

Medical care and drug-related problems: *Do doctors and pharmacists speak the same language?*

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Abstract Optimal communication between physicians and pharmacists is important for patient care. However, pharmacists and doctors do not always seem to understand each other. They have been professionalized differently, and do not always speak the same language. Especially in the areas of prescribing, medication review, and medicine use, there can be differences in views. This contribution clarifies some essential concepts that doctors and pharmacists use. Thus we hope that our commentary contributes to a better understanding of each other's role and the importance of interprofessional cooperation for the benefit of the patient.

Keywords Concepts · Drug-related problems · Medication errors · Medicine · Pharmacy · Terminology

Impacts on practice

- Not all medication errors are a problem for patient outcomes and not all medicine-related patient problems are caused by medication errors.
- A drug-related problem can be manifest, but also potential. Both need to be avoided.
- In the patients' interest it is imperative that both doctors and pharmacist speak the same language and use the same terminology around the use of medicines.

Introduction

A plethora of terms have been used to describe the various things that can go wrong during medical treatment and with pharmacotherapy in particular, ranging from medical errors to adverse drug events. A number of these terms refer to system-errors while others refer to behavioural problems at the patient level and some other terms focus on the side effects of medical treatment. Not all these 'wrongs' will result in adverse patient outcomes—it will depend on the nature and magnitude of the event being referred to. Doctors and pharmacists seem to have different views on problems and errors with pharmacotherapy, and seemingly speak different languages.

Many key national and international organisations such as IOM, IHI, World Health professionals Alliance acknowledge the importance of an interprofessional approach for the optimal delivery of healthcare, patient and medication safety. In order to achieve this, despite the use of disciplinary jargon, it is important that interdisciplinary communication is effective. Effective communication requires a common language, with common definitions.

Problems or errors, preventable or not, potential or actual

Health professionals need to create systems that minimise errors. In 2000, the Institute of Medicine (IOM) advised that the health system required a fundamental redesign to try to eradicate errors, which at that time were calculated to cost 2 billion US dollars annually [1]. Medication errors alone, occurring either in or out of the hospital, were estimated to account for over 7000 deaths annually [2]. The report generated much activity and many publications [3].

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Later publications indicated that the system problems have not been solved, and that it remains difficult to do so [4].

In order to understand how a health care system, the interface between professionals and patients, works one must realize that there is a fundamental difference between errors and problems. An error is something that goes wrong in the health care process, or, according to the Oxford dictionary, ‘a mistake’ or ‘the state or condition of being wrong in conduct or judgement’. This unintended action, however, does not necessarily influence the outcome, be that clinical, economic or humanistic. But influence on an outcome, can be a problem for the patient. A problem being ‘a matter or situation regarded as unwelcome or harmful and needing to be dealt with and overcome’, according to the same dictionary [5].

This distinction was also made in the year 2000 report of the Institute of Medicines: ‘Not all errors result in harm’. In other words, errors need to be detected, identified and recorded. But errors only become problems when they create risk or harm for patients [6]. This especially true of system errors—they need to be addressed. Problems can arise from errors but may be caused by other factors as well. Hence the problems need to be solved for the patients’ sake.

All medical interventions have the potential to cause harm or adverse events. If this adverse event is also a problem depends upon balancing the desirable effect (benefit) against the possible harm (risk). Health care professionals are involved in this balancing act on a daily basis. The likelihood of benefit and risk should also be considered with the patient. If a potential risk is translated into an outcome, then it becomes an actual problem (as opposed to a potential problem). A shared decision between the patient and the health care professional will determine whether the actual problem is acceptable or not.

Thus a problem has three dimensions: (1) it can be preventable or not and (2) it can be potential or actual and (3) it can be caused by an error, or an intentional or unintentional deviation from accepted medical practice, or an unpredictable reaction to an appropriate medical intervention.

