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Medication Management

Introduction

The Medication Management Standard promotes a collaborative approach to preventing and reducing patient safety incidents involving medications by addressing all aspects of the medication management process.This includes planning the medication management system; ensuring the people managing medications are educated and competent; managing client and medication information; selecting and procuring medications; storing medications in the pharmacy and client service areas; prescribing and ordering medications; preparing, labelling, and packaging medications; dispensing and delivering medications; administering and documenting the administration of medications; monitoring the effects of medications on clients; and evaluating medication management activities.

Organizations are responsible for ensuring that the functions outlined in the Medication Management Standard are completed by qualified individuals in line with their scope of practice and applicable regulations. At times, the scope of practice of nurses working in remote or isolated health services may have been amended to fulfill some of the medication management functions normally completed by a pharmacy. In these cases, the criteria in the standard that relate to these functions still apply.

Medication management involves multiple people, including pharmacists, pharmacy technicians, nurses, nurse practitioners, physicians, and clients and their families. Medication management services should result in safe and high-quality care.

The standard focuses on medication management in acute care organizations. The field of medication management is a constantly evolving sector, requiring attentiveness to new developments in pharmacology, treatment regimens, jurisdictional legislation, and advances in technology. Documented errors and patient safety incidents continue to provide evidence on how to improve medication management. Since the previous version of this standard was released, there have been new developments and evidence in the field that can make the management of medication safer for all. Many of these developments, listed below, have been incorporated into this version.

Including pharmacists as integral members of the team

Research shows that pharmacists play an integral role on the interprofessional team and can make the medication management process safer. Pharmacists should play a role in initiating, monitoring, and discontinuing medication orders during transitions of care (Alex et al., 2016; Mekonnen et al., 2016; Nazar et al., 2016). Alex et al,. (2016) found that when pharmacists assist with medication management, they can fill the gap between electronic health records and service providers by actively participating in the transition process and medication reconciliation. Pharmacists can play a significant role in maintaining accurate medication lists, providing medication information, and refilling prescriptions, all of which are very important considering the number of clients with chronic medical conditions and comorbidities (Mekonnen et al., 2016; Nazar et al.,2016; The College of Physicians and Surgeons of Ontario, 2017;).

In Canada, a modified Delphi approach was used to reach consensus on measurable ways to improve practice and client care. The key performance indicators included medication reconciliation; participating in interprofessional care rounds; completing pharmaceutical care plans; resolving medication therapy issues; providing in-person education to patients; providing patients with medication education at discharge; performing medication reconciliation at discharge; and providing bundled, proactive, direct patient care activities (Fernandes et al., 2015)

Clients and their caregivers can also benefit from being referred to their community pharmacist. Client medication adherence interventions benefit from multiple strategies, and community pharmacists can play an integral role in supporting clients and caregivers who are living at home (Conn et al., 2015).

Deprescribing to manage inappropriate medication use and polypharmacy

As a client’s health needs change, medication needs can also change. Medications that they once used safely to manage health conditions may no longer be helpful or safe. There are risks to clients that are associated with polypharmacy. Deprescribing refers to reducing medications after consideration of therapeutic goals, benefits and risks, and medical ethics (Turner et al., 2016).

Developing policies and procedures for independent double checking of medications

There is controversy regarding the use of independent double checks (Hewitt et al., 2016); however, research indicates that when they are done correctly, they can play an integral role in safe medication practice, detecting up to 95% of errors (Institute for Safe Medication Practices, 2012).

The use of point-of-care, computer-aided syringe labelling and barcoding verification process has been used successfully in 20 operating rooms in Toronto, Ontario. Using the barcoding for 23 months, with more than 300,000 doses of medication administered in over 20,000 surgeries, no medication errors were reported. During the trial, one critical error occurred when the anesthesiologist bypassed the barcode scanning procedure (Frandzel, 2012).

Injecting topical solutions inadvertently

ISMP Canada has published a number of bulletins about fatal incidents in Canada following the inadvertent injection of topical solutions (ISMP Canada, 2015; ISMP Canada, 2011). ISMP Canada is aware of similar incidents in other countries as well. Typically, these types of incidents occur in a perioperative or invasive procedure setting. The Canadian Patient Safety Institute identifies these as one of the medication “never events” (CPSI, 2015).

ISMP Canada’s recommendation for working with topical and injectable medications is for injectable medications to be drawn directly into a labelled syringe and not placed in an open solution vessel. Medications that are for topical use are not to be drawn into a parenteral syringe but left in a labelled solution vessel.

Recognizing medication interactions and the need for emergency administration of antidotes

Effective risk management includes proactive planning to prevent possible adverse events (Abdi et al., 2015). When clients experience adverse reactions to medications, they need immediate treatment to reverse the effects.

Controlling adverse reactions to medications can be strengthened by having the known antidotes, reversal agents, and rescue agents available to mitigate them. “Health care facilities and organizations should develop a list of antidotes, reversal agents, and rescue agents that can be used immediately in an emergency” (ISMP, 2018).

Health care organizations should develop combination order sets consisting of an order for the high-risk medication and an order for its antidote if needed and outline client monitoring parameters that include clinical signs that would signify the need for antidote administration (ISMP Canada, 2018). The order sets should also include requirements for further assessment.

ISMP Canada (2018) suggests that community practitioners inform their clients about potential toxic effects from medications and how to manage them. For example, clients may be instructed to call a poison control centre or administer naloxone. “When feasible, consider proactively supplying clients with an antidote (e.g., naloxone kit) if there is a concern for toxicity” (ISMP Canada, 2018).

Ensuring client engagement in medication management

Clients and families should be engaged in their own health care and management of their medications should involve them as partners in care. This is an approach to safe medication administration that involves the use of best available evidence, honest communication, and shared decision making (Hughes & Ortiz, 2005; Ganguli et al., 2016; Johnson, 2015; Laba et al., 2015; McMullen et al., 2015).

With this approach, health care providers make joint decisions with clients, incorporating clients’ wants, needs, and preferences. The result should create better decision making and active participation by clients in their own care (Brown et al., 2016; Brummel & Carlson, 2016; Hughes & Ortiz, 2005; McMullen et al., 2015).

Including clients and families as active partners in their care requires service providers to assess each client’s knowledge of their medications. Client and caregiver understanding of medications is critical at care transitions. The assessment should be documented in the care plan and any issues actioned (Brummel & Carlson, 2016; Brown, et al., 2016; Kahwati et al., 2016; McMullen et al., 2015).

Implementing best practices for self-administration of medication

Self-administration of medication can create opportunities for error and adverse events. Clients may require assistance to self-administer their medications, perhaps using mechanical aids or by preparing and pre-loading medications. In coaching clients and their families about safe medication administration, it is helpful to introduce strategies that can support their success at self-management. A systematic review by Mira et al. (2015) found that clients have increased their use of apps on smartphones to facilitate safer medication administration. The most common self-administration of medication mistakes were wrong dosage, forgetting to take medications, mixing up medications, not recalling what the

medications were for, and taking out-of-date or improperly stored medications (Mira et al., 2015). Clients can use pillboxes and notes on their medication bottles and packages to help with self-administration.

Evidence shows that when clients take an active role in managing their medications and can ask questions about them, the incidence of errors decreases (Mira et al., 2013). In addition, the better the communication with the client, the more likely it is that there will be fewer errors (Mira et al., 2013). Using motivational interviews with clients also helps to reduce medication errors.

Delivering medication adherence strategies

Increased morbidity, mortality, and expense are associated with the non-adherence to medications in many clinical conditions (Osterberg & Blaschke, 2005). Non-adherence is quite common. The World Health Organization estimates non-adherence at 50% for long-term therapy for chronic conditions in developed countries and lower in developing ones. Adherence can be defined as “the extent to which a person’s behaviour – taking medication, following a diet, and/or executing lifestyle changes, corresponds with agreed recommendations from a health care provider” (WHO 2003).

Health care providers need to know how to identify clients who may be non-adherent with their medications. Some things to watch for are evidence of unfinished medication bottles, compliance packs that have not had the bubbles popped, old dates on routine medications, and self-disclosure (Brown, et al., 2016; Conn et al.,2015).

Another strategy to help clients maintain their medication regimen is peer support. A study by Johnson (2015) that examined adherence to oral oncology medications found that “patients may benefit from knowledge about experiences of others and the strategies they found to be helpful, such as establishing routines and ways to incorporate taking medication into one's lifestyle.”

In a workshop held to study medication adherence interventions related to chronic disease treatment from the client perspective, McMullen et al. (2015) found that stakeholder priorities differed among clients, providers, and researchers, with clients prioritizing the use of peer support to improve their management of medications. Results showed high ratings by all stakeholder groups in the following three areas: creating tools and systems to facilitate and evaluate patient-centred medication management plans, developing training on patient-centred prescribing for providers, and increasing patients’ knowledge about medication management.

Abbreviations

ADC – Automated Dispensing Cabinets

CPOE – Computerized Prescriber Order Entry

CPSI – Canadian Patient Safety Institute

DERS – Device Dose Error Reduction Software

eMAR – Electronic Medication Administration Record

HSO – Health Standards Organization

ISMP CANADA – Institute for Safe Medication Practices Canada

ISMP – Institute for Safe Medication Practices

WHMIS - Workplace Hazardous Materials Information System

Legend

Quality Dimensions

HSO Quality Framework: Health and social services stakeholders around the world are committed to delivering the best quality possible. However, given the rapidly changing environment and the numerous challenges facing all health and social service sectors, quality can sometimes be perceived as complicated and difficult to achieve. Using a quality framework – also known as a structure underlying quality – provides common language as to what it means and brings focus on its key elements.

