Hospital pharmacist [N (%)]
Response					
Total[a]	1,141 (34)	233 (33)	410 (24)	323 (46)	175 (45)
Initial mailing	686 (60)	112 (48)	269 (66)	184 (57)	121 (69)
Reminder 1	358 (31)	67 (27)	137 (33)	101 (31)	53 (30)
Reminder 2	97 (9)	54 (23)	4 (1)	38 (12)	1 (1)
Pilot (N = 50)	22 (44)	6 (40)	3 (20)	8 (80)	5 (50)
Healthcare professional characteristics					
Female (4 missing)	465 (40)	97 (42)	141 (34)	146 (45)	81 (47)
Years of professional accreditation (2 missing)					
Trainee	7 (1)	1 (0)	0 (0)	5 (2)	1 (1)
1–5	207 (18)	24 (10)	87 (21)	58 (18)	38 (22)
6–10	240 (21)	47 (20)	76 (19)	68 (21)	49 (28)
11–15	173 (15)	37 (16)	49 (12)	61 (19)	26 (15)
≥16	512 (45)	124 (53)	197 (48)	130 (40)	61 (35)
Working part time (3 missing)	258 (22)	78 (34)	57 (14)	72 (22)	51 (29)

a Differences in percentages may exist due to rounding.

GP = General Practitioner.

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healthcare professional groups. Data were analysed using SPSS 16.0 software (SPSS, Inc., Chicago, Illinois, USA).

Results

The questionnaire and reminders were sent to 3488 healthcare professionals in the Netherlands in December 2009 and January 2010, resulting in an overall response rate of 34% (N = 1141; ranging from 24% for internists to 46% for community pharmacists) [table II]. Most healthcare professionals who returned our questionnaire were male (60%), working full-time (78%) and registered as a healthcare professional for 15 years or fewer (55%).

Attitude

The majority (mean ± SD) of the healthcare professionals considered risk information of medicinal products to be important (4.67 ± 0.6), ranging from an average of 4.55 ± 0.5 reported by the GPs to 4.77 ± 0.5 by the hospital pharmacists ($p \leq 0.0001$).

Most healthcare professionals did not have an opinion, or had a neutral attitude about the statement 'It takes too much time to remain up to date on new drug safety issues' (2.56 ± 0.9). The GPs (2.80 ± 1.0) more often reported that remaining up to date took too much time, while the community pharmacists indicated this the least often (2.39 ± 0.9; $p \leq 0.001$).

The healthcare professionals considered both the MEB and the pharmaceutical industry knowledgeable about drugs (4.06 ± 0.7 and 3.91 ± 0.7, respectively), but trusted the risk information provided by the MEB more (4.13 ± 0.6 and 2.70 ± 0.8, respectively; $p \leq 0.001$; figure 1). In particular, the GPs thought that information provided by the MEB was significantly more trustworthy than information provided by the pharmaceutical industry ($p \leq 0.001$).

Knowledge

Sixteen percent of the healthcare professionals (ranging from 5% of the hospital pharmacists to 28% of the GPs; $p \leq 0.001$) were not familiar with DHPCs. The majority (58%) of the healthcare professionals indicated that they read only the DHPCs that contained information that was relevant to them, and 30% of the community pharmacists read all letters they received from the pharmaceutical industry ($p \leq 0.001$).

Four specific drugs with safety issues were presented to the healthcare professionals (rimona-

