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Medication incident awareness and prevention for technicians

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Statement of objectives

Upon successful completion of this lesson, the technician should be able to:

1. State the different terms used to define medication incidents.
2. Describe the common causes of medication incidents.
3. Explain what the technician's role is in preventing and detecting medication incidents.

Introduction

Although adverse events have occurred since the beginning of modern medicine, practitioners have only recently acknowledged and taken steps to address this critical issue. Health professionals now recognize the need to measure the extent of the problem, discover the root causes and take action to improve patient safety.

Defining the terms

Many terms are used to describe medication incidents, including "drug misadventure," "dispensing error," "adverse event," "prescribing error," "near miss" and "medication discrepancy."¹ Most commonly used, though, is "medication error" or "medication incident," which is defined as an event that involves the actual dispensing, delivery or administration of a drug or the omission of a prescribed drug to a patient.²

Although the use of the word "error" is common, some argue that it does not support an environment that encourages reporting, learning and change and that it is associated with laying blame on an individual. It is now recognized that this is far too narrow a view and it is recommended that the term "incident" or "event" replace "error."

Defining the problem

The exact number of medication incidents occurring in Canada is currently unknown because there is no national reporting system. However, the Canadian Coalition for Medication Incident Reporting and Prevention is currently developing a reporting and prevention system through the combined efforts of Health Canada, the Institute for Safe Medication Practices, the Canadian Association of Chain Drug Stores, the research-based drug

manufacturers association (Rx & D) and other health-related organizations.

In the U.S., as many as 7,000 deaths per year result from medication incidents.^{1,3} The true costs of medication incidents are not known but the cost of adverse drug events (which encompasses medication incidents, adverse effects, interactions, etc.) is \$300 million annually in Canada in prolonged hospital stays alone. The cost of medication incidents also includes the cost of erosion of trust, confidence and satisfaction of the public and health-care providers.⁴

Understanding the causes

In order to ensure that those involved in health care are aware of the potential for medication incidents and how they can be prevented, we need to understand what causes them.

Through the review of reports of medication incidents

in the U.S., it has been determined that there are multiple factors that lead to medication incidents. Common causes involve: a) circumstances which occur during the provision of medication to patients, and b) underlying root causes in the systems involved in drug provision from manufacturer to patient.⁵

COMMON CAUSES OF MEDICATION INCIDENTS IN THE PROVISION OF MEDICATION TO PATIENTS

There are six common causes of medication incidents involving the provision of medication to an individual patient.⁶

1. Failed communication: This can occur with written or verbal prescriptions and is more frequent when the product is new to the pharmacist or technician. There are several reasons for poor communication, including:

Poor handwriting: Sloppy handwriting on the prescription can result in information being misinterpreted. Often there is confusion around drug names that are similar (i.e., Lescol, Lasix, Losec). In fact, one-third of incidents reported to the USP Medication Error Reporting Program (MERP) in the U.S. are related to similar drug names.

Improper spacing between characters: Without proper spacing, Inderal80 may be interpreted as Inderal 180. Zeros and decimal points can cause prob-

lems because the decimal point may not be easily distinguished; thus, 2.0 mg of vincristine could be interpreted as 20 mg. No zero before a decimal point can result in .1 mg being misread as 1 mg.

Ambiguous or incomplete orders: If an order isn't clear, the pharmacy staff may second-guess a prescriber, which can lead to problems.

Abbreviations: There is often poor standardization of abbreviations so that idiosyncratic terms and short forms for drug names can lead to confusion. For example:⁷

- x3d (for three days) is mistaken for three doses

- BT (for bedtime) is mistaken for BID

- U (for units): U can be mistaken for 0, 4 or 6 through poor handwriting, so that 4U is interpreted as 40, 44 or 46, possibly resulting in a fatal overdose of insulin

- Ambiguous short forms for drug names; i.e., HCT could be read as hydrocortisone or hydrochlorothiazide

Patient issues: There is plenty of potential for miscommunication with the patient, including:

- Patient name mix-ups; e.g., the wrong patient comes forward and receives the prescription.

- Language issues; English may not be the first language for the patient, pharmacist or physician and misunderstandings can result.

- Misunderstandings about

which medication the patient is requesting; i.e., requesting "my heart medication" or "my little pink pills" could result in Coumadin or hydrochlorothiazide being dispensed.

2. Poor drug distribution practices: Any medications pre-packaged in the community or hospital pharmacy should be carefully labeled and checked. Unit dose dispensing has been found to be safer but errors can occur in the unit dose packaging process.

Computers and automated dispensing can reduce medication incidents because they can be programmed to include checks and balances (allergy alert, timing, dose, etc.). However, caution is still needed when inputting original information to avoid errors in transcribing that can be repeated when refilled.