HSO Standards are based on the HSO Quality Framework. The framework consists of eight quality dimensions that all play a part in providing safe, high quality care in all health and social services sectors. These dimensions are the basis for the standards, whereby each requirement (criterion) is linked to one of the eight quality dimensions. In this way, the underlying focus of each criterion is clear, and users of the standards understand the intent of the criterion.

These are the quality dimensions that underlie HSO's quality framework:

Population Focus: Work with my community to anticipate and meet our needs

Accessibility: Give me timely and equitable services

Safety: keep me safe

Worklife: Take care of those who take care of me

Client-centred Services: Partner with me and my family in our care

Continuity of Services: Coordinate my care across the continuum

Appropriateness: Do the right thing to achieve the best results

Efficiency: Make the best use of resources

Types of Criteria

High Priority: High priority criteria are criteria related to safety, ethics, risk management, and quality improvement.

Normal Criteria: Criteria that are not related to high-priority areas are considered to be normal priority.

Required Organizational Practices: Required Organizational Practices (ROPs) are essential practices that an organization must have in place to enhance resident safety and minimize risk.

Planning the Medication Management System

1.0 An interdisciplinary committee is responsible for managing medications in the organization.

1.1 The interdisciplinary committee has defined roles and responsibilities for medication management that are in line with legislation and applicable regulations.

Guidelines:

The committee may be solely responsible for medication management or have medication management as one of its functions. Examples include a Pharmacy and Therapeutics Committee, Medication Safety Committee, or Interdisciplinary Professional Practice Committee. This committee may function at an organizational, regional, or district health authority level.

The roles and responsibilities of this committee include planning a comprehensive medication management system that ensures the safe and appropriate use of medications, including developing medication management processes, maintaining the organization's formulary, evaluating medication use, and overseeing patient safety incidents involving medications. The structure of the committee may vary across organizations, and various committees or subcommittees may be established as needed to meet these functions.

The roles and responsibilities of the interdisciplinary committee are in line with applicable legislation and regulations with respect to scope of practice as well as applicable standards of practice. In some jurisdictions, pharmacists have the sole responsibility for some of the medication use processes. In these cases, the roles and responsibilities of the interdisciplinary committee should not supersede the pharmacist's scope of practice as determined by applicable regulatory bodies.

The roles, responsibilities, and reporting lines of the interdisciplinary committee are documented in the committee’s terms of reference.

1.2 The interdisciplinary committee includes representatives from a variety of teams involved in medication management.

Guidelines:

Medication management is a collaborative process that involves representatives from across the organization. Committee membership may include physicians, pharmacists, nurses, and those responsible for risk management and quality improvement.

1.3 The role of the interdisciplinary committee is regularly evaluated and improvements are made as needed.

Guidelines:

Evaluation of the role of the committee may include a review of the committee structure, membership, and roles and responsibilities, as well as the frequency of meetings. Improvements or changes are reflected in the terms of reference, and the terms show the date they were last updated.

2.0 The interdisciplinary committee oversees the management of medications in the organization.

2.1 The interdisciplinary committee ensures there is a process to update medication management policies and procedures based on revisions to applicable laws, regulations, and standards of practice.

2.2 The interdisciplinary committee has a process to monitor research and best practice information on medication management and uses the information to update medication management processes.

Guidelines:

Research and best practice resources can provide information on problems and recommendations related to topics such as medication labelling, packaging, and nomenclature.

2.3 There is an antimicrobial stewardship program to optimize antimicrobial use.

Guidelines:

The use of antimicrobial agents is a valuable health intervention, yet may result in unintended consequences including toxicity, the selection of pathogenic organisms, and the development of organisms resistant to antimicrobial agents. Antibiotic-resistant organisms have a substantial impact on the health and safety of clients and the resources of the health care system.

Antimicrobial stewardship is an activity that includes appropriate selection, dosing, route, and duration of antimicrobial therapy. The primary focus of an antimicrobial stewardship program is to optimize antimicrobial use to achieve the best patient outcomes, reduce the risk of infections, reduce or stabilize levels of antibiotic resistance, and promote patient safety.

Effective antimicrobial stewardship in combination with a comprehensive infection control program has been shown to limit the emergence and transmission of antimicrobial-resistant bacteria. Studies indicate that antimicrobial stewardship programs are cost-effective and provide savings through reduced drug costs and avoidance of microbial resistance.

A comprehensive, evidence-informed antimicrobial stewardship program may include a number of interventions. Organizations are encouraged to tailor an approach to antimicrobial stewardship that is consistent with their size, service environment, and patient population, and to establish processes for ongoing monitoring and improvement of the program. A successful antimicrobial stewardship program requires collaboration between the antimicrobial stewardship, pharmacy, and infection control teams. The support of hospital administrators, medical staff leadership, and health care providers is essential.

Test(s) for Compliance:

2.3.1 An antimicrobial stewardship program has been implemented.

2.3.2 The program specifies who is accountable for implementing the program.

2.3.3 The program is interdisciplinary, involving pharmacists, infectious diseases physicians, infection control specialists, physicians, microbiology staff, nursing staff, hospital administrators, and information system specialists, as available and appropriate.

2.3.4 The program includes interventions to optimize antimicrobial use, such as audit and feedback, a formulary of targeted antimicrobials and approved indications, education, antimicrobial order forms, guidelines and clinical pathways for antimicrobial utilization,

strategies for streamlining or de-escalation of therapy, dose optimization, and parenteral to oral conversion of antimicrobials (where appropriate).

2.3.5 The program is evaluated on an ongoing basis and results are shared with stakeholders in the organization.

2.4 The interdisciplinary committee establishes procedures for each step of the medication management process.

Guidelines:

Medication management procedures help ensure that medications are used in a standardized manner across the organization. The medication management process consists of selecting and procuring medications; labelling and packaging medications; storing medications in the pharmacy and client service areas; prescribing, ordering, and transcribing medication orders; preparing, dispensing, and delivering medications; administering medications; disposing of medications; and monitoring clients.

2.5 A documented and coordinated approach to safely manage high-alert medications is implemented.

Guidelines:

High-alert medications may cause significant harm when they are administered in error. A coordinated and documented approach to safely manage high-alert medications enhances patient safety and reduces the possibility of harm. High-alert medications include but are not limited to antithrombotic agents, adrenergic agents, chemotherapy agents, concentrated electrolytes, insulin, narcotics (opioids), neuromuscular blocking agents, and sedation agents.

A documented and coordinated approach to safely manage high-alert medications identifies them based on an organization's medication formulary and takes into consideration organizational, provincial, or national medication error data. Each high-alert medication or class of medication is evaluated, procedures to improve safe use are identified, and an action plan is established. Procedures for the safe use of high-alert medications may include but are not limited to:

- Standardizing high-alert medication concentrations and volume options
- Using pre-mixed solutions (commercially available and pharmacy prepared)
- Using programmable pumps with dosing limits and automated alerts
- Applying warning labels to products as soon as they are received in the pharmacy
- Using visible warning and auxiliary labels according to the organization's policy
- Using patient-specific labelling for unusual concentrations
- Limiting access to high-alert medications in client service areas and auditing routinely to assess for items that should be removed
- Standardizing the ordering, storage, preparation, administration, and dispensing of these products through the use of protocols, guidelines, dosing charts, and orders sets (pre-printed or electronic)
- Segregating and providing directed access to reduce the likelihood of selection errors (e.g., use of automated dispensing cabinets in client service areas)
- Providing training about high-alert medications
- Employing redundancies such as automated or independent double checks

The approach may place additional emphasis on strategies for high-risk client populations including the elderly, pediatrics, and neonates, as well as on transition points including admission, transfer, and discharge.

Test(s) for Compliance:

2.5.1 There is a policy for the management of high-alert medications.

2.5.2 The policy names the role or position of individual(s) responsible for implementing and monitoring the policy.

2.5.3 The policy includes a list of high-alert medications identified by the organization.

2.5.4 The policy includes procedures for storing, prescribing, preparing, administering, dispensing, and documenting each identified high-alert medication.

2.5.5 Concentrations and volume options for high-alert medications are limited and standardized.

2.5.6 Client service areas are regularly audited for high-alert medications.

2.5.7 The policy is updated on an ongoing basis.

2.5.8 Information and ongoing training is provided to team members on the management of high-alert medications.

2.6 The interdisciplinary committee has policies to oversee the security of all controlled substances.

Guidelines:

Security policies address monitoring withdrawals, wastage, and administration of controlled substances to identify signs of abuse and diversion, as well as analyzing, documenting, and reporting such situations. Signs of abuse and diversion include forged medication orders, excessive medication refills, unusual patterns of controlled substance use, and frequent reports of lost medications or breakage. Controlled substances include narcotics, benzodiazepines, stimulants, and barbiturates and other substances as designated by the organization.

2.7 The interdisciplinary committee approves standardized order sets for medications.

Guidelines:

Standardized order sets can be electronic or pre-printed. Order sets are available for routine medications, high-alert medications, and complex clinical pathways, as determined by the interdisciplinary committee. Order sets are up to date, evidence based, and include a version number. Pre-printed order sets are stored securely.

2.8 Critical information for medication administration is standardized and is used on medication orders, medication labels, and in medication administration records.