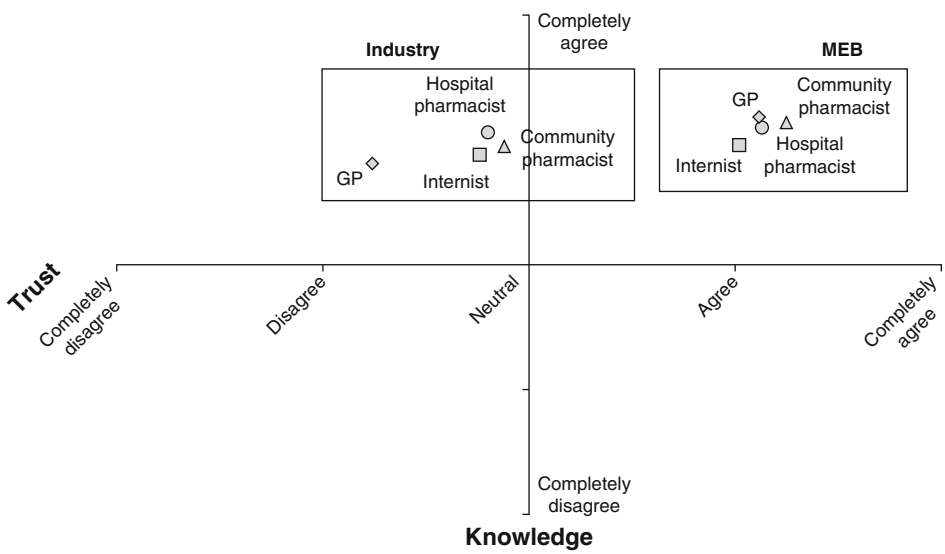

Fig. 1. Trust and knowledge attributed to the Dutch Medicines Evaluation Board/pharmaceutical industry.

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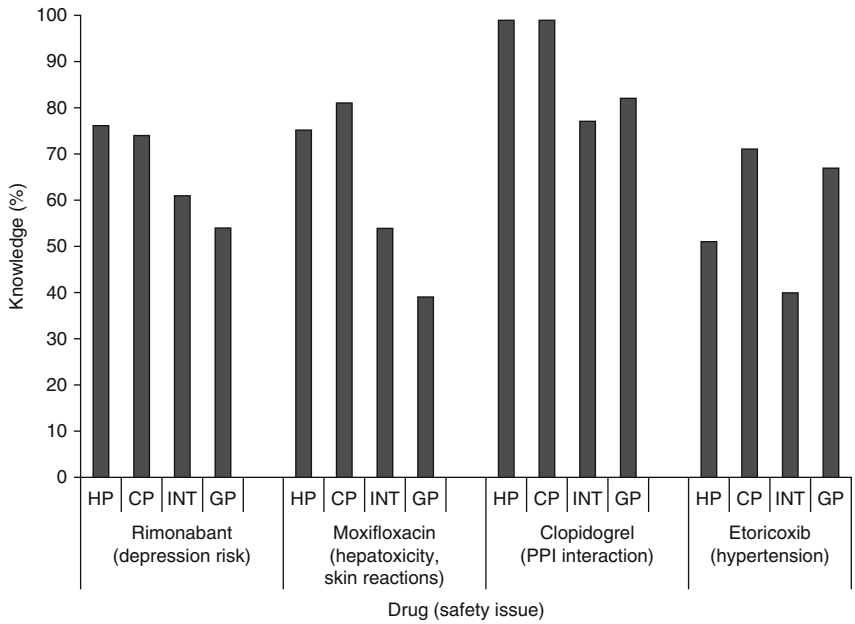

Fig. 2. Healthcare providers' knowledge of safety issues of four drugs. **CP** = community pharmacist; **GP** = general practitioner; **HP** = hospital pharmacist; **INT** = internist; **PPI** = proton pump inhibitor.

bant, moxifloxacin, clopidogrel and etoricoxib). Most healthcare professionals indicated that they were aware of all four safety issues, ranging from 56% for the etoricoxib issue to 88% for the clopidogrel issue (figure 2). The pharmacists were better informed than the physicians ($p \leq 0.001$) for all safety issues except etoricoxib. In the etoricoxib case, primary care healthcare professionals (GPs and community pharmacists) were more aware of the safety issue (67% and 71%, respectively) than the secondary care healthcare providers (internists and hospital pharmacists; 40% and 51%, respectively; $p \leq 0.001$). Knowledge of the four safety issues was mostly obtained from professional journals (59%) and DHPCs (49%), while the MEB website was rarely indicated (5%) as the information source.

Sixty-four percent of the respondents indicated that they never visited the MEB website to search for more information about safety issues. Seven percent of the healthcare professionals were not aware of the existence of the MEB. Only 6% of the respondents visited the website weekly and only 1% did so daily. Hospital and community pharmacists were more aware of the MEB and visited the MEB website more often than internists and GPs ($p \leq 0.001$), although 38% of the pharmacists visited the website only monthly or 6 monthly.

Behaviour

The healthcare professionals reported to have taken action (e.g. adjusting therapy, informing colleagues, discussion with patient) in response to 29% of the DHPCs, ranging from 23% of internists to 37% of community pharmacists ($p \leq 0.001$).