Pharmacists around the world have given a name to the problems that are a result of pharmacotherapy. Depending on the country they are called Drug-related problems (DRPs) or Medicine-related problems (MRPs) [7]. A drug (or medicine)-related problem is defined as ‘an event or circumstance involving drug (medicine) therapy that actually or potentially interferes with desired health outcomes’ [8]. The term ‘Drug-therapy problem’ (DTP) or ‘Medication-therapy problem’ (MTP), indicate that the problem can be the result of the pharmacotherapy as a whole. With respect to new developments in personalized

medicine, the term DRP also covers all influencing factors that depend on the genetic characteristics of a patient. Ignoring or not adequately using genetic information could become an important category of drug-related problems in future pharmacotherapy [9].

Medication errors

The combination of prescribing, dispensing and taking medicines is the most commonly applied medical intervention. Because there is significant human interaction involved, this process is known to be prone to errors [10–12]. According to the seminal report ‘To err is human’, medication errors are the most frequently occurring medical error. To try to avoid such errors, new technology has been used, such as electronic prescribing, computerized physician (prescriber) order entry (CPOE) systems, bar codes and scanners and individualised dosing systems. In 2007, the IOM was still concerned about medication errors and published ‘Preventing Medication Errors’, which is an attempt to think about the next level of medication safety [13].

The European Medicines Agency (EMA) defines medication errors as unintentional errors in the prescribing, dispensing, administration or monitoring of a medicine while under control of a healthcare professional, patient or consumer [14]. They are the most common single preventable causes of adverse events/reactions in medication practice. Quite rightly, the focus within EMA definition of medication error is on the word ‘unintentional’. Poor adherence with prescribed medication is a major problem within pharmacotherapy but interestingly, and according to this definition, unintentional poor adherence without impact on outcomes can be considered a medication error while intentional poor adherence can be a problem but not an error!

Medication problems

All health care professionals will be confronted in routine practice with patient problems related to medicine use. These problems may vary from no therapeutic effects to unexpected, unpredictable or adverse effects. Such problems may be the result of an error, but not necessarily. Such problems may also not always be avoidable. The problems seem to concentrate especially in the elderly, who as a rule use more medicines than younger adults. Many papers have already appeared on this topic, and Hanlon et al. [15] provided a nice overview in 2013.

Drugs or medicines?

The two words drug or medicine can be confusing, since in Europe the word 'drug' is used for substances of abuse like heroin or cocaine. In the United States, the word 'drug' normally refers to medicinal substances. Since the concept of problems with medicines was first named in the United States, the terms 'Drug-related problems' or 'Adverse Drug Events' have taken hold in most European countries where English is not the native language. In the United Kingdom and Ireland, researchers and practitioners tend to speak of 'Medicine-related problems'

And adverse drug events?

Medication-related adverse events are the single leading cause of injury according to the IOM. An adverse event, in medical terminology, is any untoward medical occurrence or injury resulting from a medical intervention, or in other words, not primarily due to the underlying condition of the patient. Adverse events of medicines (including adverse drug reactions) are indeed not intended, but may occur even when no error has been made in the prescribing, dispensing or medicine taking process. This makes such adverse events important drug-related problems.

Problem, error or both?

If, in a routine and otherwise appropriate episode of care a patient receives a course of a wide therapeutic index antibiotic in a dose that is 10 % higher or lower than intended, this usually does not cause a *problem* at the patient level. Nevertheless, somewhere in the prescribing or dispensing process an *error* was made. And if the incorrect dose does cause harm to the patient, then the potential DRP becomes an actual drug-related problem. Conversely, when a patient takes an anticoagulant in an accurately calculated dosage, he or she may still get bruising or intestinal bleeding more frequently than usual. This side effect (or adverse reaction) is a *problem* (in the sense of being unwelcome, as in the definition above) for the patient, but is not the result of an error.

If a dispensed medicine is erroneously labelled with incorrect directions for three tablets daily instead of three tablets once a week for a methotrexate prescription, this is an error which also will lead to a (very serious) problem for the patient if these instructions are followed. In this case, in most countries, this would be classed as two errors; the first would be the incorrect prescription label and the second would be the pharmacist's failure to catch the error before the medication was given to the patient.