Guidelines:

Critical information for medication administration is listed in the same order using consistent language. This includes, at minimum, the generic medication name, dose, route, and frequency of administration.

2.9 The interdisciplinary committee establishes standard medication administration schedules.

Guidelines:

Standard administration schedules should be in place and all maintenance doses administered according to a standard, repeated cycle.

2.10 The interdisciplinary committee shall develop and implement standardized protocols and/or coupled order sets that permit the emergency administration of all appropriate antidotes, reversal agents, and rescue agents used in the facility.

Guidelines:

It is best practice to have antidotes, reversal agents or rescue agents available to counteract an adverse reaction or toxic dose of medication. For example, effects from opioids can be counteracted with naloxone, flumazenil can counteract benzodiazepines, cardiotoxic effects of local anesthetics can be counteracted with lipid emulsions, and the toxic effects of fluorouracil can be counteracted with uridine triacetate.

2.11 The interdisciplinary committee has a policy on handling sample medications.

Guidelines:

The organization may or may not receive and store sample medications. The interdisciplinary committee may, in fact, develop a policy on not accepting sample medications.

If the organization keeps or uses sample medications, the policy on handling sample medications specifies that sample medications are subject to the same medication management processes as other types of medications. This includes access to and dispensing the samples; documenting in the client record information related to the administration of the samples; requirements for storage, inventory, and proper labelling of the samples; and disposal of the samples.

The policy includes the use of a separate log to facilitate contacting patients in case of medication recall.

2.12 There is a procedure for the use of investigational medications, study medications, and special access medications.

Guidelines:

The procedure specifies that all investigational, study, and special access medications used by clients are subject to the organization's medication management processes, whether or not the clinical trial is conducted by the organization. The procedure also addresses reviewing, approving, supervising, and monitoring the use of investigational, study, and special access medications. Jurisdictional regulations may apply.

The process considers requests for access to medications not yet approved for market for the treatment, diagnosis, or prevention of serious or life-threatening conditions.

2.13 There is a procedure to handle medications brought into the organization by clients and families.

Guidelines:

The procedure for handling medications brought into the organization by clients and families specifies that all prescription and non-prescription medications brought in by clients and families are subject to the organization's medication management processes and applicable regulations.

In addition, the procedure should address:

- When and how such medications can be used
- The need for a visual inspection of the medications
- Prohibiting the use of medications that cannot be easily identified
- Appropriately storing or disposing of the medications
- Returning the medications to the client and family at the end of service or at a transition, as appropriate

2.14 The organization has a policy and procedure to manage medication shortages.

Guidelines:

The policy to manage medication shortages includes developing therapeutic alternatives and substitution protocols, engaging prescribers and encouraging changes in their prescribing habits, and training team members.

The procedure includes communication and mitigation strategies.

2.15 The organization has a procedure to determine which medications can be stored in client service areas.

Guidelines:

The types of medications needed in client service areas depends on the populations served. The organization considers the team's expertise with specific medications, the risk of patient safety incidents involving medications, the typical age and diagnosis of clients treated in the client service area, required clinical support, and whether it is a high-alert medication.

3.0 Pharmacists are deployed within interprofessional clinical teams and play an integral and proactive role in client-engaged medication management.

3.1 The organization integrates pharmacists into designated interprofessional clinical teams to provide proactive care for client-engaged medication management.

Guidelines:

Key areas of interaction would be at priority care levels as appropriate for the organization.

3.2 Pharmacists collaborate with clients and interprofessional clinical teams to provide care using evidence-informed care activities associated with improved client and system outcomes.

Guidelines:

Pharmacists' priority clinical activities include preventing and resolving issues with medication therapy (e.g., pharmaceutical care), providing education about medications, actively participating on interprofessional care rounds, and facilitating seamless care with other organizations during admission and discharge, including medication reconciliation.

Key performance indicators may be used to advance pharmacy practice to improve the quality of client care and target care processes that are associated with improvements in meaningful client outcomes such as hospital readmissions.

3.3 The organization has developed local implementation action plans that include prioritizing which high-risk client populations or units receive the evidence-informed care activities from pharmacists.

Guidelines:

Limited resources may mean that not all clients or units can receive all care activities.

4.0 The interdisciplinary committee has a process to determine which medications can be used in the organization.

4.1 The interdisciplinary committee establishes criteria to add, restrict, and remove medications from the formulary.

Guidelines:

The formulary is designed to minimize the number of medications with which teams need to be familiar while ensuring the availability of effective medication therapy based on best practice and evidence.

When identifying the criteria for selecting medications, the committee considers the needs of clients, prescribers, and other team members as well as safety, effectiveness, cost, and the need to avoid product duplication. The committee also considers applicable regulations, regional formularies, and available research, evidence, and expert opinion from clinicians. It evaluates the medication's potential for harm, interactions with other medications, the likelihood of patient safety incidents, and the potential for abuse.

4.2 The organization has a process to provide non-formulary medications in a timely manner.

Guidelines:

The interdisciplinary committee has approved a process to assess non-formulary medication requests, and, once the medication is authorized, to acquire it in a timely manner.

4.3 The interdisciplinary committee reviews and updates the formulary at least every four years.

Guidelines:

The committee may review and update all medications on the formulary or only certain categories of medications. Medications in ward stock, emergency ward boxes, and night cabinets are included in the review, as are reports on patient safety incidents and adverse drug reactions. Training needs are addressed as the formulary is updated.

4.4 The organization has a process to ensure team members and service providers who handle medications are informed about changes to the formulary.

Guidelines:

Informing team members and service providers about changes to the formulary includes providing updates on the reasons why the medication was added, restricted, or removed, and where to find information about the medication.

Training and Competency Evaluation

5.0 Teams are educated about how to manage medications.

5.1 Team members participate in orientation prior to their first shift and receive continuing education and training based on their roles and responsibilities for managing medications within their scope of practice.

Guidelines:

Medication management orientation is appropriate to the role of the team member involved and is provided prior to their first shift. Training covers safety issues such as look-alike medications, sound-alike medications, high-alert medications, Do Not Use abbreviations, medications new to the market or to the formulary, and independent double checks. If required, training is provided on new medications and new medication delivery devices before they are used.

Training may be provided as part of the orientation program and may be delivered using checklists or online, as well as through meetings, memos, or posters.

5.2 Teams are educated about how to prevent, recognize, respond to, and report patient safety incidents involving medications.

Guidelines:

Education on patient safety incidents involving medications is appropriate to the role of the team member involved. For example, environmental services team members may need to be aware of only select medication-related risks (e.g., what to do if medications are found in an unsecured area) while team members who administer medications receive specialized education to avoid patient safety incidents involving medications.

The education may address organizational policies regarding medication use, preventing side effects, reporting patient safety incidents involving medications, patient safety incidents in other organizations, and strategies to prevent patient safety incidents involving medications.

Accessing Client and Medication Information

6.0 Teams are provided with timely access to client information.

6.1 The team gathers information about allergies and previous adverse drug reactions and it is recorded in the client medication profile, as part of the client record.

Guidelines:

Team members who are responsible for collecting and updating allergy and adverse drug reaction information in the client medication profile are identified. Client allergies is a required field in the profile and the type of reaction, severity, and the date the allergy was identified are documented.

6.2 Teams have timely access to the client medication profile and essential client information.

Guidelines:

The client medication profile contains a current list of medications and medication therapy records for each admission or each episode of service provided by the organization. Essential client information includes age, gender, weight and height, and allergies and adverse drug reactions. Essential information may also include diagnosis; co-morbidities or concurrently occurring conditions such as hypertension, diabetes, or renal or liver impairment; relevant laboratory values (inpatient or outpatient); and pregnancy and lactation status.

7.0 Teams have timely access to information about medications.

7.1 Teams are provided with access to information about medications.

Guidelines:

Medication information tools are readily available in all client service areas. Information may be available in written or electronic formats. Examples include pocket references, medication information cards, standard order sets, protocols or checklists, client medication training material, clinical decision support, and compounding recipes. These tools are reviewed, approved, and updated regularly. The approval process includes a review by a pharmacist and by other team members who use the tools.

Medication information can be accessed using electronic links (e.g., icons or barcodes). Commercially available resources are preferred.

7.2 Teams can readily access accurate and up-to-date medication information specific to the populations served.

Guidelines:

Medication information tools should be specific to the populations served by the organization (e.g., psychiatry, pediatrics, geriatrics) and available in written or electronic formats. Examples include pocket references, medication information cards, standard order sets, protocols or checklists, client service information and compounding recipes. These tools are reviewed, approved, and updated regularly. The approval process includes a review by a pharmacist and by other team members who use the tools..

7.3 Teams have access to an on-call pharmacist and prescriber to answer questions about medications or medication management.

Guidelines:

When the pharmacy is closed, teams can access an on-call pharmacist and prescriber, or pharmacy services provided by another organization.

8.0 If a computerized prescriber order entry (CPOE) system is used, appropriate and up-to-date clinical decision support is provided.

8.1 The type of alerts used by the CPOE system includes, at minimum, alerts for medication interactions, medication allergies, and maximum doses for high-alert medications.

Guidelines:

CPOE system alerts for high-alert medications are required as a starting point, with the goal of eventually setting alerts for all medications.

8.2 A policy is developed and implemented on when and how to override the CPOE system alerts.

Guidelines:

Automated alerts can provide an effective means of communicating essential information about a medication and a client to prescribers. The CPOE system logs the user name, date of the override, reason for the override, who reviewed it, and when. The CPOE policy should also include formal evaluation of and monitoring for unintended consequences of programmed alerts that were intended to improve prescribing habits.