Preferences for Improved Risk Communication

Satisfaction with the current way of risk communication was rated as mean 6.9 (SD ±1.9) out of 10, ranging from 6.0 ± 2.1 on average by GPs to 7.6 ± 1.4 by community pharmacists ($p \leq 0.001$). Repetition of the risk communication as well as information coming from several sources simultaneously was rated as moderately useful (5.8 ± 2.4; and 6.3 ± 2.4, respectively). The open-

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ended question regarding which specific combination was preferred yielded responses from 494 healthcare professionals (multiple answers were given). Predominantly, a combination of the paper-based DHPC with an e-mail was suggested (n = 184). Receiving risk information via e-mail only was indicated 91 times and via the paper-based DHPC only was indicated 41 times.

The preferred alternative channels of risk information were e-mail, medical journals and electronic prescribing systems. The preferences for these three channels varied across the four healthcare professional groups (table III). RSS feeds, text messages and twitter were not favoured methods. According to the healthcare professionals, risk communication should preferably be issued by the MEB, the Dutch Pharmacovigilance Center (Lareb) or their own professional association (table III). The media were rated as the least preferable source of risk communication.

Sensitivity analyses showed significant differences between responders to the initial mailing and the two subsequent reminders in only two preference variables. In those two cases, the late responding physicians rated safety information coming from pharmacists higher than did physicians responding to the initial mailing ($p = 0.007$). The late responding healthcare professionals also rated the pharmacotherapy meetings higher than did early responding healthcare professionals ($p \leq 0.001$).

Discussion

Although the responding healthcare professionals considered risk information on drug safety issues to be important, a substantial group was not familiar with the DHPC as a tool for risk information. Pharmacists appeared to be more aware of, and more responsive to, safety issues than physicians, particularly GPs. The majority of the healthcare professionals preferred to receive drug safety information from an independent source such as the MEB or their own professional

Table III. Preferred alternative drug safety information channels and sources [mean (SD)][a]

	GP	Internist	Community pharmacist	Hospital pharmacist	Total	p-Value
Channel						
E-mail	7.16 (2.5)	7.24 (2.5)	8.07 (1.8)	8.09 (2.0)	7.59 (2.3)	≤0.001[b]
Text message	232 (1.9)	2.13 (1.7)	3.05 (2.4)	2.41 (2.3)	2.47 (2.1)	≤0.001[b]
Twitter	1.72 (1.2)	1.65 (1.2)	2.13 (1.8)	1.68 (1.4)	1.81 (1.4)	≤0.001[b]
Electronic newsletter	5.66 (2.9)	5.99 (2.8)	6.53 (2.4)	6.37 (2.8)	6.14 (2.7)	≤0.001[b]
Medical journals	7.32 (2.2)	7.85 (1.7)	7.32 (2.0)	7.15 (2.2)	7.49 (2.0)	≤0.001[b]
RSS feeds	3.44 (2.4)	3.74 (2.7)	4.05 (2.7)	5.06 (3.0)	3.98 (2.8)	≤0.001[b]
Computerized prescription system	7.83 (2.2)	6.52 (3.1)	7.45 (2.4)	7.03 (2.6)	7.14 (2.7)	≤0.001[b]
Source						
Physician (by pharmacists)	NA	NA	4.76 (2.5)	3.90 (2.4)	4.46 (2.5)	≤0.001[b]
Pharmacist (by physicians)	8.14 (1.8)	6.90 (2.4)	NA	NA	7.35 (2.3)	≤0.001[b]
Professional association	7.60 (1.9)	7.98 (1.7)	8.27 (1.4)	7.93 (1.9)	7.98 (1.7)	≤0.001[b]
Lareb	7.82 (1.8)	7.98 (1.8)	8.37 (1.2)	8.00 (1.8)	8.06 (1.7)	≤0.001[b]
MEB	7.70 (1.8)	7.94 (1.6)	8.38 (1.2)	8.64 (1.2)	8.13 (1.5)	≤0.001[b]
Pharmacotherapy meetings	7.63 (2.1)	4.94 (2.3)	6.06 (2.4)	4.55 (2.3)	5.76 (2.5)	≤0.001[b]
Media	3.90 (2.2)	3.90 (2.3)	3.78 (2.3)	3.42 (2.2)	3.79 (2.2)	=0.101
Drug compendium	7.41 (2.1)	7.19 (22)	6.29 (2.6)	5.40 (2.8)	6.71 (2.5)	≤0.001[b]

a All channels and sources were rated on a 10-point Likert scale ranging from (1) not at all useful to (10) very useful.

b Indicates significant ($p \leq 0.05$) differences in preference between the four healthcare provider groups in the ANOVA analysis.

GP = general practitioner; **Lareb** = Dutch Pharmacovigilance Centre; **MEB** = Dutch Medicines Evaluation Board; **NA** = not applicable; **RSS** = Really Simple Syndication.