Look-alike containers can also lead to incidents. This is especially a problem when drugs are stored by the manufacturer's name and the same package design is used for the labels of all drugs and strengths produced by that manufacturer. This can best be addressed by storing by therapeutic classification or generic name, or by affixing distinctive labels in the pharmacy.

3. Miscalculations: Miscalculation of doses or weights of ingredients can occur through math errors such as decimal points being placed

improperly. Incidents can also occur with oral liquid medications when strength per mL is misread as strength per tsp (5 mL). Math errors also occur when converting the mg dosage into mL.

4. Drug products and devices: Twenty percent of all reports to USP MERP involve problems relating to drug products and devices.⁴ The selection of the wrong drug can result when proper labels are not on the inner wrapping of a product and the same or similar colour is on labels of different drug products.

5. Administration problems: These can occur in the institution or in the patient's home and are therefore often outside of the pharmacy staff's influence. Patients, caregivers or healthcare workers may give the wrong drug, wrong dose or administer by the wrong route. For example, vincristine, a powerful anti-cancer medication, has all too frequently been administered intrathecally rather than intravenously, resulting in almost instant death.

6. Lack of patient education: Patient counselling and education are key to ensuring patients take their medication properly. Patients are less likely to misinterpret instructions or mix up vials when they have been educated about their medications. Misunderstandings can be brought to light and clarified during counselling.

COMMON ROOT CAUSES OF MEDICATION INCIDENTS IN THE SYSTEMS INVOLVED IN DRUG PROVISION FROM MANUFACTURER TO PATIENT Although most medication incidents are the result of one of the above causes, they are also known to occur because of systemic problems during drug provision to individual patients. There are seven common underlying root causes in

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the systems involved in drug provision.⁷

1. Psychological and human factors: Medication incidents can occur when there are failures of attention or perception, or when the mind is in automatic mode. There are many distractions that can divert attention in the pharmacy, including environmental factors (noise, heat, light), physiological factors (fatigue, illness, hunger; or simply the need for a bathroom break) and psychological factors (boredom, frustration, anxiety, anger). These can be triggered by internal or external factors such as overwork, interpersonal relations and other forms of stress.⁷

Lack of knowledge is another human factor that contributes to medication incidents (i.e., a new drug name is not recognized and is confused with a drug of a similar name). This can be due to an individual's lack of continuing education or outdated and/or incorrect references.⁸ The prescriber may also lack knowledge and confuse names and dosages.

2. Workload and work schedules: Workload is one issue that pharmacy staff often blames for medication incidents. However, studies show that overall medication incident rates are not correlated with workload; although, certain types of incidents—such as omissions, extra dose and wrong time—may be related. In addition, changes in the pace of workloads—from a fast pace to a slower pace—can lead to an increase in incidents.⁹ Having technological support and an adequate number of technicians in place can help ease workloads and reduce medication incidents.

3. Dispensing process: There are many things that can go wrong during the dispensing process and contribute to an incident. A number of “critical steps” have been identified in the dispensing process that require focused attention.⁸

They include: review and assessment of the prescription, computer data entry, review of patient profile, assessment of computer alerts, selection of medication (in computer and from shelf), verification of expiry date, counting or measuring medication, affixing label, double-checking prescription, returning stock to proper location, patient counselling and taking history, and verification of questions with the prescriber.

Each of these functions should be clearly defined (i.e., who will do it, where it will be done, etc.). Also, it has been suggested that non-dispensing related conversation should not be permitted during these critical functions in order for pharmacists and technicians to be able to focus completely on the task at hand.

4. Environment: The physical environment in the dispensary can affect safety. The work area should be free of clutter and designed for smooth workflow, with telephones placed where they are convenient but not too distracting.¹⁰ Storage space should be sufficient with separate areas for different types of medications (i.e., oral, topical, etc).

Interruptions and distractions, noise and poor lighting have all been found to contribute to medication incidents. An environment that works to reduce stress and fatigue (i.e., pleasant colours, soft music, comfortable flooring, etc.) has also been found to reduce medication incidents caused by the human factors noted above.¹¹

5. Equipment design: Computers can be programmed to prevent incidents by flagging alerts for high or low dosages and frequencies, pediatric dosing, duplicates, etc. Unit dose dispensing systems have great potential to reduce incidents in administration but must have appropriate

labeling and quality control for packaging. Robots boasting very low error rates (i.e., one in 37 million) and electronic prescribing have both been promoted to reduce incidents. Bar coding and scanning technology are being instituted in many places to match the correct drug to the drug order and then to the correct patient. However, vigilance is still needed in interpreting and inputting orders; and software and hardware must be regularly checked and maintained.¹²

6. Organization: Pharmacies should make patient safety a priority. Systems and products should be regularly reviewed for risk. Most importantly, a non-punitive culture should exist so that reporting of medication incidents is encouraged.¹³ The responsibility of all staff to prevent and report incidents should be clearly stated in job descriptions and policies, emphasizing a no-blame approach to encourage reporting.