There are publications that try to relate medication errors to patient problems, but this relationship remains difficult to study, since the role of potential problems is

unclear. Potential drug-related problems are, as the word says, potential and one never knows if they will develop into an actual drug-related problem at the patient level. From the perspective of the health care professional, the actual problems are the primary reason for an intervention [16].

What needs to be solved (first), the medicine related problem or the error?

As illustrated above, if a medication error has no impact on patient outcomes (clinical, humanistic or economic) correcting such an error is not the highest priority. From that perspective, a drug-related problem which has an actual or potential adverse impact on patient care needs to be solved with more urgency. In our view, individual health professionals in their contact with patients should focus on the prevention of medicine therapy/drug-related problems rather than on medicine therapy-related errors. Errors are of course not desirable but recurring errors need to be dealt with on a system level.

Ideally, our systems should be fine-tuned to help identify DRPs (MRPs), and when identified, to check that an error is not the root cause. Healthcare professionals should routinely try to prevent (potential) DRPs, and check for DRPs when a patient is not responding as expected e.g. looking for issues like non-adherence (including over-adherence) and unexpected adverse reactions (side effects) or drug interactions.

Pharmacy and drug-related problems

For more than two decades, pharmacists have been developing systems to detect, identify and resolve DRPs and their impact upon patient care, since these are often overlooked and unrecorded as causative and associated factors in the medication-related harm. A number of classifications for such problems have been developed [17]. As health care professionals, pharmacists have been concerned that the outcomes of pharmacotherapy and the goals of that therapy are often not fully attained. In their practices, pharmacists are frequently confronted with lack of effect and side effects, as well as factors which may contribute to such problems such as drug-drug interactions, and poor medication adherence of patients to their pharmacotherapy [18]. They have recognized that, in spite of adaptations to prescribing or dispensing systems and despite correcting medication errors, many patients still do not benefit fully from their therapy, because DRPs still occur. Patients often are unaware of the possibilities to discuss their worries around medication. This concern has been translated into a

more specific form of care by pharmacists, called pharmaceutical care. Pharmaceutical care is 'the pharmacist's contribution to the care of individuals in order to optimize medicines use and improve health outcomes' [19]. This type of care is also called medicines or medication (therapy) management in some countries, and is part of quality improvement in health care. Not all pharmacists around the world are equipped to provide pharmaceutical care. However, in many countries therapeutics, clinical pharmacy and communication skills have in recent years become core parts of academic pharmacy curriculae [20, 21].

Increasingly pharmacists are now involved in formal patient medication consultations, medication reviews, and medication management in collaboration with prescribers. These activities require an agreed, shared understanding of both the pharmacotherapy and the medical therapy and the desired outcomes. And in the process of history-taking and assessment, throughout the cycle of pharmaceutical care, the pharmacist will look for problems (DRPs or MRPs) related to the pharmacotherapy. They have become a very important aspect of optimizing pharmacotherapy and thus medical treatment.

Conclusion

Terminology is important for health care professionals and we have tried to explain some terms here that are relatively new in healthcare for medical professionals. However, for a patient it is important to have optimal outcomes of therapy. If pharmacists and pharmaceutical scientists can contribute to this process of optimizing outcomes, while uncovering real or potential drug or medicine related problems, healthcare should embrace the benefits that pharmaceutical care has to offer, including the optimization of medication. But all involved should use the same language.

In conclusion we feel that as practising health professionals, pharmacists should look first for the real or potential problems and address those, before turning to the system error(s) that has possibly caused the problem. Moreover, patients, other health professionals and the health service, should seek to change the pharmacists' focus from searching for errors to the detection and solution of DRPs and thus to optimising outcomes for patients.