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association than from DHPCs. Moreover, most healthcare professionals preferred to receive the information through medical journals or electronically, for example, by e-mail or electronic (prescribing) systems.

Fifteen percent of the respondents had never heard of or seen a DHPC. This percentage is similar to the results from an earlier study performed in the US, where 18% of the respondents indicated they had never seen a DHPC.[18] In contrast, other studies reported higher percentages of respondents with knowledge of drug safety warnings.[19-21]

Awareness of the specific safety issues and reported action in response to a DHPC was higher among pharmacists. In addition, they visited the MEB website more frequently than physicians. This might be explained by the focus of pharmacists on pharmacotherapy and drug risks, while for physicians this aspect might have a lower priority. This is supported by the finding that the physicians rated 'keeping up to date on risk information' as time consuming more often than pharmacists.

Awareness of the four safety cases ranged from moderate for the etoricoxib issue (55%) to high for the clopidogrel issue (85%). Pharmacists were better informed than physicians, except in the etoricoxib case, where the GPs and community pharmacists were more aware of the safety issue than hospital pharmacists and internists. Etoricoxib is mainly prescribed and dispensed in primary care, which could explain this finding. Only in the moxifloxacin case was the DHPC indicated as the main risk information source. In the other three cases, the information was mainly obtained from professional journals. This is in line with earlier research, which found that healthcare professionals mainly use sources of safety information other than the DHPC.[22,23]

The respondents reported having taken action in relation to 29% of the DHPCs they received. This percentage is higher than that reported by Canadian healthcare professionals, which ranged from 2% adjusting their prescribing to 16% forwarding the DHPC to other healthcare professionals.[19] In other studies, higher percentages of action were reported by healthcare professionals, e.g. changes in prescribing behaviour of 80% related to an antidepressants black-box warning,[20] and 40% related to a long-acting beta agonists black-box warning.[21] It should be noted that not all DHPCs require immediate action from all healthcare professionals.

The preference for receiving drug safety information from an independent organization is in line with findings of earlier studies. Physicians in the UK and the US prefer independent sources (e.g. medical journals and colleagues) over commercial (e.g. pharmaceutical companies) and third-party sources (e.g. general media).[22,23] The respondents in our study, especially the GPs, indicated they would have more trust in drug safety information coming from the MEB than from the pharmaceutical industry. Trust in both the sender and the information itself plays an essential role in successful risk communication.[24] It is suggested that inadequate risk communication may be caused by insufficient trust in the institutions that are responsible for risk management.[10]

E-mail and electronic prescribing/dispensing systems, the preferred channels of respondents, could prove to be good channels of risk communication because of their user-friendliness. Such an e-mail would preferably consist of a short summary of the drug safety issue and the recommendations to the healthcare professional on how to manage the safety issue. A link to the DHPC and to background information on the drug safety issue could be incorporated in the e-mail. The header of the e-mail should clearly indicate the safety issue and the drug in question. Presently, the MEB already offers an e-mail service to voluntary subscribers. In our survey, 84% of the respondents indicated they were willing to provide the MEB with their e-mail address to receive such an e-mail. The physicians, especially the GPs, rated pharmacists quite highly as an alternative source of safety information. Information from professional associations was also a preferred alternative. A more active involvement of these groups as intermediaries in the risk communication process could be an important additional step to strengthen this process.

One of the aims of DHPCs is to rapidly inform healthcare professionals when a safety issue is identified. However, it should be noted that

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incorporating warnings of safety issues into electronic prescribing/dispensing systems requires some time, which could cause unnecessary harm to patients. E-mail could prove to be more useful in rapidly informing healthcare professionals, and incorporating warnings in electronic prescribing/dispensing systems may additionally be applied. The respondents indicated they would not prefer to receive safety information through methods such as twitter, RSS feeds and text messaging, even though communication through these methods could be implemented relatively easily. Since these are relatively novel methods, it may be worthwhile to keep track of how the use of and preference for these methods develop.

A substantial number of respondents indicated that they would prefer to receive the safety information via both the paper-based DHPC and an additional e-mail. However, repetition of the risk information as well as receiving information simultaneously from several sources was rated as only moderately useful. This apparent discrepancy indicates that a fine balance seems to exist between a preference for receiving the information through various methods and an overload of information. This is important to note, since such an overload could easily cause 'warning fatigue', resulting in healthcare professionals not taking notice of risk communications.

