

The ISoP CommsIG for Improving Medicinal Product Risk Communication: A New Special Interest Group of the International Society of Pharmacovigilance

Priya Bahri¹ · Alexander N. Dodoo² · Brian D. Edwards³ · I. Ralph Edwards⁴ · Irene Fermont⁵ · Ulrich Hagemann⁶ · Kenneth Hartigan-Go⁷ · Bruce Hugman⁴ · Peter G. Mol^{8,9}

Published online: 2 June 2015
© Springer International Publishing Switzerland 2015

1 Focus on Risk Communication

Communicating to patients and healthcare providers about the risks of harm with medicines and how to use medicines safely is vital to pharmacovigilance for fulfilling its objectives—there is no or little risk avoidance/mitigation or patient safety without risk communication. Communication about risk characteristics and factors should also enable patients and healthcare providers to make informed

therapeutic choices. This requires discussing risks of medicines in the context of their benefits as well as the risks of deciding against medication. Usually medicines are meant to benefit the individuals taking them. In the area of infectious diseases, however, vaccines are aimed at protecting the vaccinee and also, through repressing or eradicating the disease, protecting vulnerable individuals who cannot be vaccinated.

For a considerable time, guidance documents on communications have been available from international pharmacovigilance specialists [1–4] and some regulatory authorities (e.g. [5–8]). However, application of these documents in everyday pharmacovigilance has been a challenge. An issue of *Drug Safety* not long ago, dedicated to the theme of risk communication, discussed barriers to implementation and proposals for improving communication practices from worldwide experience [9–17]. There is much more research on medical information, communications and risk perception available, but every time a major safety concern arises with a medicine, designing a communication strategy and materials for avoiding and mitigating risks is perceived as a complex new challenge by both industry and regulatory authorities, and either the available evidence from the communication sciences is not fully applied or specific research to guide them is lacking. With rapidly changing communication tools, landscape and behaviour, it is not easy for research to catch up.

However, communicating must be a paramount consideration whenever new safety information becomes available. Independently from which communication modalities are chosen, the content must be useful and understandable for those that should benefit from it (patients and healthcare providers), but also for other possible recipients like the general public and those in mediating roles such as drug information pharmacists and journalists. This

On behalf of the ISoP CommsIG.

The views expressed in this article are personal to the authors, and are not knowingly the position of any other body unless explicitly stated. As regards Priya Bahri, the views expressed in this article are her personal views and may not be understood or quoted as being made on behalf of or reflecting the position of the European Medicines Agency (EMA) or any of its committees or working parties.

✉ Priya Bahri
priya.bahri@ema.europa.eu

- ¹ European Medicines Agency, 30 Churchill Place, London E145EU, UK
- ² Centre for Tropical Clinical Pharmacology and Therapeutics, University of Ghana, Accra, Ghana
- ³ NDA Regulatory Science Ltd, Leatherhead, UK
- ⁴ Uppsala Monitoring Centre, Uppsala, Sweden
- ⁵ Irene Fermont Safety Consulting (IFC), London, UK
- ⁶ Berlin, Germany
- ⁷ Asian Institute of Management, City of Makati, Philippines
- ⁸ Department of Clinical Pharmacy and Pharmacology, University of Groningen, University Medical Center Groningen, Groningen, The Netherlands
- ⁹ Dutch Medicines Evaluation Board (CBG-MEB), Utrecht, The Netherlands

involves managing the differing communication needs of multiple stakeholders, including some very vulnerable patient groups.

So, with effective medicinal product risk communication being a vital necessity, how can communication practices be progressed, based on evidence from the communication sciences? Leaving communicators such as press officers and journalists, or each individual healthcare provider alone with this challenge seems neither effective nor fair. In most pharmaceutical companies, risk communication is dealt with by medical affairs or marketing departments. However, communicating about medicines is a joint task, and in whatever setting, those who investigate the risks and take decisions on the benefit–risk balances should shoulder their responsibility to develop messages to those using medicines. Moreover, they need to find ways to listen to patients and healthcare providers, to understand the characteristics, impact and meaning of the risks fully, and to see which risk mitigation measures and messages may work best in real life. In addition, they need to understand how to adequately support healthcare providers and those in mediating roles to inform patients and the general public. In fact, reviewing possible risk communication strategies should be intrinsic to any risk assessment concluding that action has to be taken to avoid harm and to enable informed choice.