8.3 Medication information stored in the CPOE system is updated annually.

Guidelines:

For example, information on medication interactions is kept up to date.

8.4 The CPOE system is regularly tested to ensure alerts fire as expected.

Guidelines:

For example, the CPOE system is tested to ensure that appropriate alerts are generated for specified maximum doses of high-alert medications.

8.5 Alert fatigue is managed by regularly evaluating the type of alerts required by the CPOE system based on best practice information and by collecting input from teams.

Guidelines:

For example, audits of the type of alerts bypassed by teams may be conducted.

8.6 The CPOE system is integrated with other information systems used for medication management.

Guidelines:

Other information systems used for medication management include the pharmacy computer system and electronic medication administration record (eMAR). Additionally, the organization is encouraged to integrate the CPOE system with its laboratory information system.

9.0 The pharmacy computer system used to manage medications is up to date and uses appropriate alerts.

9.1 Medication information stored in the pharmacy computer system is updated annually.

Guidelines:

For example, the pharmacy computer system may be updated through regular updates from a recognized medication information vendor.

9.2 There is a process to determine the type and level of alerts required by the pharmacy computer system that includes, at minimum, alerts for medication interactions, medication allergies, and minimum and maximum doses for high-alert medications.

Guidelines:

Alerts for high-alert medications are required as a starting point, with the goal of eventually setting alerts for all medications.

9.3 A policy for when and how to override alerts by the pharmacy computer system is developed and implemented.

Guidelines:

The organization may require the pharmacy computer system to log the user name, date of the override, reason for the override, who reviewed it, and when.

9.4 Alert fatigue is managed by regularly evaluating the type of alerts required by the pharmacy computer system, based on best practice information and input from teams.

Guidelines:

For example, audits of the type of alerts bypassed by teams may be conducted to manage alert fatigue.

Selecting and Procuring Medications

10.0 There is a process to select and procure medications that have received formulary approval.

10.1 The organization works with its partners to encourage differentiation among products with similar labelling and packaging.

Guidelines:

Encouraging differentiation among products with similar labelling and packaging can be achieved by reporting cases to the Institute for Safe Medication Practices (ISMP) Canada, to purchasing groups, or by contacting manufacturers directly.

10.2 To minimize compounding, the organization purchases commercially manufactured medications when they are available.

Guidelines:

The ISMP recommendations for preparation of sterile products include:

- Using, to the maximum extent possible, commercially prepared, premixed parenteral products and unit dose syringes rather than manually compounded sterile products
- Using standard intravenous medication concentrations as much as possible to avoid confusion
- Minimizing the number of unique concentrations

When a parenteral medication is not commercially available in a ready-to-use format, prescribers must carefully assess, in consultation with the pharmacy department, the risks of compounding against changing to a commercially prepared product.

10.3 The availability of heparin products is evaluated and limited to ensure that formats with the potential to cause patient safety incidents are not stocked in client service areas.

Guidelines:

Heparin is a high-alert medication. Limiting its availability and ensuring that high-dose formats are not stocked in client service areas are effective strategies to minimize the risk of death or disabling injury associated with these agents.

For specific care circumstances, it may be necessary for heparin products to be available in select client service areas. In these cases, an interdisciplinary committee for medication management (e.g., Pharmacy and Therapeutics Committee and Medical Advisory Secretariat) reviews and approves the rationale for availability and safeguards are put in place to minimize the risk of error.

For flushing intravenous lines, organizations are encouraged to consult best practice guidelines to explore options other than heparin.

Test(s) for Compliance:

10.3.1 An audit of unfractionated and low molecular weight heparin products in client service areas is completed at least annually.

10.3.2 High dose unfractionated heparin (50,000 units total per container) is not stocked in client service areas.

10.3.3 Steps are taken to limit the availability of the following heparin products in client service areas:

- Low molecular weight heparin: use of multi-dose vials is limited to critical care areas for treatment doses
- Unfractionated heparin (high dose): greater than or equal to 10,000 units total per container (e.g., 10,000 units/1 mL; 10,000 units/10 mL; 30,000 units/30 mL) is provided on a client-specific basis when required
- Unfractionated heparin for intravenous use (e.g., 25,000 units/500 mL; 20,000 units/500 mL) is provided on a client-specific basis when required

10.3.4 When it is necessary for the previous heparin products to be available in select client service areas, an interdisciplinary committee for medication management reviews and approves the rationale for availability, and safeguards are put in place to minimize the risk of error.

10.4 The availability of narcotic products is evaluated and limited to ensure that formats with the potential to cause patient safety incidents are not stocked in client service areas.

Guidelines:

Narcotics (or opioids) have been identified as high-alert medications. Limiting their availability and ensuring that high dose formats are not stocked in client service areas are effective strategies to minimize the risk of death or disabling injury associated with these agents.

For specific care circumstances, it may be necessary for narcotic products to be available in select client service areas, for example:

- Fentanyl: ampoules or vials with total dose greater than 100 mcg per container
- HYDROmorphone: 10 mg/mL ampoules or vials may be provided based on the following criteria and must be removed when no longer required: intermittent intravenous, subcutaneous or intramuscular doses greater than 4 mg

In these cases, an interdisciplinary committee for medication management (e.g., Pharmacy and Therapeutics Committee and Medical Advisory Secretariat) reviews and approves the rationale for availability and safeguards are put in place to minimize the risk of error.

Organizations serving pediatric populations are encouraged to implement practice recommendations specific to their patient population, including the use of standardized concentrations for opioid infusions.

To optimize the safe use of narcotic products, organizations may also consider establishing a pain management team.

Test(s) for Compliance:

10.4.1 An audit of the following narcotic products in client service areas is completed at least annually:

- Fentanyl: ampoules or vials with total dose greater than 100 mcg per container
- HYDROmorphone: ampoules or vials with total dose greater than 2 mg
- Morphine: ampoules or vials with total dose greater than 15 mg in adult care areas and 2 mg in paediatric care areas.

10.4.2 Stocking the following narcotic products is avoided in client service areas:

- Fentanyl: ampoules or vials with total dose greater than 100 mcg per container
- HYDROmorphone: ampoules or vials with total dose greater than 2 mg
- Morphine: ampoules or vials with total dose greater than 15 mg in adult care areas and 2 mg in paediatric care areas.

10.4.3 When it is necessary for narcotic (opioid) products to be available in select client service areas, an interdisciplinary committee for medication management reviews and approves the rationale for availability, and safeguards are put in place to minimize the risk of error

10.5 The organization has a procedure to identify and resolve concerns with medication shipments.

Guidelines:

Depending on the extent of the concern, the medication may be returned to the pharmacy or manufacturer or used with additional information, training, and warnings for team members.

10.6 Medications are returned when they are formally recalled or discontinued by an external body such as a government agency or the manufacturer.

Guidelines:

Information on how to return recalled or discontinued medications is often provided by government or the manufacturer. The organization's process includes contacting clients who have been exposed to recalled medications when possible.

11.0 There is a procedure to select and procure medication delivery devices (e.g., syringes, insulin pens, infusion pumps).

11.1 There is a procedure to assess, evaluate, document, and reconcile the potential harms and benefits of medication delivery devices before purchase.

Guidelines:

If concerns are identified when assessing medication delivery devices, they are addressed before a decision is made to purchase or use a new device.

11.2 A decision-making procedure based on a health technology assessment and/or risk evaluation is used to select medication delivery devices for purchase.

Guidelines:

The health technology assessment evaluates the risks and benefits of the new medication delivery device.

11.3 There are limited brands and models of general purpose infusion pumps, syringe pumps, and patient-controlled analgesia pumps available in the organization.

Guidelines:

Limiting the variety of equipment helps reduce the need for training and retraining, and the risk of error.

12.0 A process is in place to maintain and update smart pump libraries.

12.1 Soft- and hard-dose limits are set for all medications administered via infusion.

Guidelines:

Setting soft- and hard-dose limits helps detect programming errors and inaccurately prescribed doses or infusion rates. Soft-dose limits trigger an alert that the team can override. Hard-dose limits set the use of the infusion pump between specific parameters.

12.2 A policy that specifies when and how to override smart infusion pump alerts is developed and implemented.

Guidelines:

The smart infusion pump logs details such as staff and client identification, date and time of the override, reason for the override, who reviewed the override, and when. Staff contact the prescriber for further direction when they encounter overrides.

The policy should reflect such elements as infusion device dose error reduction software (DERS) requirements including the use of soft- and hard-dose limits.

12.3 The medication library DERS stored in the smart infusion pumps is updated and tested periodically.

Guidelines:

Medication libraries are created and maintained for all client populations in consultation with interdisciplinary care teams.

Updates to the medication libraries are performed periodically as needed, but not less than quarterly unless there are no updates for that quarter.

12.4 Smart infusion pumps undergo periodical maintenance, to ensure functionality of the pumps and the DERS.

Guidelines:

Clinical engineering or an appropriate delegate provide ongoing maintenance of infusion pumps. When staff receive a reminder for maintenance of a device, it is reported to clinical engineering or the appropriate delegate.

12.5 Established dosing limits are reviewed every six months and changes are made as required.

Guidelines:

Medication library dosing limits are evaluated using continuous quality improvement data.

12.6 Clients and families are educated about the risks of tampering with the infusion pump.

Guidelines:

Clients and families have a role and a responsibility in optimizing medication delivery from pumps.

