

Medication Safety

Practice Guidelines & Tools



MINISTRY OF HEALTH
SINGAPORE



PHARMACY BOARD
SINGAPORE

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Foreword by Director of Medical Services

Medication safety has long been recognized to be important in the provision of patient care. With the evidence now pointing to medication errors as one of the leading causes of avoidable complications and deaths, there is a pressing need for a better understanding of the nature and scope of medication errors, and the will to improve the current clinical delivery systems.

In Singapore, the prescribing and dispensing standards are high and the vast majority of drug treatment is provided safely. We must, however, remain committed to ensuring that medication use is made as safe as possible, since a prescribed medication is the most frequent treatment provided to patients. For this reason, I am very pleased that the pharmacy profession has taken the lead in developing this practice guide.

I hope that the tools in this guide will lead to the identification of gaps in our system and spur improvements in medication use locally. Pharmacists and all members of the healthcare team will have to work together to transform the information in these pages into practice and ensure that the medication use process is safe from beginning to end. This will be critical in the face of an increasingly complex healthcare system.

I would like to thank all who have helped produce this guide. Special thanks are due to Chief Pharmacist, Ms Ang Hui Gek, and the members of her workgroup.

Prof K Satku
Director of Medical Services
Ministry of Health
February 2006



Foreword by Chief Pharmacist

The landmark report “To err is human” by the Institute of Medicine established that medication errors are the leading causes of death and occurs in all health care systems. Minimising medication errors in the total medication use process is therefore of strategic importance in improving patient safety in the healthcare system.

The Medication Safety Practices Guide is written to serve as a reference tool, and to encourage health care professionals to take a proactive approach to ensuring medication safety, rather than waiting for an error or patient harm to occur. The guidelines and best practices collected in this guide are applicable to all health care professionals, not limited but especially for doctors, pharmacists, nurses and patient support staff. The guidelines are categorized according to stages of the medication use process. However, it is important to note that no single health care professional’s role is neatly confined to any one section or stage as the total medication use process is a continuum; the inputs and outputs at each stage affect the next.

With the increasing use of information technology and systems, such as electronic patient records and electronic prescribing, new issues have resulted. This guide has also dedicated a chapter on the key features of a well-designed information management system to reduce the mistakes and lapses in medication order and use. Even as new technologies and new drugs potentially provide a more efficient system and effective remedies, systems and human errors will continue to harm. The key approach is really to take a proactive step to creating a patient safety mindset, environment and culture amongst health care providers, by developing good practices and encouraging right attitudes and habits in the workplace.

I hope that you will find this guide useful and valuable to your practice. Let’s build a SAFE system and ‘breathe SAFETY’ for the good of all, patients and healthcare providers.

Ang Hui Gek (Ms)
Chief Pharmacist
Ministry of Health
February 2006



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Special thanks go to the Institute for Safe Medication Practice and Changi General Hospital for kindly allowing us to reproduce the materials contained in this guide.

Executive summary



- Medication errors, near misses and adverse drug events occur at all phases of the medication use process - prescribing, dispensing, administering and monitoring.
- Near misses if ignored may lead to medication errors. Serious errors harm patients and expose health professionals to civil liability and possible criminal prosecution. Adverse drug events are costly and result in significant additional healthcare resource consumption.
- Medication safety is the responsibility of all members of the healthcare team. A system- wide approach that involves all members of the health care team as well as management is a sound approach.
- What are the facts about medication errors? Findings from several studies of large numbers of hospitalized patients indicated that it is one of the leading causes of death.
- Health institutions are putting considerable effort into strategies for safer medication use. While majority of prescriptions are filled and administered safely and effectively, most medication errors are caused not by individual carelessness, but rather by faulty processes or conditions that lead people to make mistakes or fail to prevent them. Developing and adopting standards and recommendations that have shown to reduce errors are ways to achieve error mitigation.
- Medication use is a complex process involving a variety of practitioners and many steps, with the potential for serious error and patient harm. Identifying and addressing the risks are important. The following could be considered:
 - Adopting the ten key elements from the Institute for Safe Medication Practice (ISMP). These elements play important roles in the medication use process, and the interrelationships among them form the structure within which medications are used. They can be used in daily practice to promote good practice, identify and prevent risks

Executive summary



- Adopting a Computerised Physician Order Entry (CPOE) system to decrease medication errors by improving the prescribing aspect of the medication use process
- Adopting good practices and recommendations for reducing errors due to labelling and packaging
- Encouraging patients to be their own patient safety advocate and becoming active members of the healthcare team

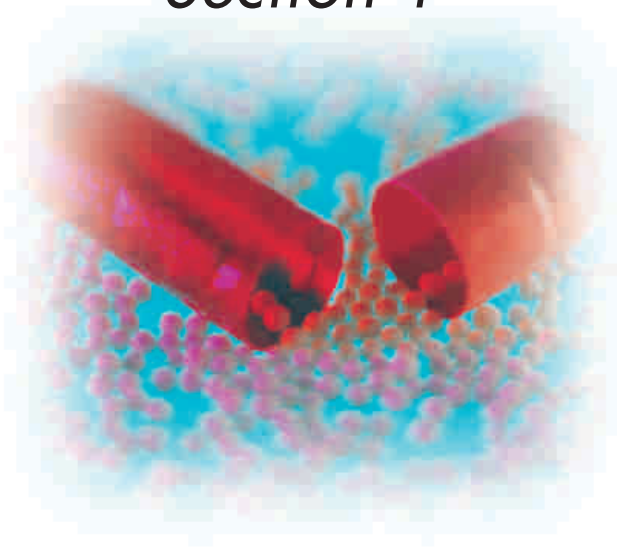
Studies from overseas tell us that medication incidents are common, cause significant illness and injury, and are costly in both human and economic terms. There is a need for us to collectively address them. For a start the following could be considered:

- Initiating a strong leadership to make medication safety our national priority
- Adopting practical tools and approaches which help to build safer processes and work practices
- Partnership and collaboration among members of healthcare team for a safe system of work
- Educating our patients about safe medication practices
- Supporting strategic research which addresses gaps in current knowledge and practice and helps to identify new issues

This guidebook is designed:

- To provide an easy-to-use guide for individuals involved in medication use process to adopt safe medication practices
- To provide tools for incorporating medication safety into work processes

Section 1



Introduction:

Medication safety

Introduction: Medication safety



Medication errors occur in all health care settings. Findings from several studies of large numbers of hospitalised patients indicated that each year many patients are harmed, injured or experienced adverse drug events as a result of medication errors.

1.1 Definitions

The term **medication error** has been defined in many ways. The US National Co-ordinating Council for Medication Error Reporting and Prevention defines it as:

“any preventable event that may cause or lead to inappropriate medication use or patient harm while the medication is in the control of health professional, patient or consumer.”

Medication errors may be related to professional practice, products, procedures, environment or systems. They may involve prescribing and ordering; dispensing and distribution; preparation and administration; labelling, packaging and nomenclature; communications and education; or use and monitoring of treatment. Serious errors harm patients and expose health professionals to civil liability and possible criminal prosecution.

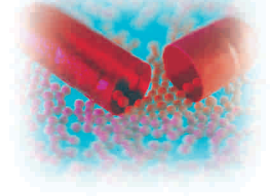
A **near miss** is an event or situation that could have resulted in medication error, but did not, either by chance or through timely intervention. It is also referred to as a “close call”. Near misses if ignored may lead to medication errors.

An **adverse drug event** is defined as an injury resulting from drug-related interventions. It can include prescribing errors, dispensing errors and medication administration errors. Adverse drug events are costly and result in significant additional health care resource consumption.

1.2 Facts about medication errors

Between 1993 and 1998, the US Food and Drug Administration Adverse Event Reporting System recorded 5307 medication error reports (an additional 59 were classified as duplicate reports or intentional overdoses). The findings were:

- Medication errors were fatal in 9.8% (N=469) of cases.
- 48.6% of deaths occurred in patients greater than 60 years of age.
- The three most common causes of death were improper dose, wrong drug, and wrong route of administration; collectively these represented approximately 66% of all deaths associated with medication errors.



Introduction: Medication safety

The Institute of Medicine reported that in the US,

- 7000 deaths occur yearly due to medication errors.
- Medication errors account for one out of 131 outpatient deaths and one out of 854 inpatient deaths.

Bates et al. reported that 42% of Adverse Drug Events were preventable and were caused by:

- Ordering errors (56%)
- Administration errors (34%)
- Transcription errors (6%)
- Dispensing errors (4%)

Currently there are no published statistics or data on local medication errors or near misses available in Singapore.