A system for reporting incidents and near misses should be instituted whereby only the reporter is identified and no blame is ascribed or discipline enacted. All staff should be made aware of reports and be involved in identifying causes and developing preventive measures.

7. Drug development process: Pharmaceutical companies can contribute to medication incidents by poor labeling, unclear dosage markings, using similar drug names, etc. In the U.S., the FDA and pharmaceutical companies have responded to reports of medication incidents by improving package labeling and even changing drug names (i.e., changing Losec to Prilosec to avoid confusion with Lasix). Thus far, this has only occurred in the U.S.; Canada continues to have medication incidents resulting from similar names and package labeling, and

there is no process to deal with this.¹⁴

The technician's role in patient safety

Everyone involved in health care, from physicians to nurses, pharmacists and technicians, has a role to play in improving patient safety. As part of the pharmacy team, technicians serve as an invaluable safety mechanism by acting as a first line of defense against medication incidents. They can do this best by observing the following:

Appropriate and ongoing training: Proper technician training will help to ensure technicians are accurate in dispensing, and alert to circumstances that increase the chances of incidents occurring. Knowledge about drugs, doses and dosage forms is particularly important, and requires continual learning.

Help maintain a distraction-free environment: Technicians can help to maintain an environment that is as free of distractions as possible, particularly during critical dispensing tasks, by avoiding unnecessary talking or loud music and intercepting interruptions by other staff, customers or telephones.

Organized checking process: Technicians should be part of a well-defined and fail-proof checking process in the pharmacy. This should include checks on patient identity, drug and dose selections, labels and packaging. Technicians should check other technicians (and pharmacists should check technicians and vice versa) and all checks should be documented.

Raising awareness about medication incidents: Technicians should be involved in the process of documenting near misses and actual medication incidents. They should also be involved in the process of identifying the cause of the incident and how it can be corrected.

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QUESTIONS

1. All of the following are TRUE except:

- a) "Medication errors" is an acceptable term for mistakes made in dispensing.
- b) The term "error" suggests that an individual is to blame.
- c) "Near miss" and "medication discrepancy" are sometimes used.
- d) "Incident" is a preferred term to "error".

2. In regard to medication incidents in Canada, which of the following is CORRECT?

- a) There are many clearly documented Canadian studies.
- b) There has always been a national reporting system.
- c) The monetary costs are accurately known.
- d) Costs of incidents include erosion of trust and confidence, and satisfaction of the public and healthcare providers.

3. Twenty percent of incidents reported to USP MERP relate to:

- a) Pediatric dosing

- b) Drug products and devices
- c) Human error
- d) Dosage calculations

4. Drugs with similar names result in:

- a) One quarter of all deaths due to errors
- b) Excessive workload
- c) One third of incidents reported to USP MERP
- d) Twenty percent of label errors

5. Which of the following can contribute to medication incidents?

- a) Poor handwriting
- b) Lack of patient education
- c) Poor lighting
- d) All of the above

6. All of the following statements about causes of medication incidents involving the provision of a drug to an individual are TRUE except:

- a) They involve factors in the system of drug provision.
- b) Look-alike labels and drug names are a problem.
- c) Poor handwriting on written prescriptions is a com-

- mon cause.
- d) Patients who have been counselled are less likely to make mistakes.

7. Which of the following statements is FALSE in relation to root causes of medication incidents involving the drug provision system?

- a) Clutter in the work area can increase incidents.
- b) Hunger and fatigue are physiological causes of incidents.
- c) Separate storage for oral and topical medications can reduce incidents.
- d) Higher overall incidents are caused by heavy workloads.

8. In relation to medication incident reporting, which of the following is CORRECT?

- a) Only pharmacists should be responsible for reporting incidents.
- b) The person responsible should be named and disciplined.
- c) The cause of the incident should be identified.
- d) Technicians should not be

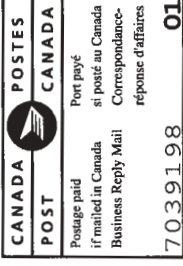
involved in discussion of incident reports.

9. In relation to preventive strategies, which of the following is FALSE?

- a) The pharmaceutical industry could make changes to drug names to reduce errors in Canada as they have in the U.S.
- b) Technicians can help in a number of ways to improve patient safety.
- c) Disciplining staff who make errors is a good strategy.
- d) Robots and electronic prescribing will help prevent errors in the future.

10. Technicians can contribute to patient safety in which of the following ways?

- a) Never allow another technician or pharmacist to check your work.
- b) Participate in continuing education.
- c) Cover up errors when they occur.
- d) Participate in conversations with other staff while dispensing.



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TECH TALK • CE**Medication incident awareness
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