The pivotal question is how to best communicate measures to avoid or mitigate risks in order to achieve safe behaviours around medicine use. Some of the associated challenges may actually be opportunities. In particular, developments in various media may help overcome the limitations of the printed word and offer opportunities for dialogue. With new media tools, one can learn by asking stakeholders whether information provided has been useful and evaluate the utility of communication efforts. Above all, this might bring pharmacovigilance into a real partnership with patients and healthcare providers. Perhaps, at last, this dialogue can move us away from underreporting of adverse effects and beyond the merits of controlled clinical trials and observational studies, shifting the gaze towards those particularly at risk because of reasons such as genetic factors, medical conditions or social situations. Obtaining their input might enable specific communication strategies to avoid or mitigate risks and optimise benefits in those individuals.

Another major strategic consideration relates to timing of communication. Should information be disseminated as soon as a safety concern has arisen, only after its full assessment, or at regular intervals during the assessment process? Increasing transparency and dialogue with patients and healthcare providers during assessments intensifies communication needs, also with a view to informing about uncertainty and preventing social risk amplification.

Communication processes should also facilitate effective communication in situations where new information needs to be disseminated urgently or where there is a potential media crisis.

“Inadequate communication is a risk in itself, and hence communication expertise and functions within pharmacovigilance should be installed alongside all other crucial functions”, the editorial of the *Drug Safety* theme issue concluded [9]. This means that pharmacovigilance specialists with risk communication expertise should reach out and build bridges for collaborations with patient representatives and healthcare providers during assessments. They should further collaborate with those specialists leading communication operations for development of communication strategies and messages, as well as promote and conduct relevant research for planning and evaluating communication. Pharmacovigilance systems and processes should provide for this, underpinned by quality management. Efforts should in particular be made to understand why so far implementation of already available communication evidence and guidance, including recommended listening mechanisms, has been slow and how practice uptake can be improved. Issues and opportunities regarding the latest media developments are also an important area to tackle.

2 Setting up the ISoP CommSIG

2.1 Call into Being and Mandate

It is for these reasons that in October 2013 the Executive Committee of ISoP, the International Society of Pharmacovigilance, agreed with the suggestion of the ISoP President Hervé Le Louet to establish a special interest group (SIG) on the topic of medicinal product risk communication, in short CommSIG. The Executive Committee also agreed the following mandate, the scope of which has never previously been attempted:

- Describe, develop and promote risk communication as a sub-discipline of pharmacovigilance;
- Provide a forum for global exchange on communication practices and experiences to maximise lessons learnt and drive progress;
- Connect with communications, social science and healthcare practice experts worldwide to improve risk communication, including collaboration to support communication operations;
- Reach out to others (e.g. patient groups, healthcare providers, drug information providers, patient safety experts, scientific journals, general media) to develop communication practices facilitating informed

therapeutic choice, safe use of medicines and credibility of the safety surveillance/regulatory system;

- Advocate for relevant research on risk communication;
- Provide training opportunities, ideally multi-disciplinary for mutual learning, e.g. with journalists.

A guideline on how SIGs should operate was adopted by the Executive Committee in April 2014. In line with this, at least five founding members were required to establish a SIG, and then colleagues who had been active in the area of communications at the annual meetings of ISoP or had contributed to the *Drug Safety* theme edition convened to establish the CommSIG.