1.3 Steps to reduce errors

A number of practices have been shown to reduce errors in medication use process. These include:

Reduce Reliance on Memory

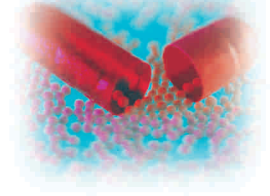
- Use drug-drug interaction checking systems
- Use computerised order entry
- Use bar-coding on drugs, containers, medication records, patient wristbands
- Use computerised patient information
- Use guided dose algorithms

Simplify

- Eliminate transcription of orders
- Limit choices of available drugs in pharmacy
- Limit dosage strengths and concentrations for each drug
- Mix IVs in the pharmacy
- Automate dispensing on patient care unit

Standardise

- Standardise prescribing conventions:
 - no error-prone abbreviations
 - use generic names
 - use "units" not "u", etc.



Introduction: Medication safety

- Use protocols for complex medication administration (heparin, insulin, chemotherapy)
- Standardise times of drug administration
- Store medications in the same place in every medication room
- Use standard equipment, e.g. one kind of pump or syringe

Use Forcing and Constraints Functions

A **forcing function** is an effective error-proofing method that eliminates reliance on memory, checklists, and double check systems. A **constraint** prevents further action until some conditions are met.

- Use pharmacy computers that will not fill any orders unless allergy information, patient weight and height are entered
- Use special luer-locks syringes and indwelling lines that have to match before fluid can be infused
- Use computerised order entry with dosage range checks
- Remove dangerous IV drugs from ward stock

Use Protocols and Checklists Wisely

Protocols support standardisation.

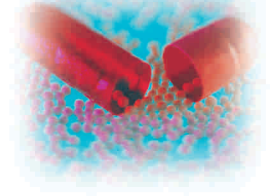
Checklists serve as reminders of critical tasks, especially when an omission can have serious consequences. They reduce individual variation in practice, but can be a source of error with indiscriminate adherence.

- Avoid statements that contain negatives
- Make sure that everyone has agreed on protocol or checklist, and is aware that it is in use
- Revisit the protocol or checklist regularly to evaluate and update

Improve Access to Information

Lack of information is a common cause of errors.

- Have a pharmacist available on nursing units and at rounds
- Use computerised order entry systems
- Use computerised laboratory data to alert abnormal laboratory values
- Place laboratory reports and medication records at bedside
- Place protocols and ordering information on patients' charts and in medication room where they are easily accessible
- Colour-code wristbands for patients with allergies
- Provide patient with list of his/her medications, dosage, and frequency
- Track errors or near misses and feedback to staff on a regular basis



Introduction: Medication safety

Decrease Reliance on Vigilance

There are limits to the human attention span. It is difficult to maintain vigilance in situations of fatigue, repetitive tasks, and infrequently occurring events.

- Use double check system
- Use automatic drug dose checking in high-risk situations
- Use electronic monitors that raise alert when parameters are exceeded
- Rotate staff when performing repetitive functions
- Limit shift duration for doctors, nurses, pharmacists, support personnel, etc

Reduce Handoffs

The complexity in the medication system is a result of the number of people involved and the handoffs between them. Many errors occur during transfer of materials, information, people, instructions, or supplies.

- Provide ready-to-administer products
- Reduce transcription of medication orders
- Use unit-dose systems
- Have pharmacist participate in rounds
- Use automated drug dispensing / filling systems
- Use computerised prescriber order entry

Differentiate : Eliminate Look-Alikes and Sound-Alikes

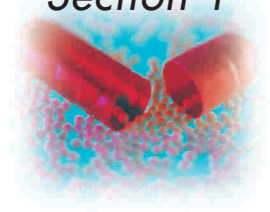
- Store similar-looking medications in separate places
- Repackage or re-label look-alikes to differentiate them
- Alert staff and post information on medications with similar names (including sound-alike)
- Avoid stocking look-alike packages
- Use striking caution stickers on stock containers to alert staff to look-alikes

Automate Carefully

Automation can reduce errors that occur in repetitive tasks or in tasks requiring attention to detail. It can become hazardous when it leads staff to feel less responsibility for the task. It can also multiply an error if the error was made in generating inputs to the system.

- Use computerised order entry systems with range checks and override capacity
- Train staff to double check the automation regularly
- Use bar-code technology to identify drugs

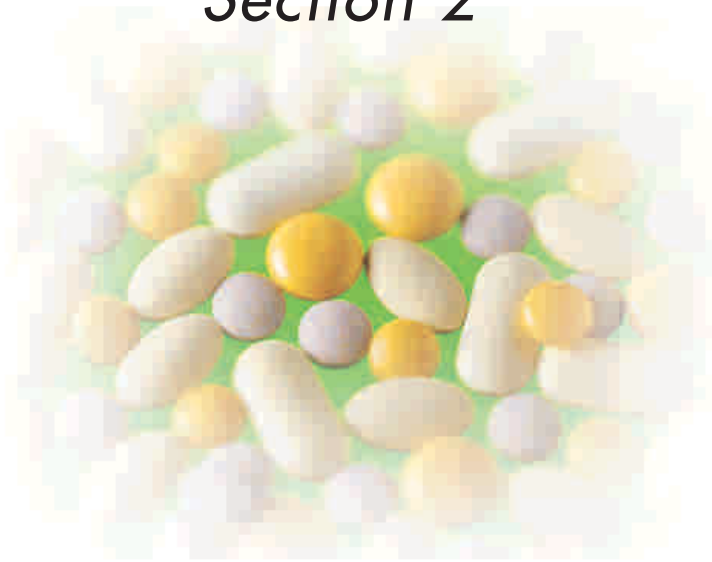
Introduction: Medication safety



While there is no “magic-bullet” solution to the problem of patient safety, there are national standards and clinical guidelines and processes that are being implemented to address the challenges faced by practitioners. Together with the help of dedicated organisations that are working to elevate awareness of the issues and to develop solutions that improve patient safety, we will surely see improvements that will translate into enhanced patient care. Following is a list of organisations and associations that have made medication safety their priority:

- The Institute of Medicine
- The United States Pharmacopeia
- The Institute for Safe Medical Practices
- The National Quality Forum
- The National Patient Safety Foundation
- The Agency for Healthcare Research and Quality
- The Quality Interagency Coordination Task Force
- The Joint Commission on the Accreditation of Healthcare Organizations
- The Leapfrog Group

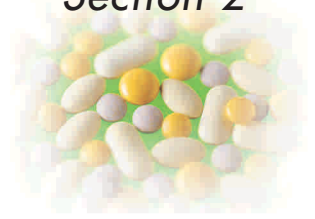
Section 2



The Medication use process:

**Prescribing, dispensing
and administration
of medicines**

The Medication use process: Prescribing, dispensing and administration



The Medication Use Process is commonly divided into four stages:

The **prescribing stage** (writing / ordering the prescription) includes assessing the need, selecting the correct drug and individualising the therapeutic regimen to the patient.

Basic principles of prescribing safely

Before prescribing,

- Assess the patient thoroughly, making sure the drug is appropriate and not contraindicated
- Always ask if the patient is allergic to any drugs; if this is not already documented, write it down
- Take into consideration any medication the patient is already taking, checking there are no interactions
- Consider alternative therapies and discuss these with the patient

When prescribing,

- Check that you are prescribing the correct medication to the correct patient
- Use generic drug names rather than brand names. Don't use abbreviations
- Check the dose, frequency, and route of administration are correct and appropriate for the patient. Include a start date and a review date
- Avoid unnecessary zeros (for example, 1.0 mg), which may be misread, and make sure the units you use are correct
- If in doubt, refer to appropriate reference
- Make sure your prescription is legible and easy to read
- Explain what you are prescribing to the patient and why; describing how and when to take medication increases compliance and reduces confusion

After prescribing,

- Watch out for any unprecedented reactions
- Make sure you monitor levels or organise follow-up tests if indicated
- Review the indications for the drug regularly. This prevents patients from taking medications they don't need to take

Adapted from BMJ Career Focus 2005;331:110

The Medication use process: Prescribing, dispensing and administration



The **medication supply** stage (routing the prescription, keying the prescription into pharmacy dispensing and labeling system, picking, packing and dispensing the prescription) includes reviewing and processing the order, compounding/ preparation of the drug and dispensing the drug in a timely manner.