The limited awareness that healthcare professionals had of the MEB and the MEB website seems to be comparable to familiarity with other national authorities. In the UK for example, approximately 20% of the healthcare professionals indicated they were aware of the Medicines and Healthcare products Regulatory Agency (MHRA).[23] In Canada, 38% of the healthcare professionals were familiar with the drug safety advisories on the Health Canada website, but only 9% of the healthcare professionals visited this website to retrieve new drug safety information.[19] A focus group study performed in Canada indicated that the 'reporting authority is perceived as a virtual and remote entity'.[25] Although it appears that healthcare professionals see a clear role for regulating authorities in communicating safety issues, their visibility amongst healthcare professionals should be improved.

Strengths and Limitations

This is one of the first studies assessing healthcare professionals' opinions of DHPCs. A sizable group of 1141 healthcare providers, both pharmacists and physicians, were included in our survey. We used a pre-tested questionnaire, preserving the anonymity of the respondents to reduce the possibility of socially desirable answers.

Limitations to this study include a fairly low response rate, with only 34% of the healthcare providers responding. This is comparable to other surveys amongst healthcare professionals, especially amongst physicians.[20,21,26] Still, the low response may have biased our results in that healthcare professionals who are unaware of, or not interested in, DHPCs could be underrepresented in our sample. This might mean that, in reality, even fewer healthcare professionals are aware of DHPCs and safety issues, which underlines the need for improvements in current risk communication. We were unable to analyse any characteristics of the non-responders due to the anonymous nature of the questionnaire. We can only report that our sample is representative for the Dutch setting in terms of sex,[27] and the percentage of GPs who work part-time.[28] We found no significant differences between early and late responders, except for two preference variables. It is possible that the non-responders have different preferences with regard to the pharmacists and pharmacotherapy meetings than the responders. We can conclude that, apart from these two variables, our results are, in all likelihood, not affected by non-response bias. Due to the anonymous nature of the questionnaire, it is possible that healthcare professionals might have responded to both the initial mailing as well as the reminders. However, in the cover letters of the reminders, we explicitly stated that these mailings concerned reminders, which should be ignored if the questionnaire had already been returned. Since the reminders were sent within a month of the previous mailing, and because of the specific topic, we assume that the respondents would have remembered filling out the earlier questionnaire. This was underlined by the fact that some respondents actually notified us about this.

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It should be noted that 'action in response to DHPCs' was a self-reported measure. Respondents may have had difficulties remembering the number of DHPCs they received for which they actually took action, leading to possible recall bias. We cannot rule out that some healthcare professionals may perceive a DHPC as information from the pharmaceutical industry, despite our explanation in the questionnaire that a DHPC is issued on request from and in collaboration with the MEB. This might have influenced their responses to several questions, for example questions 8 (reading the DHPCs) and 13 (satisfaction with the current communication method).

Conclusions

Healthcare professionals consider staying up to date on new drug safety issues important, although a fair proportion were not aware of the DHPC as a risk communication tool. Those that were aware rated this risk communication method as reasonable, but valued electronic methods as alternative or additional risk communication channels. In line with this, healthcare professionals indicated mainly other channels as the source for their knowledge of some recent drug safety issues. Our study also showed that healthcare professionals had greater trust in the MEB than in industry as a source of drug safety information and that they would prefer to be informed through independent organizations.

Therefore, current risk communication of medicinal products should be improved, preferably by using electronic methods, including e-mail and electronic prescription systems, and/or medical journals. Moreover, (additional) safety information should come from an independent source such as the MEB to optimize credibility. The results of this study indicate that additional efforts are needed to ensure that the safety information reaches healthcare professionals.

Acknowledgements

The authors would like to thank Michelle Pena for her contribution to an earlier version of the article. This study was supported by an unconditional grant from the Dutch Medicines Evaluation Board (CBG-MEB). The authors, who are also (part-time) employees of the MEB (Pieter de Graeff, Sabine Straus and Peter Mol), state that the opinions presented in this paper are their own and do not necessarily reflect that of the MEB. All authors report that they do not have any conflicts of interest.

This article is part of a theme issue co-edited by Priya Bahri, European Medicines Agency, UK, and Mira Harrison-Woolrych, New Zealand Pharmacovigilance Centre, New Zealand. No external funding was used to support the publication of this theme issue.

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Correspondence: Dr *Peter G.M. Mol*, University Medical Center Groningen, Department of Clinical Pharmacology, FB20, P.O. Box 196, 9700 AD Groningen, the Netherlands.
E-mail: p.g.m.mol@umcg.nl

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