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References

1. Institute of Medicines. To err is human: building a safer health system. In: Kohn LT, Corrigan JM, Donaldson MS, editors. Washington; 1999. ISBN: 0-309-06837-1.
2. Phillips DP, Christenfeld N, Glynn LM. Increase in US medication-error deaths between 1983 and 1993. *Lancet*. 1998;351(9103):643–4.
3. Stelfox HT, Palmisani S, Scurlock C, Orav EJ, Bates DW. The "To err is human" report and the patient safety literature. *Qual Saf Health Care*. 2006;15:174–8.
4. Larizgoitia I, Bouesseau MC, Kelley E. WHO efforts to promote reporting of adverse events and global learning. *J Public Health Res*. 2013;2(3):e29. doi:10.4081/jphr.2013.e29 (eCollection 2013 Dec 1).
5. Oxford University Press. Oxford Dictionary (UK English). <http://www.oxforddictionaries.com/>. Last accessed 7-4-2015.
6. Benjamin J, Basger BJ, Moles RJ, Chen TF. Development of an aggregated system for classifying causes of drug-related problems. *Ann Pharmacother*. 2015;49:405–18.
7. Meyboom RB, Lindquist M, Egberts AG. An ABC of drug-related problems. *Drug Saf*. 2000;22:415–23.
8. van Mil JWF, Westerlund LOT, Hersberger KE, Schaefer MA. Drug-related problem classification systems. *Ann Pharmacother*. 2004;38:859–67.
9. Kirchhof P, Sipido KR, Cowie MR, Eschenhagen T, Fox KAA, Katus H, et al. The continuum of personalized cardiovascular medicine: a position paper of the European Society of Cardiology. *Eur Heart J*. 2014. doi:10.1093/eurheartj/ehu312.
10. Rupp MT, DeYoung M, Schondelmeyer SW. Prescribing problems and pharmacist interventions in community practice. *Med Care*. 1992;30(10):926–40.
11. Dean B, Schachter M, Vincent C, Barber N. Prescribing errors in hospital inpatients: their incidence and clinical significance. *Qual Saf Health Care*. 2002;11(4):340–4.
12. Velo GP, Minuz P. Medication errors: prescribing faults and prescription errors. *Br J Clin Pharmacol*. 2009;67(6):624–8.
13. Institute of Medicine. Preventing medication errors: quality chasm series. Washington, DC: National Academy Press; 2006.
14. European Medicines Agency. Medication errors. http://www.ema.europa.eu/ema/index.jsp?url=pages/special_topics/general/general_content_000570.jsp. Last accessed 15-3-2015.
15. Hanlon JT, Schmader KE, Semla TP. Update of studies on drug-related problems in older adults. *J Am Geriatr Soc*. 2013;61(8):1365–8.
16. van Doormaal JE, van den Bemt PM, Mol PG, Zaal RJ, Egberts AC, Kosterink JG, et al. Medication errors: the impact of prescribing and transcribing errors on preventable harm in hospitalised patients. *Qual Saf Health Care*. 2009;18(1):22–7.
17. Basger BJ, Moles RJ, Chen TF. Application of drug-related problem (DRP) classification systems: a review of the literature. *Eur J Clin Pharmacol*. 2014;70:799–815.
18. Kaufmann CP, Stämpfli D, Hersberger KE, et al. Determination of risk factors for drug-related problems: a multidisciplinary triangulation process. *BMJ Open*. 2015;5(3):e006376.
19. Allemann SS, van Mil JW, Botermann L, Berger K, Griese N, Hersberger KE. Pharmaceutical care: the PCNE definition 2013. *Int J Clin Pharm*. 2014;36(3):544–55.
20. Burke JM, Miller WA, Spencer AP, et al. Clinical pharmacist competencies. *Pharmacotherapy*. 2008;28:806–15.
21. European Association of Faculties of Pharmacy. EAFP/EPSA joint statement. <http://eafponline.eu/wp-content/uploads/2013/04/EAFP-EPSA-Joint-Symposium.pdf>. Last accessed 15-3-2015.