Basic principles of supplying medication safely

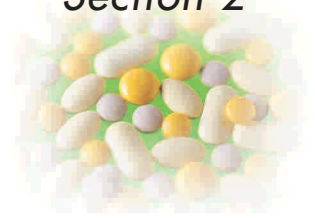
During processing of order (typing, picking and packing)

- Interpret prescription carefully to identify any ambiguity or safety concerns
- Do not hesitate to contact prescriber for any illegible or ambiguous order
- Remind prescriber to avoid using dangerous abbreviations when detected on order
- Check that you are entering the correct order into the correct patient profile
- Do **NOT** ignore warnings or alerts on allergy, drug interactions, contra-indications when entering order into computer system
- Make sure drug label information contains the correct patient name, drug, strength, quantity, dosage instructions and cautionary instructions
- Make sure to affix the correct drug label onto the correct medication
- Always counter-check drug assembled against the prescription order and **NOT** drug label

During dispensing

- Check that you are dispensing the correct drug to the correct patient
- Always ask if patient is allergic to any drugs
- Take into consideration any medication the patient is already taking, including Traditional Chinese Medicine, so as to identify any potential drug-drug interactions
- Caution patient on possible food-drug interactions
- Explain clearly to patient what is the drug for, how and when should it be taken and what are the adverse drug reactions to look out for
- Keep up-to-date references, including on-line version, easily accessible for quick reference check when in doubt

The Medication use process: Prescribing, dispensing and administration



The **administration** stage (administering the prescription) includes administering the right medication to the right patient, in the right manner and administering the medication only when indicated.

Basic principles of administering medication safely

Before administration

- ☐ Check that you are taking the correct medication chart for the correct patient
- ☐ Interpret the order carefully before preparing drug for administration
- ☐ Check that the pharmacist has reviewed a new drug order before administering
- ☐ Check for any drug allergy or ambiguous order
- ☐ Do not hesitate to contact the prescriber for any illegible or ambiguous order
- ☐ Accept verbal order only in emergency by writing down and repeating back the order, spelling the drug name and doses
- ☐ Check that you are preparing the correct drug for the correct patient
- ☐ Always get a double-check for correct drug, dose, route and time of administration before administering the drug
- ☐ Make sure to counter-check the drug prepared against the order before administering
- ☐ Label all infusion sets and lines
- ☐ Be familiar with all the different administration sets and devices available in the inventory

During administration

- ☐ Check that you are administering the correct drug to the correct patient
- ☐ Advise patients on the possible adverse drug reactions that they may experience during and after administration
- ☐ Encourage patient to express any discomfort or problems experienced during drug administration

After administration

- ☐ Document promptly on the medication chart the time that the drug is administered

The Medication use process: Prescribing, dispensing and administration



The **monitoring** stage (counselling the patient about the prescription and monitoring treatment outcome) includes informing the patient about their medication and encouraging compliance, monitoring and documenting the patient's response to the medication, identifying and reporting adverse drug events and re-evaluating drug selection, regimen, frequency and duration.

Basic principles of monitoring medication use

- Be familiar with the drug use protocols
- Be familiar with the possible adverse drug reactions following drug administration
- Be vigilant when monitoring patient by adhering strictly to established protocols
- Alert prescriber promptly should patient develop unexpected signs and symptoms or is not responding as expected
- Document patient's response on the medication chart in a timely manner
- Do not use dangerous abbreviations when documenting administration details
- Keep up-to-date references easily accessible for quick checks

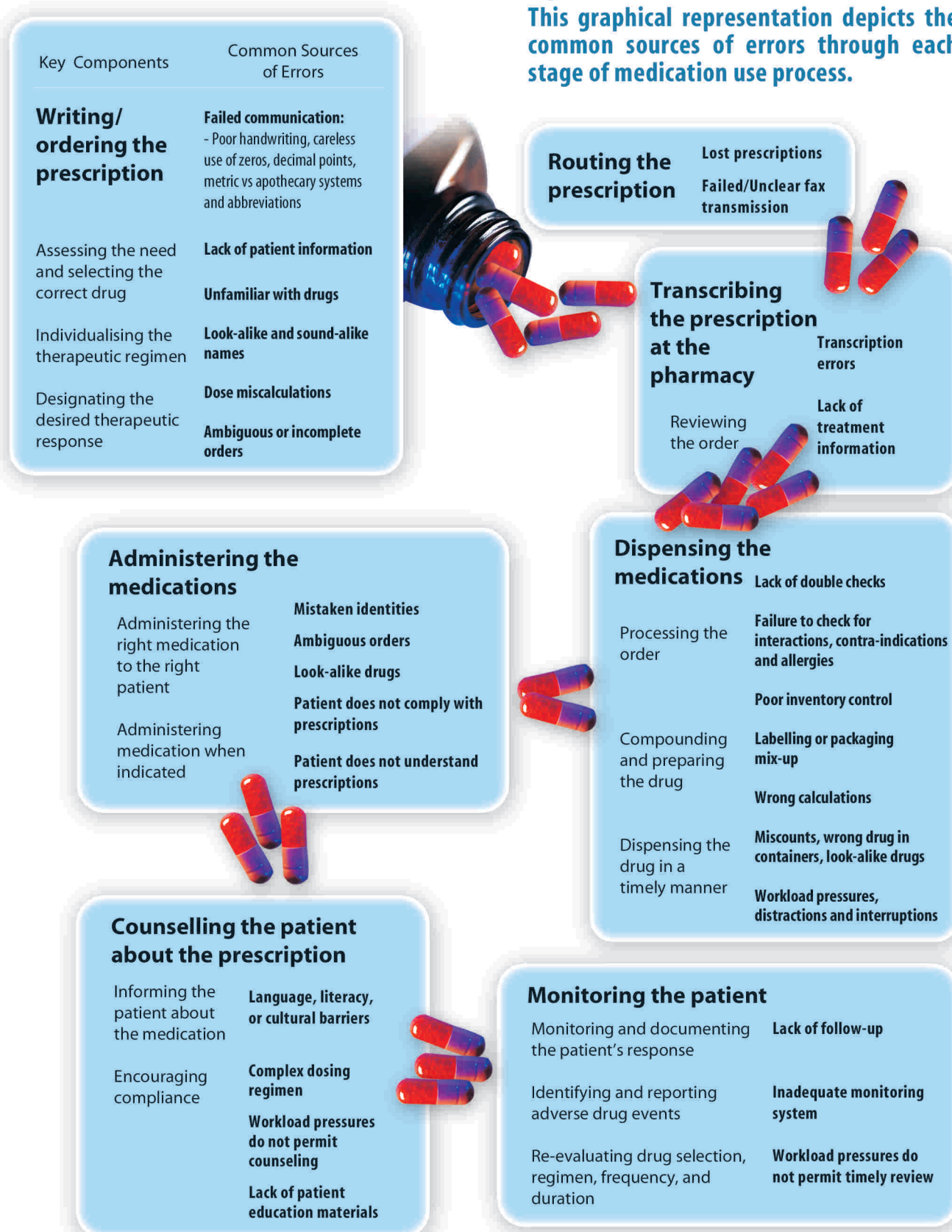
It should be kept in mind that errors and failures may occur at any point in the medication use process (Figure 1). For the process to function optimally, we must consciously ensure that each step is being carried out properly.



The Medication use process: Prescribing, dispensing and administration



Figure 1:
This graphical representation depicts the common sources of errors through each stage of medication use process.



The Medication use process: Prescribing, dispensing and administration



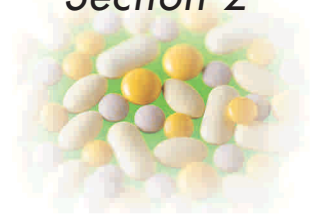
The Institute for Safe Medication Practices identified the following areas as common causes of medication errors during the medication use process:

- Failed communication: handwriting and oral communications, especially over the telephone, drugs with similar names, missing or misplaced zeros and decimal points, confusion between metric and apothecary systems of measure, use of non-standard abbreviations (Table 1), ambiguous or incomplete orders
- Poor drug distribution practices
- Complex or poorly designed technology
- Access to drugs by non-pharmacy personnel
- Workplace environmental problems that lead to increased job stress
- Dose miscalculations
- Lack of patient information
- Lack of patients' understanding of their therapy

Table 1. Commonly Misinterpreted Medical Abbreviations

Abbreviation	Intended Meaning	Possible Misinterpretation
U	Units	Mistaken as a zero or a four (4) resulting in overdose.
µg	Micrograms	Mistaken for "mg" resulting in a 1,000-fold overdose.
QD	Every day	The period after the "Q" has sometimes been mistaken for an "I," and the drug has been given QID rather than daily.
QOD	Every other day	Misinterpreted as "QD" or "QID." If the "O" is poorly written, it looks like a period or an "I."
SC or SQ	Subcutaneous	Mistaken as "SL" (sublingual) when poorly written.
TIW	Three times a week	Misinterpreted as "three times a day" or "twice a week."
D/C	Discharge; also discontinue	Patients' medications have been prematurely discontinued when "D/C" was intended to mean "discharge" versus "discontinue."
HS	Half strength	Misinterpreted as the abbreviation "HS" (hour of sleep).
cc	Cubic centimeters	Mistaken as "U" (units) when poorly written.
AU, AS, AD	Both ears; left ear; right ear	Misinterpreted as the abbreviation "OU" (both eyes); "OS" (left eye); "OD" (right eye).