2.2 Previous ISoP Activities as the Basis for the SIG

ISoP has not started this topic from scratch. There was a first pre-conference session discussing risk management and communication in 2006 at the ISoP Annual Meeting in Liège [18–20]; and in Bournemouth in 2007, editors from medical and pharmacovigilance specialist journals presented and discussed the roles of journals and in particular editors in this respect [21–23]. This was followed by a plenary lecture in Buenos Aires in 2008, where a strategic health communication approach was applied to pharmacovigilance [24]. In 2009, ISoP contributed to the second Erice report [2] and organised a session at the ISoP Annual Meeting in Reims with pharmacovigilance and media specialists [25–28] as well as a session on ethics where an anthropologist provided inspiring thoughts about the topic of healthcare communication [29]. Something different was organised in Accra in 2010 with an interactive debate consisting of vivid sharing of experiences and ideas of all presenters and more importantly all session attendees [30]. The ISoP Annual Meeting in Istanbul in 2011 took the topic to a new level: there was a specific call for research abstracts about risk perception and communication [31–33], and a lecture by an invited risk communication scientist [34] complemented the oral abstract presentations from the ISoP community [33, 35, 36]. It was this research-based event which led *Drug Safety* to pursuing their idea of the theme edition. ISoP continued its practice of having sessions dedicated to communication in pharmacovigilance at its Annual Meeting in Cancun in 2012, where theory and practice of risk communication was addressed with research and examples [37–40]. In Pisa in 2013, the focus of an invited speech was on the evolving media landscape and its meaning for pharmacovigilance [41], supplemented by reflections from a health journalist [42]. For many years, ISoP has also held training events on various aspects of risk communication.

The CommSIG will use the research, experiences and proposals discussed so far at ISoP meetings to inform their future activities, and will also build on the established contacts for expanding the expert network.

2.3 Interactions with the ISPE BRACE SIG

ISoP is not the only learned society that has recognised the importance of communication in relation to risks with medicines. ISPE, the International Society for Pharmacoepidemiology, established a SIG for BRACE in 2012. BRACE stands for benefit-risk assessment, communication and evaluation, and the purpose of the ISPE BRACE SIG is to promote knowledge sharing, education, best practices and new methods for BRACE activities, supported by multi-disciplinary input and collaboration [43]. The mandates of this and the ISoP CommSIG have some overlap, but more importantly they are complementary, and a fruitful exchange between the two SIGs is ensured through some common members. While the ISPE BRACE SIG looks more at methods to gather and analyse data for assessment, communication/risk mitigation interventions and their evaluation, the ISoP CommSIG aims more at applying such methods and developing best practices for everyday pharmacovigilance.

2.4 Announcements and SIG Membership

The Executive Committee's decision to set up a SIG on medicinal product risk communication was announced at the Annual Meeting of ISoP in 2013, and the newly established CommSIG was presented to the General Assembly at the Annual Meeting in Tianjin in October 2014 [44], where ISoP members with an interest in the area were invited to join. The first CommSIG meeting was held at the margins of this Annual Meeting in order to welcome new members, exchange what they would like to contribute, agree priorities and appoint a coordinator. The CommSIG currently counts 20 members (see Appendix 1).

In the meantime, a CommSIG webpage has been added to the ISoP website and will provide space for announcements, exchange and resources from other relevant initiatives [45].

3 Next Steps for the ISoP CommSIG

3.1 Connecting with Others for a Multi-Disciplinary Network

Most importantly, the CommSIG will actively connect with relevant experts outside traditional pharmacovigilance circles and invite them to contribute to progressing medicinal product risk communication, in order to address the scientific-medical, cultural, linguistic, social, political and media-technological complexity. Links are planned with experts from the social and communication sciences or those active in patient safety and human factors research and practice, as well as with representatives from patient, healthcare provider and media organisations. It is crucial to

listen to those who should benefit from pharmacovigilance and to set up opportunities for learning from other experts.

There is specific interest to ground the work in cognitive risk communication and decision science theories [7, 46–51]. Some CommSIG members have already started applying these [14, 17, 24], and a related lecture was invited at an ISoP Annual Meeting [34]. Also, the *Drug Safety* theme edition included an article on this subject [11].

In general, and for multi-disciplinary work in particular, the CommSIG finds it essential to compile existing definitions and to work further on defining terms and concepts in the context of medicinal product risk communication; for example, for communication, communications, information, dialogue and risk communication, to name the most obvious ones.

3.2 Working Arrangements

Several work streams have been set up under the lead of different CommSIG members, so work on various deliverables can go on in parallel. There will also be collaboration with the Uppsala Monitoring Centre (UMC) for synergies. The SIG works through telecommunications and personal meetings, including regular gatherings at the annual meetings and training sessions of ISoP.

Contributions of the CommSIG to ISoP training activities will follow chapter 14 of the recently published WHO-ISoP Curriculum [52] and be further informed by the teaching experience gained from ISoP events, the Eu2P Programme [53] and other training activities SIG members have been involved with.