Storing Medications in the Pharmacy and Client Service Areas

13.0 **Medications are safely stored in the pharmacy and client service areas.**

13.1 Access to medication storage areas is limited to authorized team members.

Guidelines:

The level of security required depends on the types of medications stored. For example, access to medication storage areas can be controlled using key pad code entry or swipe cards with different levels of access, medication carts can be locked or never left unattended, or medications can be stored in an area that is continuously staffed.

The organization determines how best to restrict access to medication storage areas based on its needs and the risk of unauthorized access to the storage area.

13.2 Medication storage areas are clean and organized.

Guidelines:

Regular cleaning schedules for medication storage areas are maintained, and approved cleaning products are available. Medications are stored by generic name and in groups for easy identification and access based on pharmacy standards. Inspections should be documented with the use of a checklist.

13.3 The organization has implemented comprehensive procedures for the safe use of medications stored in automated dispensing cabinets (ADCs).

Guidelines:

The use of ADC's continues to evolve. Their rapid evolution and deployment have raised concerns. With improper use due to a lack of sufficient policies and procedures, ADC complexities including variations in functions and maintenance requirements, may compromise client safety.

13.4 The organization maintains medication storage conditions that protect the stability of medications.

Guidelines:

Appropriate storage conditions take into account the temperature, light sensitivity, packaging, and delivery containers. For example, vaccines, insulin, and lorazepam injectables are stored in refrigerators with temperature controls.

Medication monographs should be referred to regarding storage temperatures for medications.

13.5 Lighting in medication storage areas is sufficient for teams to read medication labels and information sheets.

Guidelines:

Accessibility tools can be provided for staff to magnify labels.

13.6 Medication storage areas meet legislated requirements and regulations for controlled substances.

Guidelines:

Medications are kept in a locked, secure environment using a double lock procedure at a minimum (e.g., in a locked cabinet in a locked room).

Controlled substances should be stored in dedicated locking/high-security pockets in automated dispensing cabinets.

13.7 Separate storage in client service areas and in the pharmacy is used for look-alike medications, sound-alike medications, different concentrations of the same medication, and high-alert medications.

Guidelines:

Separating these types of medications in medication storage areas prevents confusion and promotes safety. For example, medications can be stored in separate rows or bins.

13.8 Pending removal, expired, discontinued, recalled, damaged, or contaminated medications are stored separately in the medication storage areas from medications that are in use.

Guidelines:

Separating or isolating expired, discontinued, recalled, damaged or contaminated medications prevents confusion and promotes safety.

13.9 Multi-dose vials are used only for a single client in client service areas.

Guidelines:

Using multi-dose vials for a single client reduces the risk of cross-contamination and the spread of infection. Multi-dose vials typically contain an antimicrobial preservative to help prevent the growth of bacteria. The preservative has no effect on viruses and does not protect against contamination when health care personnel fail to follow safe injection practices.

Unsafe injection practices that put clients at risk for hepatitis B, hepatitis C, and other infections have been identified during various types of procedures when multi-dose vials were used for more than one client. Dozens of outbreaks, where clients have suffered significant harm, including death, have been associated with reuse of single dose vials and misuse of multi-dose vials. The organization's policy and procedures must include safe practices for handling multi-dose vials including labelling syringes.

Exceptions include some medications such as vaccines that may not be available in single dose vials or manufacturer-filled syringes. For exceptions, the interdisciplinary committee must approve the storage of multi-dose vials in client service areas.

13.10 The availability of concentrated electrolytes is evaluated and limited to ensure that formats with the potential to cause patient safety incidents are not stocked in client service areas.

Guidelines:

Ensuring that concentrated electrolytes are not stocked in client service areas can minimize the risk of death or disabling injury associated with these agents. It is also recommended that the packaging of concentrated electrolytes is in line with their intended use.

For specific care circumstances, it may be necessary to have concentrated electrolytes available in select client service areas, for example:

- Calcium: pre-filled syringes (1 g in 10 mL) in emergency carts or boxes only
- Sodium chloride (concentrations greater than 0.9%): bags are segregated from non-medicated intravenous solutions in select areas (e.g., neurology, emergency departments, critical care)

In these cases, an interdisciplinary committee for medication management (e.g., Pharmacy and Therapeutics Committee and Medical Advisory Secretariat) reviews and approves the rationale for availability, and safeguards are put in place to minimize the risk of error.

Test(s) for Compliance:

13.10.1 An audit of the following concentrated electrolytes in client service areas is completed at least annually:

- Calcium (all salts): concentrations greater than or equal to 10%
- Magnesium sulfate: concentrations greater than 20%
- Potassium (all salts): concentrations greater than or equal to 2 mmol/mL (2 mEq/mL)

- Sodium acetate and sodium phosphate: concentrations greater than or equal to 4 mmol/mL
- Sodium chloride: concentrations greater than 0.9%

13.10.2 Stocking the following concentrated electrolytes is avoided in client service areas:

- Calcium (all salts): concentrations greater than or equal to 10%
- Magnesium sulfate: concentrations greater than 20%
- Potassium (all salts): concentrations greater than or equal to 2 mmol/mL (2 mEq/mL)
- Sodium acetate and sodium phosphate: concentrations greater than or equal to 4 mmol/mL
- Sodium chloride: concentrations greater than 0.9%

13.10.3 When it is necessary to make concentrated electrolytes available in select client service areas, an interdisciplinary committee for medication management reviews and approves the rationale for availability, and safeguards are put in place to minimize the risk of error.

13.11 Medication storage areas are regularly inspected, and improvements are made if needed.

Guidelines:

Medication storage area inspections include verifying that only approved and usable medications are stocked in the pharmacy and client service areas. The inspection also includes verifying the temperatures of refrigerators and freezers used to store medications. Inspections are documented in accordance with organizational policy. Inspections should be documented with the use of a checklist.

14.0 Hazardous medications are safely stored in client service areas and medication preparation areas.

14.1 Raw materials used for compounding are regularly assessed to determine if they should be discarded when they are not regularly used or are considered dangerous.

Guidelines:

The assessment of raw materials used for compounding includes adhering to guidelines on the length of time to keep containers of raw materials once opened. Compounding ingredients should be discarded three years after opening unless the manufacturer's expiry date is shorter.

14.2 Regulations for handling raw materials used for compounding in the pharmacy, including storage and cleaning up spills, are followed.

Guidelines:

Staff have access to Workplace Hazardous Materials Information System (WHMIS) documents, including safety data sheets.

14.3 Chemotherapy medications are stored in a separate negative pressure room with adequate ventilation and are segregated from other supplies where possible.

Guidelines:

Adequate ventilation minimizes team member exposure to harmful chemicals. The organization takes this into account when planning for construction or renovations.

14.4 Anesthetic gases and volatile liquid anesthetic agents are stored in an area with adequate ventilation, as per the manufacturer's instructions.

Guidelines:

Nitrous oxide is an example of an anesthetic gas.

Adequate ventilation minimizes team member exposure to harmful gases if bottles break. Bottles should be stored low to the ground to minimize spread and dispersion, in case of a spill, and to limit the risk of combustion.

Prescribing and Ordering Medications

15.0 Medications are prescribed and ordered safely, and the technical requirements of the medication order are met.

15.1 A structured program has been implemented to reduce the risks associated with polypharmacy, especially with frail or vulnerable clients.

Guidelines:

The organization has validated processes and interventions, including regular and thorough medication reviews, to reduce the incidence of polypharmacy. Interdisciplinary teams have access to resources and strategies to reduce polypharmacy, thus improving the safety and quality of life in clients who are taking multiple medications.

15.2 The team regularly evaluates intravenous therapy in clients using an established intravenous to oral conversion program that has been approved by the interdisciplinary committee.

Guidelines:

The World Health Organization reports that the overuse of injections, when oral formulations would be more appropriate, is one of the key factors for the irrational use of medicines. Establishing an intravenous to oral conversion program at acute care hospitals is a stepping stone to decreasing the irrational use of injectable medications.

The oral route is the safest and most practical way of administering medications and, for many, essentially the same amount of medication is found in the blood whether it is given intravenously or orally. Numerous guidelines are available for various types of intravenous to oral programs.

15.3 A standardized procedure is followed when sending medication orders to the pharmacy.

Guidelines:

The pharmacy may receive medication orders as original paper copies, direct copies (e.g., no carbon required), or via computerized prescriber order entry or other electronic transmission as permitted by law. Medication orders may be delivered in person, via

pneumatic tube systems, or by fax or scanned transmission. Client identification on paper orders may be via addressograph imprints or client identification labels.

15.4 Standardized, pre-printed forms shall be used to order medications that are commonly prescribed or have been identified as high risk.

Guidelines

Standardized forms help reduce the risk of errors. The pharmacy may receive medication orders as original paper copies or direct copies (e.g., no carbon required). Medication orders may be delivered in person, via pneumatic tube systems, or by fax or scanned transmission. Client identification on paper orders may be via addressograph imprints or client identification labels.

15.5 There is a policy for acceptable medication orders, with criteria being developed or revised, implemented, and regularly evaluated, and the policy is revised as necessary.