The Medication use process: Prescribing, dispensing and administration



The vast majority of drug administration takes place in the home where patients usually take their own medicines. Patients can play a vital role in preventing medication errors when they have been adequately educated about their medications and encouraged to ask questions to clarify any doubts. Because patients are the final link in the medication use process, health care professionals should teach them how to protect themselves from medication errors. Reviewing patients' use of medication is one way to seek their input in medication-related matters.

2.1 Safer prescribing of medicines

Prescribing error is potentially the most serious of all types of medication error as, unless detected, it may be repeated systematically for a prolonged period.

The need for drug therapy must be carefully evaluated and weighed against the alternatives for every patient. Both health care professionals and patients must realise that not all illnesses necessitate drug therapy. Because of the potential for adverse effects, drugs should only be used when indicated. Pharmacists should monitor drug use in all practice settings and assist in establishing guidelines to encourage rational drug use.

The questions below are not meant to be all-inclusive, but they should set practitioners thinking of safety issues that should be incorporated in their processes.

DOs checklist

- ☐ Do I have ready access to all patient information, including medication history, allergies, laboratory and other investigational studies?
- ☐ Do I have access to a computerised order entry system that will warn me about unsafe orders (allergies, drug interactions, and so on)?
- ☐ Do standardised preprinted orders exist for common diagnoses, and are they readily available?
- ☐ Do I ask patients for input into what I may prescribe and educate them about the medications they will be taking?
- ☐ Do I have standardised drug protocols, guidelines and dosing scales readily available where prescribing occurs?
- ☐ Do I have computerised up-to-date drug information available? If not, are all reference texts current and up to date? Is the hospital formulary readily available?

The Medication use process: Prescribing, dispensing and administration



DOs checklist (continued)

- ☐ Do I have a pharmacist readily available to answer questions that I may have on medications?
- ☐ Do I include indications on medications, especially for sound-alike medications?

DON'Ts checklist

- ☐ Do I use dangerous abbreviations when writing orders?
- ☐ Do I get interrupted often when writing medication orders?

2.2 Safer dispensing of medicines

Data from literatures suggest that dispensing errors occur less frequently than prescribing errors, but can nevertheless cause serious harm to patients. Many dispensing errors are a result of drug name confusion, failure to clarify an ambiguous or badly written prescription, similar packaging or lack of a check by a second person.

Pharmacists should lead efforts to ensure clear and accurate communication of drug orders and other drug information before they reach patients. Counselling at the point of delivery can significantly improve medication safety and patient compliance.

The questions below are not meant to be all-inclusive, but they should set pharmacists thinking of safety issues that should be incorporated in their processes.

DOs checklist

- ☐ Do I have pharmacists available on patient care areas to check on new orders before they are sent for preparation and dispensing?
- ☐ Do I have orders electronically entered into a computer system that is interfaced with the pharmacy computer system?
- ☐ Does pharmacy have important patient information (allergies, diagnosis, height, weight, comorbid conditions and etc.) before orders are sent?
- ☐ Are all orders legible and free of dangerous abbreviations and dose designations?

The Medication use process: Prescribing, dispensing and administration



DOs checklist (continued)

- ☐ Do medication orders contain the trade and generic name of drugs when necessary and include the total dose and mg/kg dose for children and mg/m² dose for chemotherapy?
- ☐ Do I use preprinted standardised order forms for high-alert medications and common diagnosis?
- ☐ Does the pharmacy computer system contain warnings and alerts for look-alike and sound-alike drug products?
- ☐ Are all medications properly labelled with the drug name, strength, dose, route of administration, and the patient's name and location?
- ☐ Are medications with look-alike and sound-alike names and packaging stored separately within the pharmacy?
- ☐ Do I adopt appropriate infection control for the preparation of compounded oral and IV products?
- ☐ Do I have quality control measures in place for end-product testing of preparations such as TPN solutions, cardioplegic solutions, or dialysis solutions?
- ☐ Do I have a double-checking mechanism in place before medication is supplied?
- ☐ Are medications checked against the label and prescription before they are dispensed from the pharmacy?
- ☐ Do I retrieve discontinued medications from the patient care areas in a timely manner?
- ☐ Is the space where medications are stored (such as stock cabinets, refrigerators) clean and of adequate size for proper storage?
- ☐ Do I provide written information to patients and their caregivers?
- ☐ Are there certain medications or patient criteria that will automatically trigger a consult with a pharmacist for patient education?
- ☐ Do I ensure all new pharmacy staff undergo baseline competency evaluation before participating independently in the medication use process?

The Medication use process: Prescribing, dispensing and administration



DON'Ts checklist

- ☐ Do I use dangerous abbreviations when supplying orders?
- ☐ Do I get interrupted often when processing medication orders?
- ☐ Do I use outdated and incomplete references?
- ☐ Do I store concentrated solutions or hazardous medications in patient care areas?
- ☐ Do I use similar looking containers to store oral medications and substances that are meant for external use only?
- ☐ Does the hospital stock products with potentially confusing names and packages?
- ☐ Do I leave untrained/new pharmacy staff involved in medication use process unsupervised?

2.3 Safer administration of medicines

Accurate administration of medicines is critically dependent on the quality of all previous steps in the prescribing and dispensing processes. Doctors, pharmacists, nurses and others involved in the administration of medicines should work together to ensure accurate and safe drug administration. Each has a role in improving the quality of drug administration and in monitoring the quality of other groups' contributions to the medication use process.

The questions below are not meant to be all-inclusive, but they should set nurses thinking of safety issues that should be incorporated in their processes.

DOs checklist

- ☐ Do I have an appropriate designated site for drug storage and drug preparation?
- ☐ Do I ensure the "Five Rights" – the right drug gets to the right patient at the right dose and at the right time by the right route?
- ☐ Do I check for patient allergies before I prepare to administer any medications?
- ☐ Do I check if protocols apply? If so, does the dose fit?

The Medication use process: Prescribing, dispensing and administration



DOs checklist (continued)

- ☐ Do I clarify unclear medication order before administering medication?
- ☐ Do I have ready access to drug information on all medications that I administer?
- ☐ Do I encourage patients to ask questions about their medications and to notify me of any problems they may be experiencing?
- ☐ Do I try to get an answer, if a patient or a caregiver questions me regarding a medication, before I administer the medications?
- ☐ Do I have the Inpatient Medication Record at the bedside while I administer the medication?
Do I document the time and medication administered immediately?
- ☐ Do I use appropriate hand washing and other infection control procedures before I administer the medication?
- ☐ Do I have another health care professional available to double-check before I administer any medication, especially for high-alert medication?
- ☐ Am I able to easily contact the pharmacist and/ or prescriber for any questions that I have following medication administration?
- ☐ Do I ensure that infusion bags and infusion sets are properly labelled?
- ☐ Am I adequately trained on the use of any infusion devices that I may be using to administer medication?
- ☐ Are procedures in place to report and initiate a change if the response is not as expected?
- ☐ Are medication charted clearly at a specific place so that anyone (doctors, pharmacists, nurses) can easily find out whether a patient has received a dose?
- ☐ Do I record my assessment (such as vital signs, glucose reading) before or after medication administration based on protocol or order?
- ☐ Do I notify if a prescribing/ dispensing error is detected?

The Medication use process: Prescribing, dispensing and administration



DON'Ts checklist

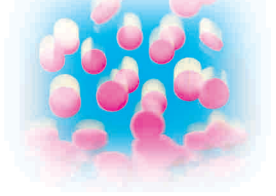
- ☐ Do I use dangerous abbreviations when documenting administration details?
- ☐ Do I get interrupted often when administering medication orders?
- ☐ Do I use outdated and incomplete references?
- ☐ Do I store concentrated solutions or hazardous medications in patient care areas?
- ☐ Does the hospital stock administration related devices with potentially confusing connections or use?
- ☐ Do I leave untrained/new nursing staff involved in medication administration process unsupervised?
- ☐ Do I accept verbal orders for high-risk medications and chemotherapy?