3.3 Deliverables for 2015

The following are the concrete deliverables for 2015, which were proposed by the founding members and agreed with all CommSIG members:

- Organise a session for the 15th Annual Meeting of ISoP on a defined question and invite experts with the objective to learn about the challenges and explore solutions;
- Review the *Drug Safety* theme edition on risk communication to identify relevant questions for the next and future annual meetings;
- Finalise and publish a founding paper (i.e. this publication), which will also act as background material when reaching out to experts from other disciplines or to other organisations;
- Start an inventory of ongoing relevant publications and initiatives ISoP members are involved with or know about for the CommSIG webpage [45];
- Start developing a set of definitions for clear, meaningful exchange on the topic;

- Contribute to ISoP training activities.

The preparations for the Annual Meeting in Prague in 2015 have already begun and a major session with contributions from a healthcare researcher and a communication psychologist is under preparation [54].

4 Outlook

This paper presents the ISoP CommSIG, a new special interest group of the International Society of Pharmacovigilance (ISoP) on medicinal product risk communication, describing the way it has come into being, its mandate, plans, and above all its rationale, reflecting the intrinsic role of communication in pharmacovigilance. The key messages are summarised in Box 1. This is a call to interested ISoP members to join the CommSIG as well as a backgrounder for experts from other disciplines with whom the SIG wants to collaborate. It will be essential for the SIG to bring in worldwide expertise from the areas of communications and the social sciences. The SIG hopes to invite such experts to ISoP's annual meetings each year to review possible recommendations for another challenge in risk communication, so it can gradually progress.

The CommSIG will of course also connect with those practicing and researching healthcare and most importantly with patients in order to improve risk communication. It should provide a platform for a critical discussion on how new communication tools/channels, the social media, and new(er) concepts such as two-way risk communication can actually be applied effectively, and also how these can be incorporated effectively and efficiently into the patient–healthcare provider interaction. The global flow of local information and the need for local adaption of global information needs specific attention.

Overall, the CommSIG aims to develop concepts for communication at an expert-quality level and best practices which can be integrated into operational everyday pharmacovigilance, and hence contribute to enabling informed therapeutic choices and keeping patients safe.

Acknowledgments The authors are the founding members of the Special Interest Group of the International Society of Pharmacovigilance on Medicinal Product Risk Communication (ISoP CommSIG). The manuscript was reviewed by the whole CommSIG (see Appendix 1), and the authors thank the members for their review; and in particular, Paula Alvarado, Jean-Christophe Delumeau, Tamas Megyaszi, Kaori Nomura, Sylvie Tomczyk and Panos Tsintis for their comments.

The authors, Priya Bahri, Alexander Doodoo, Brian Edwards, Ralph Edwards, Irene Fermont, Ulrich Hagemann, Kenneth Hartigan-Go, Bruce Hugman and Peter Mol, have no conflicts of interests that are directly relevant to the content of this article.

No sources of funding were used to assist in the preparation of this article.

Appendix 1: Current members of the ISoP CommSIG

Sris Allan
 Paula Alvarado
 Asmaa Asim
 Priya Bahri (CommSIG Coordinator)
 Jean-Christophe Delumeau
 Alexander N. Dodoo
 Brian D. Edwards
 I. Ralph Edwards
 Irene Fermont
 Kenneth Hartigan-Go
 Ulrich Hagemann
 Bruce Hugman
 Agnes Kant
 Viola Macolic
 Tamas Megyaszi
 Peter G. Mol
 Kaori Nomura
 Sylvie Tomczyk
 Panos Tsintis
 Banu Unal

Box 1: Key Messages

- ISoP, the International Society of Pharmacovigilance, has set up their Special Interest Group on Medicinal Product Risk Communication (ISoP CommSIG), which started its work in 2014.
- The CommSIG's mandate is to establish risk communication as a sub-discipline of safety surveillance and risk management of medicines, provide for multi-disciplinary exchange, learning and practice development and promote related research.
- This builds on ISoP members' long-standing interest in the topic, with sessions at the annual meetings of ISoP since 2006, training events and articles published in the scientific literature.
- Reaching out to others, such as patient groups, healthcare providers, drug information providers, the media, as well as connecting with experts from the fields of communications, social and healthcare sciences will be essential to the CommSIG.
- The overall goal is to support improving risk communication practices in the various pharmacovigilance settings worldwide with a view to facilitating informed therapeutic choice, safe use of medicines and credibility of the regulatory system.

