Although increasing numbers of adverse medication events are being reported to the National Patient Safety Agency, many such occurrences still go unreported. Is there more pharmacists could be doing?

How to use "trigger drugs" to help identify adverse medication events

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Pharmacists have the skills and remit to identify and report adverse drug events (ADEs), including adverse drug reactions and medication errors. In the UK, pharmacists working in secondary care aim to screen all inpatient drug charts clinically every working day. During this process, they will encounter patients who have been prescribed medicines to treat ADEs or who have had medicines discontinued because of these events. However, on many occasions these ADEs go unreported.

One method for promoting ADE reporting could be to offer pharmacists clear specifications for the types of incidents that should be reported and provide a tool for identifying when such incidents occur.

**Trigger drugs**

Medicines prescribed and administered to prevent harm from an ADE can be classed as "trigger drugs". These include antidotes (eg, naloxone, flumazenil, vitamin K, glucagon), medicines that treat the symptoms of an ADE (eg, antiemetics and antidiarrhoeals) or medicines that mitigate the adverse event itself (eg, calcium gluconate to treat hyperkalaemia).

The Institute for Healthcare Improvement in the US and the Patient Safety First campaign in the UK advocate using a "global trigger tool" to measure rates of patient safety events and monitor improvements in the quality of patient care. The tools include lists of medicines that are indicators of possible ADEs. At King’s College Hospital, London, we have extended this list to include other medicines that, in our experience, can also indicate possible ADEs. A list of these medicines, incorporating those used in the global trigger tools and by KCH, is provided in the Box below.

Simply monitoring the incidents where trigger drugs are prescribed is not sufficient. First, not all trigger drugs indicate ADEs in every clinical setting. For example, the need for intravenous omeprazole on a medical ward is a good indicator of acute gastrointestinal bleeding, which is possibly drug-induced. However, on a surgical ward, it might be administered routinely following surgery.

Second, in some instances a trigger drug might be prescribed (for use when required) at the same time as a high-risk medicine so that it can be administered promptly if needed. For example, naloxone prescribed at the same time as an opioid, or glucagon prescribed for patients who are receiving insulin. Here, it is important to check whether the medicine was actually administered.

**What can pharmacists do?**

When they monitor inpatient prescriptions, pharmacists can identify the prescribing and administration of trigger drugs. Where such medicines are administered, pharmacists should be prompted to investigate the reasons why.

Many pharmacists do not realise the need to investigate isolated ADEs that have
been treated successfully. However, an in-depth investigation is not needed to determine whether an ADE has occurred; a simple questioning approach can be sufficient. This approach is illustrated in the adjacent Figure — using vitamin K as an example.

The ease with which ADEs can be identified varies according to the specificity of the trigger drug as an indicator of medicines-related harm. Naloxone and flumazenil are good indicators because they are specific reversal agents for reactions to opioids and benzodiazepines, respectively. Ion-exchange resins are not so good because hyperkalaemia, for which these products are often prescribed, can be a symptom of deteriorating renal function as well as a side effect of drug therapy (eg, with potassium supplements, potassium-sparing diuretics or angiotensin-converting enzyme inhibitors).

Glucagon administration can be used to identify incidences where hypoglycaemia has occurred. Nevertheless, the precise cause of hypoglycaemia is often difficult to establish.

**What intervention is needed?**
Pharmacists must find out why a trigger drug has been used in each instance so that they can identify ADEs and take steps to prevent these recurring. It may be necessary for them to advise medical staff on how best to change a patient’s drug regimen following an ADE — eg, by reducing a dose or dosing frequency, discontinuing a medicine or starting a more suitable alternative.

Identifying an ADE can highlight the need for a medicines-related discussion with the patient, for which the pharmacist could take the lead. For example, a patient who is prescribed hydrocortisone and chlorphenamine to treat a serious allergy will need to understand that he or she needs to avoid that medicine in the future. The patient should be counselled and his or her updated allergy status clearly documented. Also, the patient’s GP should be informed of the reaction upon discharge. In the case of anaphylaxis, the patient might be advised to report such events. Although using trigger drugs is a method for prompting the recognition of ADEs, staff still need to be motivated to complete the report forms.

**Wider learning**
Incident reports should be used to identify local risks with medicines use and prompt reviews of systems to promote safe medicines use. Once incidents have been reported locally, they should be passed on by the hospital to the National Reporting and Learning System (operated by the National Patient Safety Agency). Here, they can be reviewed alongside those from other organisations to identify national trends and inform learning that can be disseminated through NPSA publications.

Where an actual or suspected adverse drug reaction is identified, pharmacists should also consider reporting it to the Medicines and Healthcare products Regulatory Agency via the yellow card scheme (www.yellowcard.gov.uk).