Section 3



Improving medication use process



Improving medication use process

Medication use is a complex process involving a variety of practitioners and many different steps, all with the potential for serious error and patient harm. The Institute for Safe Medication Practices (ISMP) has listed down ten key elements that most often affect the medication use process. The inter-relationships among these key elements form the structure within which medications are used safely.

1. Patient information

Having essential patient information at the time of medication prescribing, dispensing and administration will result in a significant decrease in preventable adverse drug events (ADEs).

2. Drug information

Providing accurate and usable drug information to all health professionals involved in the medication use process reduces preventable adverse drug events. Not only should drug information be readily accessible to the staff, it is imperative that this information is accurate and up to date.

3. Communication of drug information

Miscommunication between physicians, pharmacists and nurses is a common cause of medication errors. To minimise medication errors caused by miscommunication, it is always important to verify drug information and eliminate communication barriers.

4. Drug labeling, packaging and nomenclature

Look-alike, sound-alike drug names, confusing drug labels and non-distinct drug packaging contribute significantly to medication errors. The incidence of medication errors can be reduced with the use of proper labelling and the use of unit-dose systems within hospitals.

5. Drug storage, stock and standardisation

Standardising drug administration times and drug concentrations or limiting the concentrations available in patient care areas will reduce the risk of administration errors.

6. Drug device acquisition, use and monitoring

Appropriate safety assessment of drug delivery devices should be made prior to their purchase and during their use. Also, a system of independent double-checks should be used within the institution to prevent device related errors such as, selecting the wrong drug or drug concentration, setting the rate improperly, or mixing-up the infusion line with another.

Improving medication use process



7. Environmental factors

Having a well-designed system offers the best chance of preventing errors. However, sometimes the environment in which we work contributes to medication errors. Environmental factors that often contribute to medication errors include poor lighting, noise, interruptions and an excessive workload.

8. Competency and staff education

Staff education should focus on priority topics, such as: new medications being used in the hospital, high-alert medications, medication errors that have occurred both internally and externally, protocols, policies and procedures related to medication use. Staff education can be an important error prevention strategy when combined with the other key elements for medication safety.

9. Patient education

Patients must receive on-going education from physicians, pharmacists and the nursing staff about the brand and generic names of medications they are receiving, their indications, and doses, expected and possible adverse effects, drug or food interactions, and how to protect themselves from errors. Patients can play a vital role in preventing medication errors when they have been encouraged to ask questions and seek answers about their medications.

10. Quality processes and risk management

The best way to prevent errors is to redesign the systems and processes that lead to errors rather than focus on correcting the individuals who make errors. Effective strategies for reducing errors include, making it difficult for staff to make an error and promoting the detection and correction of errors before they reach a patient and cause harm.

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Improving medication use process



3.1 Medication safety audit for physicians

Using the ten key elements, a physicians' checklist for self-audit relevant to local practice can be found in **Appendix 1**. The questions and issues raised are not meant to be all-inclusive, they should be used as points of discussion when you participate in a multi-disciplinary review of the medication use process or serve on hospital committees that set standards and policies for improving patient safety.

3.2 Medication safety audit for pharmacists

Using the ten key elements, a pharmacists' checklist for self-audit relevant to local practice can be found in **Appendix 2**. The questions and issues raised are not meant to be all-inclusive, they should be used as a guideline to assess the safety of medication use in your daily practice. They should also be used as points of discussion when you participate in inter-departmental or multi-disciplinary review of the medication use process. The recommendations that follow are actions you should perform daily and/or promote to your co-workers, supervisors, and hospital administrators to encourage medication safety.

3.3 Medication safety audit for nurses

Using the ten key elements, a nurses' checklist for self-audit relevant to local practice can be found in **Appendix 3**. The questions and issues raised are not meant to be all-inclusive, they should be used as a guideline to assess the safety of medication use in your daily practice. They should also be used as points of discussion when you participate in inter-departmental or multi-disciplinary review of the medication use process. The recommendations that follow are actions you should perform daily and/or promote to your co-workers, supervisors, and hospital administrators to encourage medication safety.

3.4 Computerised Prescriber Order Entry system (CPOE)

CPOE is a technology designed to decrease medication errors by improving the prescribing aspect of the medication use system. Many patient safety advocate groups promote the implementation of CPOE systems. Potential advantages of CPOE include:

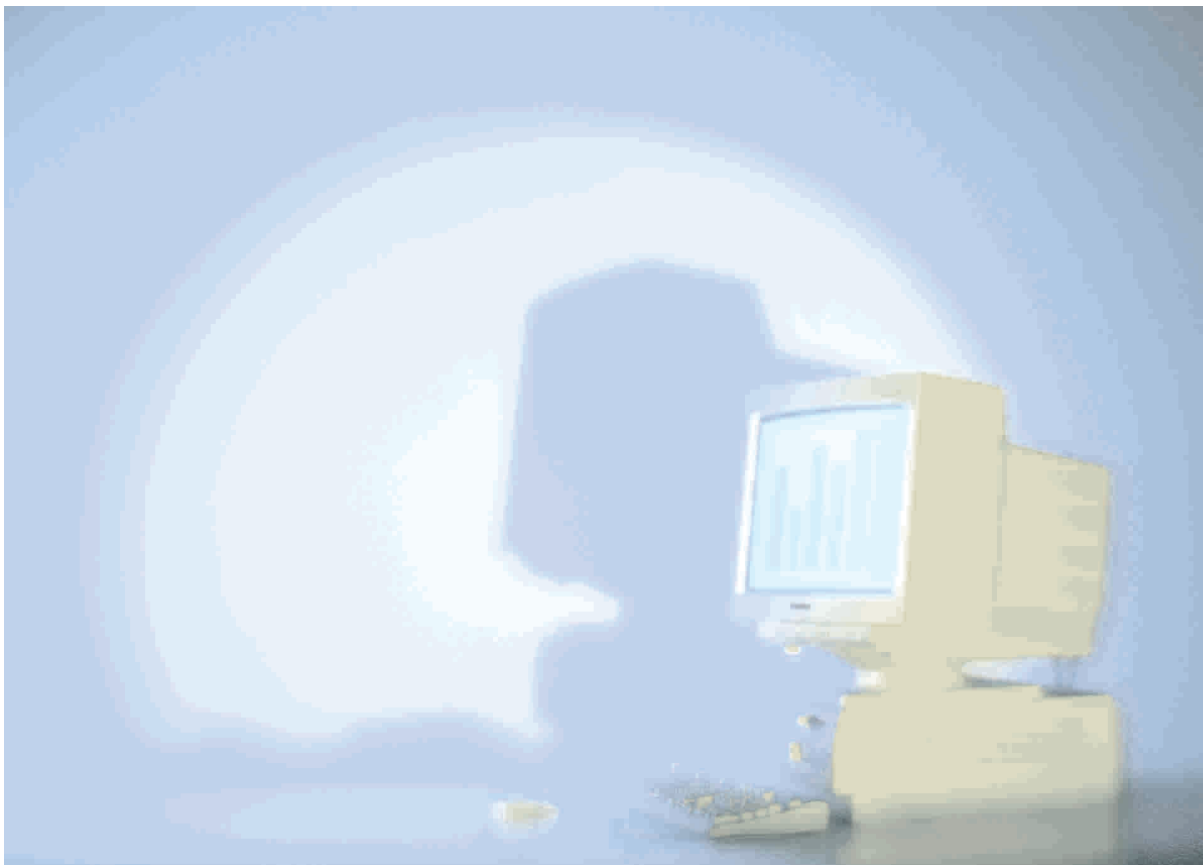
- elimination of handwriting discrepancies
- immediate error checking for dosage, frequency, route of administration, etc.

Improving medication use process



- drug interaction and allergy checking
- serving as drug information databases if tied to formularies, policies, and external data sources
- acting as a tool to document administration of medications
- immediate transmission of orders to multiple disciplines
- providing data to analyse drug utilisation and workflow
- increasing formulary adherence and compliance to prescribing guidelines
- allowing price comparisons
- linking to other databases (e.g. laboratory data), hence providing complete patient information
- intelligent prescribing (allowing use of automatic dose calculators)

While designing the CPOE system, it is important to balance patient safety features against ease of use. While there is no "cookbook" approach for handling the magnitude and complexity of CPOE, we have gathered a list of related issues through literature searches and lessons learned by practitioners actively involved in the implementation and maintenance of CPOE systems.