Guidelines:

Acceptable medication orders are clear, complete, current, and legible. A complete order includes:

- Client name
- Date medication was prescribed
- Medication name, strength and dosage, route, dose frequency
- Why the medication is prescribed (if it is a PRN medication)
- Quantity to be dispensed, if appropriate
- The prescriber's signature
- The prescriber's licence or registration number
- If it is a telephone order, the name of the regulated staff taking the order

Do Not Use abbreviations should not be used in medication orders. Standing orders, orders to resume previous medications or take medications from home, and the blanket reinstatement of previous orders are not acceptable medication orders.

15.6 A list of abbreviations, symbols, and dose designations that are not to be used have been identified and implemented.

Guidelines:

Medication errors are the largest identified source of preventable hospital medical error. From 2004-2006, more than 600,000 medication errors were reported to the United States Pharmacopeia (USP) MEDMARX program, with a total annual cost of $3.5 billion. Five percent of those errors were attributed to abbreviation use. Misinterpreted abbreviations can result in omission errors, extra or improper doses, administering the wrong drug, or giving a drug in the wrong manner. In return this can lead to an increase in the length of stay, more diagnostic tests and changes in drug treatment.

Test(s) for Compliance:

15.6.1 The organization's 'Do Not Use' List is inclusive of the abbreviations, symbols, and dose designations, as identified by an Institute for Safe Medication Practices (ISMP) list of error-prone abbreviations, symbols, and dose designations.

15.6.2 The organization's 'Do Not Use' List is implemented and applies to all medication-related documentation when hand written or entered as free text into a computer.

15.6.3 Pre-printed forms related to medication use do not include any abbreviations, symbols, and dose designations identified on the organization's 'Do Not Use' List.

15.6.4 The dangerous abbreviations, symbols, and dose designations identified on the organization's 'Do Not Use' List are not used on any pharmacy-generated labels and forms.

15.6.5 Team members are provided with education about the organization's 'Do Not Use' List at orientation and when changes are made to the list.

15.6.6 The organization's 'Do Not Use' List is updated and necessary changes are implemented to the medication management processes.

15.6.7 Compliance with the organization's 'Do Not Use' List is audited and process changes are implemented based on identified issues.

15.7 Disease-specific protocols and pre-printed or electronic orders are used for chemotherapy orders.

Guidelines:

Acceptable orders for chemotherapy include the client's height, weight, and body surface area; dose per body surface area; final calculated dose; and total number of doses per treatment course.

15.8 Steps are taken to reduce distractions, interruptions, and noise when team members are prescribing medications or transcribing and verifying medication orders.

Guidelines:

Steps that help reduce distractions include having a separate area or putting up a Do Not Disturb sign when prescribing a medication or transcribing and verifying a medication order.

15.9 There is a policy on telephone and verbal orders for medications that specifies when such orders are acceptable, how they are to be documented, and when they are to be co-signed by the prescriber.

Guidelines:

The policy on telephone and verbal orders stipulates the circumstances under which a telephone or a verbal order is acceptable (e.g., an emergency or clinics linked by phone or video conferencing). Verbal orders refer to medication orders given in person by a prescriber. The policy requires transcribing the order, immediately verifying the order using a repeat-back process, and having it co-signed by the prescriber. The policy also specifies responsibilities and timelines. Chemotherapy and concentrated electrolytes should not be ordered verbally.

15.10 Medication orders are accurately transcribed into clinical documents such as medication administration records.

Guidelines:

Transcribed medication orders are verified by a second person. For example, the medication order may be transcribed by a clerk and double checked by a nurse for accuracy.

15.11 The organization uses regular, documented audits to assess the accuracy of medication order documentation and makes improvements as needed as part of a continuous quality improvement program.

Guidelines:

Monitoring compliance with transcription helps identify areas that may require attention or improvements to enhance safety.

Preparing Medications

16.0 The pharmacist reviews all medication orders for accuracy and appropriateness.

16.1 The pharmacist reviews each medication order prior to the first dose being administered.

Guidelines:

The review includes:

- Appropriateness of the medication
- Dose, frequency, and route of administration
- Therapeutic duplication
- Actual or potential allergies or sensitivities
- Actual or potential interactions
- Variations from the medication's intended use
- Any other medication-related issues or concerns

In emergency situations or during surgical procedures, an approved process is followed to ensure a review occurs in the absence of a pharmacist.

16.2 The pharmacist performs an independent double check for the dosing calculations of pediatric weight-based protocols.

Guidelines:

Staff have access to tools for calculating pediatric doses, and they double check with the prescriber.

Children are at greater risk of medication errors than adults because of their development, dependency on parents and other service providers, and different epidemiology of medical conditions. Errors in prescribing, dispensing, and administering medications represent a substantial proportion of preventable medical errors in children.

In emergency situations or when there is no pharmacist available, the organization follows an approved process to conduct the independent double check.

16.3 The pharmacist performs an independent double check for the dosing calculations for chemotherapeutic agents that are dosed according to weight or body surface area.

Guidelines:

In emergency situations or when there is no pharmacist available, the organization follows a defined process to conduct the independent double check.

16.4 A team member contacts the prescriber if there are concerns about or changes required to a medication order and documents the results of the discussion (e.g., a corrected medication order) in the client record.

Guidelines:

The prescriber is contacted by a qualified team member when a medication order is ambiguous, incomplete, or illegible. Qualified team members include regulated health professionals such as registered nurses, licensed practical nurses, or pharmacists.

The interdisciplinary committee may authorize pharmacists to correct or change a medication order, with documentation in the chart, without contacting the prescriber (e.g., automatic substitution programs).

17.0 Medications are safely and appropriately prepared.

17.1 Medication preparation areas are clean and organized.

Guidelines:

Documentation of this activity is available on request.

17.2 Appropriate ventilation, temperature, and lighting are maintained in the medication preparation areas.

Guidelines:

Preparation areas are organized and free of clutter.

17.3 There is a separate negative pressure area for preparing hazardous medications, with a 100 percent externally vented biological safety cabinet.

Guidelines:

Hazardous medications include chemotherapy medications, monoclonal antibodies, and biologicals.

17.4 Sterile products are prepared in a separate area that meets standards for aseptic compounding.

Guidelines:

Non-hazardous sterile products are prepared in the pharmacy in accordance with applicable national standards.

Sterile medications are compounded in the pharmacy except in emergencies, after hours, or if the medications have a short stability.

17.5 Direct contact with hazardous medications is avoided while the medications are being prepared.

Guidelines:

Avoiding direct contact with hazardous medications may include wearing personal protective equipment to prevent contamination of the medication and exposure to chemical agents.

17.6 Accurate and up-to-date records are maintained for all medications that are compounded or repackaged in the pharmacy.

Guidelines:

Records on medications that are compounded or repackaged in the pharmacy include information on the quantity, lot number, and expiry date of the medications. Documenting this information helps monitor compliance with appropriate compounding methods and sign-offs and is also helpful in the event of a product recall.

17.7 Accurate and up-to-date information is maintained for all medications dispensed by the pharmacy or client service area, and includes, at minimum, the date and quantity.

Guidelines:

Documenting information on medications that are dispensed helps monitor compliance with appropriate dispensing methods and sign-offs.

Labelling and Packaging Medications

18.0 The likelihood of patient safety incidents involving medications is reduced through appropriate medication labelling, packaging, and nomenclature.

18.1 Medication packages or units are labelled in a standardized manner.

Guidelines:

The requirement for standardized labelling applies to handwritten and computer-generated labels. Labels should include standard abbreviations where applicable, as well as the generic or brand name of the medication, preparation date, and dose. Where practical, the initials of the team member who verified the label can also be included.

18.2 The organization labels all sterile products with a label that, at minimum, includes the name of the medication, the base solution, and the total amount of medication additives.

Guidelines

Including the total volume of solution in the container on the label can be challenging due to overfill. Labelling for overfill is not a requirement.

Medications and situations where labelling of overfill is required are identified based on a risk assessment (e.g., for pediatric clients). For example, an antibiotic prepared in a mini-bag or an opioid for a pain management infusion does not require overfill to be included on the label. However, a chemotherapy medication that requires administration of a specific volume does require this information.

18.3 Unit dose oral medications are kept in manufacturer or pharmacy packaging until they are administered.

Guidelines:

Administration may be at the point of care or in an ambulatory setting. Pre-pouring medications is not an acceptable practice.

18.4 Concerns with medication names, packaging, or labelling are identified, reported to the pharmacy or manufacturer, and shared with team members in the pharmacy and in client service areas.

Guidelines:

The organization may store medications with problematic names, packaging, or labelling in a separate area, or place label enhancements or warnings on them.

Dispensing and Delivering Medications

19.0 Medications are dispensed in a safe, secure, and timely manner.

19.1 The pharmacy has a quality assurance process to ensure that medications are accurately dispensed as ordered.

Guidelines:

Medications prepared in the pharmacy are inspected and verified.

Examples of quality assurance processes related to dispensing medications include automated barcode verification methods or independent double checks. Automated systems such as barcode verification help avoid errors with look-alike and sound-alike medications at all points of the medication chain, including inventory management, prescribing, medication compounding, and dose administration.

19.2 Medications are dispensed in unit dose packaging and exclusions (e.g., liquids, topical preparations, antacids, otic/ophthalmics, multi-dose vials) are specified in organizational policy.

Guidelines:

Client safety is enhanced when medications are dispensed in the most ready-to-administer form. Unit dose packaging includes controlled dose systems, daily multi-dose packaging, or point-of-administration packaging. The organization uses unit dose medication when available.

19.3 Emergency, urgent, and routine medications are accessible within the timelines set by the organization.

Guidelines:

Emergency, urgent, and routine medications are defined by the organization (e.g., type of medication, clinical indication).