- The objectives of pharmacovigilance, and the wider vision of patient safety, cannot be achieved without communication with patients, healthcare providers and other influential parties at expert quality level.

References

1. Effective communication in pharmacovigilance: the Erice report. Uppsala: Uppsala Monitoring Centre (UMC); 1997. (Report on the International Conference on Developing Effective Communications in Pharmacovigilance held in Erice, 24–27 September 1997, organised by the UMC, the World Health Organization (WHO), the University of Verona, the International School of Pharmacology at the Ettore Majorana Foundation and Centre for Scientific Culture in Erice, Sicily, Italy and supported by EQUUS Communications, UK).
2. Erice statement 2009: communication, medicines and patient safety. *Br J Clin Pharmacol.* 2010; 69: 207–208. (Statement from the Workshop on Drug Risk Communication held in Erice, 3–8 July 2009, organised by the International School of Pharmacology at the Ettore Majorana Foundation and Centre for Scientific Culture in Erice, Sicily, Italy, in collaboration with the International Society of Pharmacovigilance (ISoP), the SK Foundation and the Uppsala Monitoring Centre (UMC)).
3. Uppsala Monitoring Centre (UMC). Dialogue in pharmacovigilance. Uppsala: UMC; 2002. (Based on preliminary meeting organised by the UMC, the Department of Clinical Pharmacology of the University of Verona and EQUUS Communications, UK and sponsored by the World Health Organization (WHO) and the Council for International Organizations for Medical Sciences (CIOMS)).
4. Uppsala Monitoring Centre (UMC). Expecting the worst: anticipating, preventing and managing medicinal product and other healthcare crises. 2nd ed. Uppsala: UMC; 2010.
5. Health Canada. Risk communication: protecting Canadians through information [webpage]. Ottawa: Health Canada. Available under: http://www.hc-sc.gc.ca/dhp-mps/pubs/medeff/_fs-if/2011-risk_comm_risque/index-eng.php.
6. European Medicines Agency (EMA) and Heads of Medicines Agencies. Good pharmacovigilance practices (EU-GVP). London: EMA; 2012–2015. Available under: http://www.ema.europa.eu/ema/index.jsp?curl=pages/regulation/document_listing/document_listing_000345.jsp&mid=WC0b01ac058058f32c. (EU guidance on communication principles and direct healthcare professional communication was published in 2006 as final in Chapter IV.2 of: European Commission. Volume 9A of the Rules Governing Medicinal Products in the EU: pharmacovigilance guidelines. Brussels: European Commission; 2001–2012 (superseded by EU-GVP)).
7. Fischhoff B, Brewer NT, Downs JS. Communicating risks and benefits: an evidence-based user's guide. Silver Spring: US Food and Drug Administration; 2009.
8. US Food and Drug Administration. Guidance on drug safety information: FDA's communication to the public (2007), Guidance for industry and FDA staff: dear health care provider letters: improving communication of important safety information (2014) and Guidance for industry: internet/social media platforms with character space limitations: presenting risk and benefit information for prescription drugs and medical devices [draft] (2014) on: Guidances (drugs) [webpage]. Silver Spring: 2015. Available