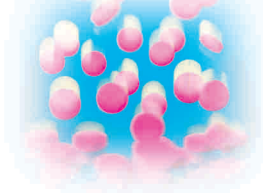


Table 1: Key issues for consideration before implementing CPOE system in your institution

Issues	Actions for consideration
Pharmacist's Role in CPOE Process	<p>To take proactive leadership roles</p> <p>To be involved in key decisions that determines (1) Scope of system (2) Medication use process (3) Patient safety features (4) Clinical decision support system (5) Interfaces with existing pharmacy system</p> <p>To look into effect on workflow, safety, quality and productivity of the overall medication use process</p>
Vendor-Review Process	<p>On-site vendor demonstrations</p> <p>Peer contacts</p> <p>Site visits</p>
Patient Care Environment	<p>To cater to different patient care environments. Ensure connectivity with inpatient areas, outpatient areas, ambulatory centers, purchasing & inventory management, business office, finance etc.</p> <p>To meet needs from specific patient groups such as neonatal, pediatric, oncology patients</p>
Nursing	<p>To consider nursing staff requirements and workflows</p> <p>To define requirements for medication administration record</p>
Interfaces	<p>To consider robustness and functionality</p> <p>Should be carefully planned</p>
Clinical Decision Support	<p>Decision needs to be made on how the new clinical decision support functionality will work with the preceding decision-support functions</p> <p>To balance between amount of clinical decision support and ease of usage</p> <p>To improve safety of the medication use process</p>
Reporting	<p>To have a wide variety of reporting outputs, including hard copy, graphics, spreadsheets and data exports</p>
Technology Environment	<p>The Information Systems (IS) staff to be part of the interdisciplinary team. As the complexity of systems increases, new issues arise related to system downtime. Besides the restoration of hardware after a hardware-related problem, there are issues of data synchronization that come into play</p> <p>To have a planning team to design the restoration plan among the multitude of servers and interfaces</p>
Financial	<p>To review application billing capability</p>
Quality Improvement	<p>To monitor system to ensure that it performs as intended and modify/enhance where and when necessary</p>

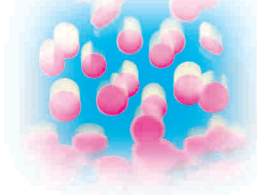


Table 2: ISMP's key recommendations for Safe Electronic Communication of Medication Orders

Recommendations	Specific safety strategies
Use generic name	List all products by generic name as the primary drug nomenclature, ensuring that each matches a standardised nomenclature so that all package labels agree with medication records
Avoid including salt of chemicals	Do not include the salt of the chemical when expressing a generic name unless there are multiple salts available (e.g., metoprolol tartrate and metoprolol succinate)
Differentiate generic name from brand names	When used, present brand names in upper case letters (e.g., LANOXIN, LASIX) to differentiate them from generic names. Trademark symbols should not be used [e.g., TM or (R)]
Standardise inclusion of suffixes	Express suffixes that are part of the brand name (e.g., SR, LA, CR) within both the generic name field and the brand name field (e.g., nifedipine LA and ADALAT LA)
Standardise use of mnemonics or short names	Standards are needed for mnemonics or short names that allow practitioners to access a particular medication listing without entering the full name
Standardise fonts (size and style) and colours	Standards are needed for the use of fonts (size and style) and colors that facilitate clarity of information presented on computer screens and in printed material derived from electronic databases (e.g., labels, reports)
Standardise use of symbols	<p>Consideration must be given to the role that symbols and certain letter characters may play in creating errors during electronic communication</p> <p>For example, slash marks and hyphens have been misread as the number one, and symbols for more and less than have been misinterpreted opposite from intended. Also, the letter O can be misread as a zero (0), the letter z as the number 2, and a lower case L (l) as the number 1 or the letter i (I)</p>
Avoid dangerous abbreviations and dose expressions	Refer to Appendix 4 on ISMP's list of error-prone abbreviations, symbols and dose designations
Do not abbreviate drug names	To avoid confusion, do not abbreviate drug names (e.g., MTX for methotrexate has been misunderstood as mitoxantrone; MSO4 for morphine sulfate has been misinterpreted as magnesium sulfate)
Distinguish look-alike drugs on screens and reports	Use "tall-man" letters (e.g., hydrOXYzine and hydrALAZINE) to help distinguish look-alike products on screens and reports. This is to minimise the risk of selecting the wrong product when medication names appear alphabetically in look-up lists
Standardise order entry fields	Standards are needed for presenting drug name, strength, dosage form and dosage units on screen and labels to facilitate clarity of information presented

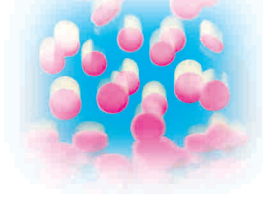


Table 2: ISMP's key recommendations for Safe Electronic Communication of Medication Orders

Recommendations	Specific safety strategies
Provide adequate spacing	Provide adequate space for items in data fields used to communicate drug names, dosing units, routes of administration, and frequencies
Consider entry for indication	<p>Provide a field that requires entry of the purpose for the following types of medication orders: all prn medications; look-alike products that are known to be problematic; and medications that have different dosing for varying indications or have multiple indications not in approved labeling</p> <p>Communicating the drug indication reduces the risk of improper drug selection and offers clues to proper dosing when a medication has an indication-specific dosing algorithm</p>
Provide for search functions	Provide users with the ability to search by brand name, generic name, synonym, or mnemonic, and link all means of accessing a name to a generic name default
Provide for special instructions	<p>Provide the ability to clearly communicate medications prescribed for specific, non-routine administration times or under certain conditions (e.g., with dialysis, while NPO, until tolerating liquids, prior to surgery)</p> <p>Provide a mechanism to facilitate safe order entry of complex medication regimens (e.g., chemotherapy, sliding scale insulin) and medications that require a tapering dosing schedule (e.g., steroids) so that the orders appear clearly and in a logical order for those who dispense and administer the medications</p>
Consider added safety features	Provide the capability for users to link medications only to the appropriate routes of administration available for each drug. For example, vincristine injection should link only to the IV route of administration. Provide for tracking of cumulative dose over time
Provide for drug start and stop time or date	Provide the capability for clinicians to select the time or date to begin drug administration, regardless of when the order was entered, so that it appears on profile screens and computer-generated medication records
Provide for mechanism for suspending drug orders	Provide a mechanism to place medication orders on hold under specified conditions, and to alert users at specified times while a medication is on hold
Standardise drug labels	Provide the generic name on all computer-generated labels and reports

Improving medication use process



3.5 Improving labelling and packaging

Misinterpretation of drug labels and confusion between different packaging are common causes of medication errors. An estimated 25% of serious complications resulting from the use of drugs are related to labelling and packaging issues.

Labelling of medications is mandatory for proper drug identification and clarity of administration instructions. However, the use of abbreviations, typographical errors, incorrect information, or light and hard to read print on the label can lead to medication errors.

There are many drugs with very different names but have similar looking packagings. This creates the potential for error when people 'see' and do not 'read' before they pick or administer drugs.

To assist health care practitioners to reduce errors due to labelling and packaging, the committee makes the following recommendations:

1. Use only properly labelled drug products.
2. Read labels carefully (at least three times – before, during and after use).
3. Employ machine-readable coding (e.g. bar coding) in the medication use process.
4. Segregate similar looking / sounding products during use and storage. **Appendix 6** provides a list of medications with similar looking/sounding names commonly available in local pharmacies.
5. Limit access to drugs with high risk potential (e.g. concentrates, electrolytes, paralyzing agents). **Appendix 5** provides a list of high alert medications from ISMP.
6. Develop policies and procedures for repackaging of medications. These should address the clarity of labels to reduce risk of errors. Refer to **Appendix 7** for the "Practice standards for pre-packing of drugs for healthcare institutions and pharmacies in Singapore" published by the Ministry of Health and the Singapore Pharmacy Board.

Improving medication use process



7. Develop a system for feedback to purchaser, including to the Group Purchasing Office, when potential drug related safety issues are encountered. **Appendix 8** provides a sample of a drug safety notification form for feedback to purchaser.
8. Share error-related experiences, case studies, etc., with colleagues through newsletters, journals, bulletin boards, and the internet.
9. Take an active role in reviewing and commenting on proposed regulations and standards that relate to labeling and packaging.
10. Collaborate among health care professionals, health care organisations, patients, industry, standard-setters, and regulators to facilitate design of packaging and labeling to help minimise errors.