19.4 When automated dispensing cabinets are used, there are policies and procedures that address access, location, type of medication information, verification, and restocking of medications.

Guidelines:

A well-organized and secure medication storage system can reduce the risk of medication errors, including those associated with high-risk medications.

19.5 Automated dispensing cabinets in client service areas interface with the medication order entry management system.

Guidelines:

Having an interfaced profiling system allows the pharmacist to review and approve medications before they are available for selection in the automated dispensing cabinet and administration to the client.

20.0 The organization has a process for controlled access to medications when the pharmacy is closed.

20.1 When the pharmacy is closed, there is controlled access to a night cabinet or to automated dispensing cabinet for a limited selection of urgently required medications.

20.2 A record is kept of the medications accessed from the night cabinet or automated dispensing cabinet.

Guidelines:

Keeping a record of medications accessed from the night cabinet or automated dispensing cabinet gives the team up-to-date data about accessed medications.

20.3 A pharmacist or other qualified team member verifies, as soon as possible, that the correct medications were obtained from the automated dispensing cabinet or night cabinet after hours.

Guidelines:

The dispensing record of medications that are accessed from the night cabinet or automated dispensing cabinet is used to verify dispensing activity.

20.4 The system for dispensing medications when the pharmacy is closed is regularly evaluated and improvements are made as needed.

Guidelines:

Regular monitoring of medication retrieval when pharmacy services are not available could unveil potential problems because the medication system is more vulnerable to errors. Implementing strategies to safeguard the storage of and access to medications during such situations can help prevent errors and harm to clients.

21.0 Medications are transported in a safe, secure, and timely manner.

21.1 Medications are delivered securely from the pharmacy to client service areas.

Guidelines:

The medication delivery system may involve trained team members or automation. This stage is vulnerable to medication diversions if robust documentation or electronic recording during delivery is not in place.

21.2 Steps are taken to protect the health and safety of team members who transport, administer, or dispose of cytotoxic or other hazardous medications.

Guidelines:

Exposure to cytotoxic or other hazardous medications is minimized by special handling procedures such as using personal protective equipment (e.g., double gloves), and plastic bags and plastic containers.

21.3 A readily accessible hazardous spill kit is located wherever cytotoxic or other hazardous medications are dispensed and administered.

Guidelines:

Spill kits and other clean up materials are located in the immediate areas where there is a potential for exposure to hazardous medications. Staff are informed about the location and proper use of spill kits.

21.4 There is a procedure to manage the return of medications to the pharmacy.

Guidelines:

The return procedure includes procedures to account for and prevent the diversion of returned medications, integrity checks, and stability checks.

21.5 The organization has a policy and procedure to manage how it procures and tracks medications.

Guidelines:

The policy addresses how medications arrive at the organization, how they are received, the steps taken once they are in the organization, and how the procedure is documented.

Administering Medication and Client Monitoring

22.0 The team works with clients and families to safely administer medications.

22.1 The team discusses medications prior to the initial dose and when the dose is adjusted, documents the discussion, and gives highest priority to the wishes of the client or family.

Guidelines:

The extent of the information that is provided about the medication depends on the client's capacity. Educating clients about their role in safe medication administration may include discussing potential questions about medications and encouraging them to show their identification (e.g., name bracelet, band number) and stating their name clearly before medications are administered.

Information shared with clients and families includes the name of medication, what it is used for, and when the next dose is due, as well as the medication's potential benefits and adverse effects, how to use the medication safely and properly, the risks of non-adherence, and what to do in the case of an adverse drug reaction.

Information can be shared verbally or in writing. Written and verbal information should be simple, easy to understand, and provided in the appropriate language. Information about the cost of the medication may be provided. Pharmacists may be directly involved in this process.

If a client, or family member if the client is incapable, objects to or rejects the medication that is prescribed, the team must respect this decision and resolve it by offering an alternate solution.

Discussions about medications may not be possible in an emergency.

22.2 At the time of admission, information on how to prevent patient safety incidents involving medications is provided to and discussed with clients and families.

Guidelines:

Engaging clients and families on how to safely use medications can help prevent patient safety incidents involving medications.

The extent of the information provided depends on the client's capacity. Discussing the client's or family's role in safe medication administration may include identifying questions they could ask about medications and encouraging them to show their identification (e.g., name bracelet or other form of identification such as a barcode) and stating their name clearly before medications are administered.

This information can be provided verbally or in writing (e.g., pamphlets on medication safety, posters inviting clients to ask questions about their medications).

22.3 Information is shared with each client about who to contact and how to reach that person if they have concerns or questions about their medications while receiving care, at transfer of service, or at the end of service.

Guidelines:

Informed clients and families are more active participants in their health care and are better able to ask questions, which can help prevent medication errors. Information should be shared in a manner most suited to the client's capacity.

Written or electronic formats can be used to provide other service providers with this information.

22.4 Team members reinforce medication information that is provided to clients and families and respond to concerns or questions they may have about their medication.

Guidelines

Clients' understanding of their medications depends on their capacity. If a client does not have the capacity to understand, a family member or substitute decision maker is included in the conversation.

Verifying that clients understand their role in safe medication administration may include providing them with information or education, responding to their questions or concerns, helping them identify medication-related questions to ask when they meet with their service providers or pharmacists, or consulting with their service providers or pharmacists

if they have concerns that require an immediate response and cannot be answered by team members.

To assess comprehension and verify understanding, the client can be asked to repeat back the information provided.

23.0 The organization works with clients and families to manage self-administration of medications safely.

23.1 There is a policy and procedure to ensure client self-administration of medication is safely managed.

Guidelines:

The policy should state what medications clients can self-administer. A consent form for client self-administration and medication adherence strategies could be included in the policy and procedure.

23.2 Established criteria are used to determine which medications clients can self-administer.

Guidelines:

The criteria include the mode of delivery, monitoring requirements for the medication, possible adverse drug reactions, and the client's history of allergic reactions.

23.3 Established criteria are used to assess whether a client is able to self-administer medications.

Guidelines:

The criteria include the client's competency, ability, and agreement to self-administer medications.

Medication adherence may be critical to the client's treatment regimen. Clients require sufficient education and understanding of their medication regimen and administration procedures (e.g., inhalers, injections) to be able to manage these at home.

During self-administration, the most common types of patient safety incidents involving medications are wrong dosages, taking unnecessary medications, interactions with other prescription and non-prescription medications, and non-adherence.

23.4 Medications that are self-administered by clients are stored and labelled safely and appropriately.

Guidelines:

For example, medications for self-administration can be stored in a cabinet with limited access or in a safe, or at the bedside in a locked drawer. Appropriate storage could mean refrigeration of the medication.

23.5 Each client who self-administers medications is provided with appropriate education and supervision prior to self-administration, and this is documented in the client record.

Guidelines:

The organization has a comprehensive and carefully supervised program to support the self-administration of medications. It may include print and online resources to explain the rationale for prescribing the medication, the importance of taking the medication regularly,

and the possible side effects. Medication education improves adherence as clients have a better understanding about their medication therapy and can thus exercise more independence and control.

23.6 The process for self-administering medications includes documenting in the client record that the client took the medication and when it was taken.

Guidelines:

Clients may document this information in their own record. It should be verified for completeness by a team member.

24.0 The organization has processes to ensure medications are administered safely and accurately.

24.1 Team members who administer medications are assigned a level of responsibility that is within their scope of practice.

Guidelines:

Responsibility may differ by medication class and administration route.

24.2 Before medication is administered, the client's profile is consulted to verify the "rights" of medication administration, which are the right medication, the right dose, the right route, the right time, to the right person, with the right documentation, for the right reason, and with the right response.

Guidelines:

The organization may have established criteria for the information to be verified, in which case the team should adhere to these criteria.

24.3 The organization establishes a list of high-alert medications that require an independent double check before they are administered.

Guidelines:

Ensuring an independent double check for designated high-alert medications is encouraged as a method to identify potentially harmful errors before they reach clients. The double check must be carried out independently by a second person, to reduce the risk of bias that could occur when the team member is preparing and checking the medication. When two people check the process separately, there is less likelihood that they will make the same mistake. Certain components of an independent double check can be completed electronically (e.g., using a barcode) such as verification of client identity and correct medication.

An independent double-check is completed prior to the administration of designated high-alert medications, including narcotic (opioid) infusions (continuous only), heparin infusions, insulin infusions, antineoplastic infusions, and parenteral nutrition.

24.4 An independent double check of high-alert medications identified by the organization is conducted at the point of care before these medications are administered.

Guidelines:

Independent double checks help prevent medication errors during selection, preparation, and administration of medications identified by the organization as high risk. The process

involves having a second person verify the client's identity, the medication, the concentration, pump programming, and the line attachment. The second person should be trained to perform this check and performing the check should be within their scope of practice.

In situations where another person is not available, it is recommended that a strategy be implemented to mitigate the risk of errors. For example, the person doing the check could complete the first check, perform another task, and then complete the second check. Alternatively, medication administration could be scheduled to take place around shift changes when extra personnel are available. Certain components of an independent double check can be completed electronically (e.g., using a barcode) such as verification of client identity and correct medication.

24.5 To allow for immediate administration during emergencies, antidotes, reversal agents, and rescue agents shall be available to team members along with standardized protocols or coupled order sets and directions for use.

Guidelines:

Examples of medications for emergency interventions include naloxone, epinephrine, and flumazenil.