- under: <http://www.fda.gov/Drugs/GuidanceComplianceRegulatoryInformation/Guidances/default.htm>.
9. Bahri P, Harrison-Woolrych M. Focussing on risk communication about medicines [editorial]. *Drug Saf.* 2012;35:971–5.
 10. Cox AR, Butt TF. Adverse drug reactions: when the risk becomes a reality for patients. *Drug Saf.* 2012;35:977–81.
 11. Fischhoff B. Good decision making requires good communication. *Drug Saf.* 2012;35:983–93.
 12. Hartigan-Go K. Challenges of drug risk communication in the Philippines. *Drug Saf.* 2012;35:995–1004.
 13. Hugman B. Protecting the people? Risk communication and the chequered history and performance of bureaucracy. *Drug Saf.* 2012;35:1005–25.
 14. Edwards B, Chakraborty S. Risk communication and the pharmaceutical industry: what is the reality. *Drug Saf.* 2012;35:1027–40.
 15. Doodoo A, Hugman B. Risk perception and communication in Sub-Saharan Africa. *Drug Saf.* 2012;35:1041–52.
 16. Larson H, Brocard Paterson P, Erondu N. The globalisation of risk and risk perception: why we need a new model of risk communication for vaccines. *Drug Saf.* 2012;35:1053–9.
 17. Piening S, Haaijer-Ruskamp FM, de Graeff PA, Straus SMJM, Mol PGM. Healthcare professionals' self-reported experiences and preferences related to direct healthcare professional communications: a survey conducted in the Netherlands. *Drug Saf.* 2012;35:1061–72.
 18. Castot A. EU guidance on the handling of direct healthcare professional communications (DHPCs) on the safe and effective use of medicinal products for human use [training lecture]. In: Liège: 6th Annual Meeting of the International Society of Pharmacovigilance; 10 October 2006.
 19. Schmickler M. How to prevent side effects: communicating risks to health professionals [training lecture]. In: Liège: 6th annual meeting of the international society of pharmacovigilance; 10 October 2006.
 20. Fermont I. How to built a new partnership aimed at risk communication [training lecture]. In: Liège: 6th annual meeting of the international society of pharmacovigilance; 10 October 2006.
 21. Stather R. Communicating drug safety: the role of the specialist journal [presentation]. In: Bournemouth: 7th annual meeting of the international society of pharmacovigilance; 24 October 2007.
 22. Jones G. Communicating drug safety: the role of medical journals [presentation]. In: Bournemouth: 7th annual meeting of the international society of pharmacovigilance; 24 October 2007.
 23. Abbasi K. Communicating drug safety: the role of the editor of a medical journal [presentation]. In: Bournemouth: 7th annual meeting of the international society of pharmacovigilance; 24 October 2007.
 24. Bahri P. Public pharmacovigilance communication: a process calling for evidence-based, objective-driven strategies. *Drug Saf.* 2010;33:1065–79.
 25. Castot A. Communication from regulatory authorities in the EU: current challenges and developments [presentation]. In: Reims: 9th annual meeting of the international society of pharmacovigilance; 7 October 2009.
 26. Le Louet H. Patient reporting of adverse drug reactions and cooperation with patient associations: a pilot study [presentation]. In: Reims: 9th Annual Meeting of the International Society of Pharmacovigilance; 7 October 2009.
 27. Kouimtzi M. Risks of evidence-based medicine and effective communication [presentation]. In: Reims: 9th Annual Meeting of the International Society of Pharmacovigilance; 7 October 2009.
 28. Turone F. The media between alarmist headlines and confident declarations [presentation]. In: Reims: 9th Annual Meeting of the International Society of Pharmacovigilance; 7 October 2009.
 29. Fainzang S. Pharmacovigilance and patients: symbolic logics and ethical aspects [abstract]. *Drug Saf.* 2009;32:988.
 30. Bahri P, Mol PGM, Théophile H, Edwards IR, Hugman BPJ. Communication in drug safety: a report from an interactive debate held at the 10th annual meeting of the International Society of Pharmacovigilance (ISoP), 2010. *Drug Saf.* 2011;34:881–2.
 31. Osborne V, Layton D, Al Shukri M, Foff C, Shakir S. Indicators of dependence and aberrant behaviours during post-marketing use of fentanyl buccal tablets: risk scores in support of risk management [abstract]. *Drug Saf.* 2011;34:895.
 32. Arnardottir A, Haaijer Ruskamp F, Straus S, Piening S, Monster Simons M, De Graeff P, Mol P. Which aspects of new glucose lowering drugs do different stakeholders value? A qualitative study [abstract]. *Drug Saf.* 2011;34:896.
 33. Bahri P. Patients, medicines and perceptions: “bridging continents” for improving risk assessment and communication [abstract]. *Drug Saf.* 2011;34:896.
 34. Lofstedt R. Perception of risk and communication [lecture]. In: Istanbul: 11th Annual Meeting of the International Society of Pharmacovigilance; 28 October 2011.
 35. Stefansdottir G, Knol MJ, Leufkens HG, Arnardottir AH, Grobbee DE, De Bruin ML. Room for improvement in safety learning of same class drugs [abstract]. *Drug Saf.* 2011;34:892.
 36. Butt TF, Cox AR, Oyeboode J, Ferner RE. Internet accounts of survivors of serious adverse drug reactions: a study of experiences of Stevens-Johnson syndrome and toxic epidermal necrolysis. *Drug Saf.* 2012;35:1159–70.
 37. Psaty B. The rhetoric of risk communications: rosiglitazone and its aftermath in the US [presentation]. In: Cancun: 12th Annual Meeting of the International Society of Pharmacovigilance; 2 November 2012.
 38. Van Puijenbroek EP, Abbink NH, Van Grootheest AC. Perception of causality terms: a personal view [abstract]. *Drug Saf.* 2012;35:888.
 39. Tulkens PM, Arvis P, Kruesmann F. Communicating comprehensive safety data gained from clinical trials to the scientific community: opportunities and difficulties from an example with moxifloxacin [abstract]. *Drug Saf.* 2012;35:888.
 40. Piening S, Reber KC, Wieringa JE, Straus SM, De Graeff PA, Haaijer-Ruskamp FM, Mol PGM. Determinants of impact of drug safety warnings: a retrospective analysis of direct healthcare professional communications [abstract]. *Drug Saf.* 2012;35:913.
 41. Bahri P. The relationship between pharmacovigilance and the various media types: increasing mutual understanding [abstract]. *Drug Saf.* 2013;36:939.
 42. Feinmann J. Risks of medicines and the media [oral comments]. In: Rome: 13th Annual Meeting of the International Society of Pharmacovigilance; 4 October 2013.
 43. Radawski C, Morrato E, Hornbuckle K, Bahri P, Smith M, Juhaeri J, Mol P, Levitan B, Huang H-Y, Coplan P, Li H, on behalf of the BRACE Special Interest Group. Benefit-risk assessment, communication and evaluation (BRACE) throughout the life cycle of the therapeutic products: overall perspective and role of the pharmacoepidemiologist. *Pharmacoepidemiol Drug Saf.* 2015. (Submitted). <https://pharmacoepi.org/communities/BRACE.cfm>
 44. International Society of Pharmacovigilance (ISoP). In: 14th Annual Meeting of the International Society of Pharmacovigilance: new ideas in ancient cultures: advancing pharmacovigilance in Asia [conference programme]. 20–22 October 2014. Available under: <http://www.isop2014.org/plan.aspx>.
 45. Website of the International Society of Pharmacovigilance (ISoP): www.isoponline.org.
 46. Arvai J, Rivers L III. Effective risk communication. London: Earthscan; 2013.
 47. Fischhoff B, Bostrom A, Jacobs Quadrel M. Risk perception and communication. In: Detels R, McEwen J, Reaglehole R, Tanaka H, editors. *Oxford textbook of public health*. 4th ed. Oxford: Oxford University Press; 2002.