3.6 Patient's role in medication safety

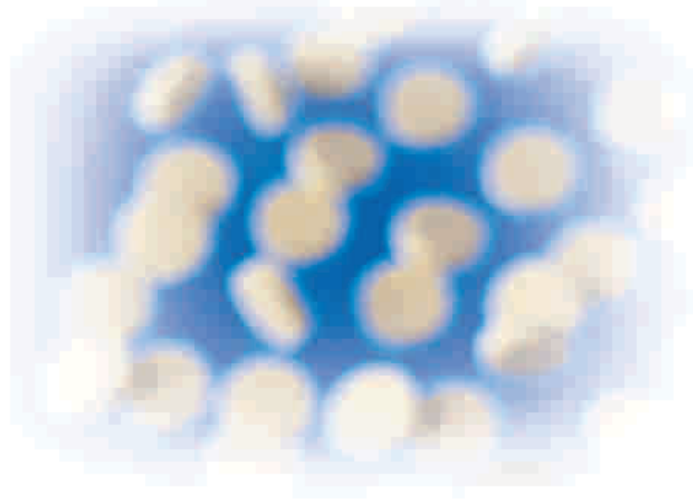
Patients should be encouraged to serve as their own safety advocate and become an active member of the health care team. This is because a vast majority of drug administration takes place at home and patients are responsible for taking their own medicines.

Patients should be encouraged to speak up, to pay attention to the care they are receiving, to educate themselves about their diagnosis and treatments, to find out more about medications they are taking, and to participate in all decisions that affect their treatment.

Patients should be educated in the hospital, at discharge, and in ambulatory settings about their medications. They should know what they are taking, why they are taking it, and how to use it safely. Pharmacists have vital roles to play in improving patients' knowledge about their medicines.

Patients who are knowledgeable about their medication are much more likely to avoid adverse drug events resulting from medication errors. Some safety tips to pass on to patients can be found in **Appendix 9**. **Appendix 10** provides a sample copy of an information leaflet, in four different languages, on "How to take your medicines safely".

Section 4



**Reducing risks in
specific population**

Reducing risks in specific populations



4.1 Reducing risks in people with allergies

Serious harm has occurred when patients have been prescribed drugs to which they have a pre-existing allergy. Prevention of such errors relies on patient and drug information being available and acted on at the time of prescribing, dispensing and administration.

Key recommendations for safer use of medicines in people with allergies include:

- A standard protocol for the documentation of allergies should be in place
- All staff should be aware of their responsibilities in allergy documentation, including updating the allergy record if a new allergy is identified
- Compliance with the standard for allergy documentation to be audited regularly
- All avenues used for prescribing medicines should include a section for allergy documentation
- Hospital inpatients with documented allergies should wear readily distinguishable wristbands
- Implementation of electronic prescribing system to include automatic alerts for allergy

4.2 Reducing risks in paediatrics

A medication error in a child may be more serious than the same error in an adult. The risk of error in children is often compounded by the need for additional calculations to determine the dose. Also, many medicines prescribed for children are only available as adult dose forms only. Sometimes complex manipulations are necessary to prepare suitable doses for very small children.

Key recommendations for safer use of medicines in paediatrics include:

- Establish and maintain a functional paediatric formulary system with policies for drug evaluation, selection and therapeutic use. All staff involved in paediatric drug therapy should have access to the formulary
- All prescriptions for children should include the child's age and, where the dose is weight dependent the child's weight and the intended dose in mg/kg
- Dose calculations should be documented and, ideally, double-checked before dispensing and administration
- Staff should demonstrate their competence in paediatric drug therapy including dose and infusion rate calculations
- Infusion concentrations should be standardised to reduce errors in calculations

Reducing risks in specific populations



- Infusion rate charts or validated computer programmes to aid calculation should be available for use in paediatric units, particularly for potent drugs such as digoxin or opiates
- Parents and carers should be taught how to handle and administer drugs safely

4.3 Reducing risks in geriatrics

Compared to the general population, a patient over 65 is more likely to have chronic illnesses, requiring multiple medications. Elderly patients with more than one health conditions are likely to receive care from several healthcare providers, each of whom may prescribe different medications to treat the same symptoms. They are particularly susceptible to polypharmacy issues.

Key recommendations for safer use of medicines in geriatrics include:

- Establish and maintain a functional formulary system with policies for drug evaluation, selection and therapeutic use specific for the elderly. All staff involved in geriatric drug therapy should have access to the formulary
- Establish a structured process for reviews of patients' medication on admission to, and discharge from, hospital. Pharmacists should be available to participate in reviews
- Determine which health care provider the patient is seeing and, the medications currently prescribed
- Know all of your patient's diagnoses, including self-diagnoses that the patient may be managing with OTC or herbal medications
- Patient-held, shared care medication records should be used where appropriate
- Simplify patient's treatment regimen. Prescribe a single drug rather than multiple drugs to treat a condition or choose a drug that can be given once or twice, rather than three times a day.
- Be vigilant in monitoring for adverse drug events
- Patients and carers should be taught how to handle and administer medicines safely

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Medication safety audit list for physicians



Key element 1 : Patient information

To guide appropriate drug therapy, health care providers need readily available demographic and clinical information (such as age, weight, allergies, diagnoses, and pregnancy status) and patient monitoring information (such as laboratory values, vital signs, and other parameters) that gauge the effects of medications and the patients' underlying disease states.

Questions to Consider

NA Yes No

When using an electronic order entry screen, am I immediately notified of a potential safety issue with the medication that I prescribed?

Do I have access to patient laboratory results, medication, and other information to make a decision on a change in medication or to add a new medication?

Do paper order forms, if used, contain prompts for entering allergies, height, weight, and disease conditions?

Are allergies clearly visible on all order forms, medication administration records and patient charts?

Do I have access to outpatient medications and laboratory results?

Do I always list allergies and other patient information that I may be aware of (comorbid conditions, height, weight) on all initial medication order forms or in the electronic record?

Do I include indications on medications especially for look-alike and sound alike medications?

Do I inform nursing personnel and pharmacy of any vital changes in patient information that may affect medication supply & administration?

Do I routinely adjust medication doses for patients with renal or liver impairment?

Medication safety audit list for physicians



Key element 2 : Drug Information

To minimise the risk of error, the drug formulary must be monitored and revised periodically. Up-to-date drug information must be readily accessible to health care providers through references, protocols, order sets, computerised drug information systems, and regular clinical activities by pharmacists in patient care areas.

Questions to Consider

NA Yes No

Are pharmacists available to assist with medication choices, answer drug enquiries, and participate in patient education?

Do I only order medications in the hospital formulary, unless it is medically necessary?

Are special precautions (dosing charts, auxiliary labels, protocols, pre-printed order sets, etc.) available to me for high-alert medications and/or high-alert treatments and procedures?

Does the hospital drug formulary contain very little duplication of therapeutically equivalent products?

Do I have access to drug information on my computer terminal in the hospital?

Does each nursing unit have up-to-date texts of drug information when I need it?

Do I have ready access to the medications that are in the hospital formulary?

Medication safety audit list for physicians



Key element 3: Communication of drug orders and other drug information evaluation

Because failed communication is the cause of many errors, health care organisations must eliminate communication barriers between health care providers and standardise the way that orders and other drug information is communicated.

Questions to Consider

NA Yes No

Does the Computerised Physician Order Entry (CPOE) system contain alerts for unsafe orders?

Do prescribers enter orders directly into a CPOE system linked with pharmacy and nursing system?

Is there a hospital-wide policy and procedure to resolve conflicts on potentially unsafe medication orders?

Do I use protocols and standard order sets whenever they are available?

Do I give verbal orders for high-risk medications and chemotherapy?

Do I ask nurses, pharmacists and others taking verbal orders to repeat back to me the spelling of drug names and doses?

Do I use any dangerous abbreviations and dose expressions in any of my written orders, notes, or progress notes?

Do I include indications for medications that may be associated with look-alike or sound-alike mix-ups?

Medication safety audit list for physicians



Key element 4: Drug labelling, packing, and nomenclature

To facilitate proper identification of drugs, health care organisations should provide all drugs in clearly labelled, unit-dose packages, and take steps to prevent errors with look-alike and sound-alike drug names, ambiguous drug packaging, and confusing or absent drug labels.

Suggested Actions

NA Yes No

Notify the pharmacy and other staff members if unsafe labelling and packaging is observed or known from reading the literature.

Always label medications unless they are drawn up at the patient bedside and administered immediately.

Key element 5: Drug standardisation, storage, and distribution

Many errors are preventable simply by minimising floor stock, restricting access to high-alert drugs and hazardous chemicals and distributing drugs from the pharmacy in a timely fashion.