24.6 When using medications intended for the topical use in surgical procedures, such as concentrated epinephrine, it is not drawn up into a parenteral syringe but placed in a labelled bowl within the sterile field.

Guidelines:

The inadvertent injection of medications intended for topical use is one of five ’never’ pharmaceutical events published in 2015 by the Canadian Patient Safety Institute.

24.7 When using any medication intended for injection, it is drawn into the syringe from the original vial and labelled immediately prior to use.

Guidelines:

Unlabeled syringes are a significant risk associated with preparation of injectable products in clinical areas.

Information on the solution labels include medication name, strength, amount, expiration date and time.

24.8 In the event of a delayed or missed medication dose, the team documents the actual time of administration in the client record.

Guidelines:

Documenting details of medication administration provides an accurate history of a client’s care. For example, if a medication dose is missed because a client refused to take it, the prescriber may need to alter the plan of care.

24.9 Teams address medication-related concerns with a prescriber or pharmacist and follow established guidelines to notify the prescriber or pharmacist as required.

Guidelines:

Teams can raise safety concerns and are comfortable identifying medication-related concerns.

If team members have a concern with the appropriateness or safety of an order being administered, established guidelines to notify the prescriber or pharmacist should be followed.

24.10 Lot numbers and expiry dates for vaccines are documented in the client record following administration of the medication.

Guidelines:

Requirements to document vaccine lot numbers and expiry dates may vary among jurisdictions. The organization follows jurisdictional requirements.

25.0 There are policies and procedures to ensure team members are competent to safely assist clients with their medications.

25.1 Team members who assist with medications are provided with appropriate training, at orientation and on an ongoing basis, to maintain competency.

Guidelines:

Staff require education and training to do their jobs safely. Keeping up to date on managing medications is important. In addition to education, mentorship and availability of resources such as medication therapy manuals, that can be kept on the ward or online, can help maintain competency.

25.2 Team members who assist with medications are educated on how to recognize allergic reactions and how to respond if a reaction occurs.

Guidelines:

The responsibility of recognizing and responding to reactions is an expectation within each team member's scope of practice, and the team member knows the parameters of their role and when to defer to the expertise of another team member.

25.3 Team members who assist with medications have access to a regulated health care professional who can answer their questions about medications.

Guidelines:

Team members work within their scope of practice and mentor and support their colleagues.

26.0 Clients are monitored following medication administration.

26.1 The team has access to up-to-date reference material that identifies the type and frequency of monitoring required for specific medications.

Guidelines:

The type, frequency, and level of client monitoring depends on the type of medication and the organization's role in managing the client's medications. Examples of monitoring systems to keep clients safe include alarm systems and smart pump technology. References may include the monograph or medication manual.

26.2 The effects of medications on client treatment goals are monitored and documented in the client record.

Guidelines:

The effects of medications may include the client's own perceptions, laboratory results, vital signs, and clinical response or efficacy. Failure to adequately monitor the effects of medications can compromise client safety and increase the risk of patient safety incidents involving medications.

26.3 Clients are monitored for possible patient safety incidents involving medications.

Guidelines:

Seniors taking multiple medications and clients taking high-risk medications are at the highest risk for patient safety incidents involving medications. Team members are provided with information on how to monitor for patient safety incidents involving medications including what signs to look for and how to react.

26.4 Alerts or alarms on client monitoring systems are used to alert team members and service providers immediately of potential patient safety incidents.

Guidelines:

Alerts or alarms on client monitoring systems are active at all times. Examples may include an oxygen saturation monitor, infusion device, cardiac monitor, or pulse oximeter.

26.5 The organization discloses patient safety incidents involving medications to the client and family at the earliest opportunity.

Guidelines:

The policy for disclosure is based on best practice and guidance from regulatory bodies.

The process for disclosure is consistent with the organization’s processes for disclosing other patient safety incidents.

Evaluating the Medication Management System

27.0 The interdisciplinary committee uses the organization's patient safety incident management system to report and learn from patient safety incidents involving medications.

27.1 The interdisciplinary committee maintains the organization's patient safety incident management system and ensures it is used to report patient safety incidents involving medications.

Guidelines:

Patient safety incidents involving medications are reported internally and the organization is encouraged to also report them externally.

The organization’s patient safety incident management system defines reporting lines and requirements related to adverse drug events and potential adverse drug events, including what kinds of reports need to be made and to whom, and over what time period. These may include reports to appropriate internal staff, partners, and external organizations.

The organization should have a formal incident management process that meets its needs for a fair, transparent, and just process.

27.2 All patient safety incidents and near misses are reported, reviewed, and analyzed.

Guidelines:

The review and analysis of incidents and near misses is undertaken by a subcommittee that is responsible for proposing actions to be taken to prevent the same or similar incidents or near misses from recurring. The subcommittee ensures follow up on these actions and provides proper resources and implementation.

27.3 The interdisciplinary committee reviews patient safety incidents involving medications and uses established criteria to prioritize those that will be analyzed further.

Guidelines:

A medication safety subcommittee may be established to review patient safety incidents involving medications. This includes trending and developing plans for prevention. The committee's review of adverse drug events may consist of a root cause analysis or a similar process. It may include analyzing and using published adverse drug event experiences from other organizations to proactively improve the organization's own patient safety incident management system.

27.4 The interdisciplinary committee determines which team members to involve in the analysis of patient safety incidents involving medications.

Guidelines:

Team members may be able to provide information on contributing factors and what can be done to avoid recurrence. The analysis of incidents promotes a just culture and shared accountability and avoids targeting an individual.

27.5 In response to patient safety incidents involving medications, the interdisciplinary committee exchanges information with clients, families, and other team members about recommended actions and improvements that were made.

Guidelines:

Information about patient safety incidents involving medications and risk reduction strategies is exchanged with team members in accordance with applicable legislation and includes de-identifying client and other information to maintain confidentiality.

28.0 Adverse drug reactions are monitored and reported.

28.1 Teams are informed about the value of and their role in reporting adverse drug reactions, specifically unexpected, expected, or serious reactions to recently marketed medications.

Guidelines:

Adverse drug reactions may be reported to a national body or to the manufacturer, who in turn uses the information to improve the safety of medications, encourage safe use of medications, and promote effective communication to the public about medications and potential adverse reactions.

28.2 Teams are provided with information on how to identify and report adverse drug reactions.

Guidelines:

Adverse drug reactions are reported to a national body or to the manufacturer, which in turn uses the information to improve the safety of medications, encourage safe use of medications, and promote effective communication to the public about medications and potential adverse reactions.

Where a reporting program for adverse drug reactions is available, teams should receive training on how to report adverse drug reactions and to whom they should be reported.

28.3 Action plans are developed in response to alerts regarding adverse drug reactions.

Guidelines:

Organizations that collect reports of adverse drug reactions may publish alerts or reports regarding identified adverse drug reactions. The organization should be aware of these alerts and how to get them in a timely way.

Actions to take in response to alerts may include sharing information with teams, monitoring use of the medications mentioned in the alerts, and making process changes (e.g., removing the medications from storage).

29.0 The interdisciplinary committee oversees a quality improvement program for medication management.

29.1 Resources are provided to support quality improvement activities for medication management.

Guidelines:

Examples of resources to support quality improvement activities for medication management include designating team members and providing training opportunities in quality improvement.

29.2 When medication management processes are contracted to external providers, a contract is established and maintained with each provider that requires consistent levels of quality and adherence to accepted standards of practice.

Guidelines:

The organization is responsible for the activities carried out by its external contractors.

29.3 When medication management processes are contracted to external providers, the quality of the services is regularly monitored by reviewing the evidence from the external contractors.

Guidelines:

Monitoring service quality includes reviewing copies of reports and other documentation that demonstrate the quality monitoring performed by the external contractors. It is suggested this review be conducted quarterly.

29.4 The interdisciplinary committee conducts an annual evaluation of the medication management system.

Guidelines:

The type of evaluation depends on the size and complexity of the organization. Examples include participating in an external quality control or accreditation program.

29.5 The interdisciplinary committee monitors process and outcome indicators for medication management.

Guidelines:

The interdisciplinary committee selects indicators as part of its comprehensive evaluation of its medication management system. Indicators may be selected based on local priorities.

Examples of medication management-related indicators include:

- Number of adverse drug event-related hospitalizations or emergency room visits
- Percentage of clients whose medication history was recorded at the beginning of service
- Medication reconciliation rate

29.6 The interdisciplinary committee prioritizes and completes medication use evaluations.

Guidelines:

Medication review panels may review medication therapy outcomes and guidelines in a particular specialty. The review includes medications dispensed outside the pharmacy (e.g., in operating rooms). The evaluation focuses on improving client care, reducing the risk of error, and managing medication costs.

An example is evaluating the use of antimicrobials. The medication review panel might assess appropriate use of antimicrobials and their efficacy, as well as antimicrobial stewardship in the organization.

29.7 The interdisciplinary committee uses the information it collects about its medication management system to identify successes and opportunities for improvement, and to ensure that improvements are made in a timely way.

Guidelines:

Measuring success and opportunities for improvement could include monitoring the implementation of patient safety recommendations, medication costs, the use of non-formulary medications, published research, and medication therapy issue reports.

29.8 The interdisciplinary committee shares evaluation results, areas of success, and opportunities for improvement with teams.

Guidelines:

Sharing the results of evaluations and improvements helps team members become familiar with the concept and benefits of quality improvement. Recognizing success encourages a positive culture within teams.

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