48. Lofstedt RE. Risk management in post-trust societies. London: Pelgrave Macmillan; 2005.
49. Pidgeon N, Kasperson RE, Slovic P. The social amplification of risk. Cambridge: Cambridge University Press; 2003.
50. Siegrist M, Earle TC, Gutscher H. Trust in cooperative risk management: uncertainty and scepticism in the public mind. London: Earthscan; 2007.
51. Slovic P. Perception of risk. London: Earthscan; 2000.
52. Beckmann J, Hagemann U, Bahri P, Bate A, Boyd IW, Dal Pan GJ, Edwards BD, Edwards IR, Hartigan-Go K, Lindquist M, McEwen J, Moride Y, Olsson S, Pal SN, Soulaymani-Bencheikh R, Tuccori M, Vaca CP, Wong ICK. Teaching pharmacovigilance: the WHO-ISoP core elements of a comprehensive modular curriculum. *Drug Saf.* 2014; 37: 743–759.
53. European Programme in Pharmacovigilance and Pharmacoepidemiology (Eu2P). Available under: <http://www.eu2p.org>.
54. International Society of Pharmacovigilance (ISoP). In: 15th Annual Meeting of the International Society of Pharmacovigilance: cubism in pharmacovigilance [conference programme]. 27–30 October 2015. Available under: <http://www.isop2015prague.org>.