Whenever possible, health care organisations should also use commercially available solutions and standard concentrations to minimise error-prone processes such as preparation of IV admixtures and dose calculations.

Suggested Actions

NA Yes No

Use *stat* and *now only* on medication orders that must be given within the time frame selected by hospital policy.

Medication safety audit list for physicians



Key element 6: Medication delivery device acquisition, use, and monitoring

To avoid errors with drug delivery devices, health care organisations must access the devices' safety before purchase; ensure appropriate fail-safe protections (such as free-flow protection, incompatible connections, and safe default settings); limit variety to promote familiarity; and require independent double checks for potential device-related errors that could result in serious patient harm.

Questions to Consider

NA Yes No

Does a member of the medical staff sit on a committee to review new medication devices and equipment?

Suggested Actions

NA Yes No

Volunteer if possible to attend new medication and equipment reviews.

Key element 7: Environmental factors

Environmental factors such as poor lighting, cluttered work spaces, noise, interruptions, high patient volume, and non-stop activity contribute to medication errors because health care providers are unable to remain focused. Staffing pattern deficiencies and excessive workload could contribute to a broad range of errors and present unique challenges to health care organisations today.

Suggested Actions

NA Yes No

Notify administrators if there is a need for more space and/or quiet work space on patient care units.

Notify administrators of any concerns with staffing levels in the hospital.

Medication safety audit list for physicians



Key element 8: Staff competency and education

Staff education can play an important role when it is combined with system-based error-reduction strategies. Activities with the highest leverage include ongoing assessment of health care providers' baseline competencies and education about new medications, non-formulary medications, high-alert medications, and medication error prevention.

Questions to Consider

NA Yes No

Are medication safety programs offered at medical staff meetings?
Do I try to attend lectures and in-service programmes on medication safety?

Do the nursing staff receive enough education on medications, especially timely information on non-formulary medications if they are needed?

Are pharmacists involved in providing in-service programmes to the medical staff?

Do I offer my services to help in conducting safety programmes for the hospital staff?

Medication safety audit list for physicians



Key element 9: Patient education

Patients can play a vital role in preventing medication errors when they have been educated about their medications and encouraged to ask questions and seek satisfactory answers. Because patients are the final link in the process, health care providers should teach them how to protect themselves from medication errors and seek their input in related quality improvement and safety initiatives.

Questions to Consider

NA Yes No

Do I tell patients to bring their current medications for verification?

Do I always follow up on questions from patients regarding their medications?

Suggested Actions

NA Yes No

Encourage patients and their caregivers to freely ask questions about their medications.

Consult pharmacy to help educate high-risk patients and those receiving multiple medications.

Support programmes on patient education by pharmacy and nursing.

Medication safety audit list for physicians



Key element 10 : Quality process and risk management

Health care organisations need systems for identifying, reporting, analysing, and reducing the risk of medication errors. A non-punitive culture of safety must be cultivated to encourage frank disclosure of errors and near misses, to stimulate productive discussions, and to identify effective system-based solutions.

Strategically placed quality control checks are also necessary. Simple redundancies that support a system of independent double checks for high-risk, error-prone processes promote the detection and correction of errors before they reach and harm patients.

Questions to Consider

NA Yes No

Are reports of errors and near misses freely exchanged among the hospital staff?

Is there a fear to report errors because of embarrassment or reprisal?

Is support provided for staff members who have been involved in an error?

Are medication errors discussed at medical staff meetings? Are suggestions for system improvement made and sent to the administrative staff?

Do I offer to double-check a medication, calculation, dose, or pump setting for a nurse if I am available?

Do I order paediatric medications in total dose plus mg/kg dose and chemotherapy in total dose and mg/m² dose.

Suggested Actions

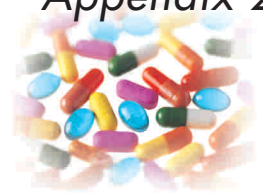
NA Yes No

Support the need for system changes that will help prevent medication errors.

Notify administrators if system changes are needed within the organisation.

Always include total dose and mg/kg for paediatric orders and mg/m² dose for oncology orders.

Medication safety audit list for pharmacists



Key element 1 : Patient information

To guide appropriate drug therapy, health care providers need readily available demographic and clinical information (such as age, weight, allergies, diagnoses, and pregnancy status) and patient monitoring information (such as laboratory values, vital signs, and other parameters) that gauge the effects of medications and the patients' underlying disease states.

Questions to Consider

NA Yes No

Do I routinely check patient diagnosis and comorbid conditions before I dispense medications?

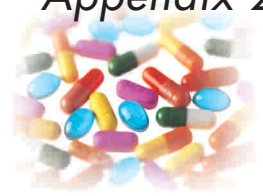
Do I routinely adjust medication doses for patients with renal or liver impairment?

Do I routinely seek the height and weight of patients who may require high-alert medications?

Does the information technology (IT) system provide easy and electronic access to all patient information (history, allergies, laboratory values, diagnostic tests, medications, etc) at any terminal with password entry?

Do I have direct access to inpatient and outpatient information including laboratory results?

Do paper order forms contain prompts for prescribers to enter allergies, height, weight, and disease conditions? Are these information always available on new orders?



Medication safety audit list for pharmacists

(continued)

Questions to Consider

NA Yes No

Are allergies clearly visible on all order forms, medication administration records, and patient charts?

Does the pharmacy keep logs on all patients receiving chemotherapy, and does it track lifetime doses?

Suggested Actions

NA Yes No

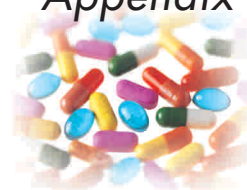
Request that all order forms contain patient allergies.

Unless it is an emergency, do not enter medication orders on patients for which an allergy is not documented.

Provide pharmacy-generated medication administration records to nurses.

Request that nurses and physicians have access to the current pharmacy medication profile.

Medication safety audit list for pharmacists



Key element 2 : Drug Information

To minimise the risk of error, the drug formulary must be monitored and revised periodically. Up-to date drug information must be readily accessible to health care providers through references, protocols, order sets, computerised drug information systems, and regular clinical activities by pharmacists in patient care areas.

Questions to Consider

NA Yes No

Do I have adequate time to assist prescribers with medication choices, answer drug enquiries and participate in patient education?

Unless it is an emergency, do I screen all medication orders before medications are available to nurses for administration?

Are special precautions (auxiliary labels, protocols, preprinted order sets, etc.) available to me and on all patient care units for high-alert medications and/or high-alert treatments and procedures?

Does the pharmacy computer system offer alerts for maximum and minimum doses of medications plus drug interactions, allergies, abnormal laboratory values, and other important medication screening?

Do I always check the patients profile before I make changes in medication therapy?

Am I able to enter look-alike and sound-alike warnings into the pharmacy computer system?

Do I have access to online drug information resources (such as MICROMEDEX) on all terminals in the pharmacy and throughout the hospital?

Do I have access to the Internet so I can obtain timely drug information when necessary?

Are the most current drug references available in the pharmacy and on every patient care unit?

Does the hospital drug formulary contain very little duplication of therapeutically equivalent products?

Am I routinely updated on the activities of the Pharmacy and Therapeutics Committee?



Medication safety audit list for pharmacists

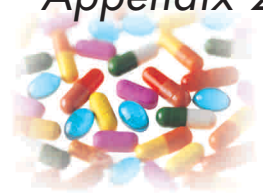
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Suggested Actions	NA	Yes	No
Request for online drug information at pharmacy and patient care unit terminals			
Support the establishment and/or growth of a clinical pharmacy programmes with the goal of having pharmacists available on patient care units to follow up on high-risk patients or patients receiving high-risk medications.			
Support the use of protocols and standard order sets to prescribers.			
Ask that all pharmacy staff be given updates on Pharmacy and Therapeutics Committee activities.			
Educate all nurses on new medications that are used in the hospital.			

Key element 3: Communication of drug orders and other drug information evaluation

Because failed communication is at the heart of many errors, health care organisations must eliminate communication barriers between healthcare providers and standardise the way that orders and other drug information is communicated.

Question to Consider	NA	Yes	No
Does the CPOE system contain alerts for unsafe orders?			
Do prescribers enter orders directly into the CPOE system that is linked with the pharmacy and nursing system?			
Are all pre-printed order sets and protocols current and updated at least annually?			
Is there a hospital-wide policy and procedure to resolve conflicts on potentially unsafe medication orders?			
Do I immediately contact the prescriber if I have a question on any new order, even if it is about handwriting?			



Medication safety audit list for pharmacists

(continued)

Questions to Consider

NA Yes No

Do I provide dosing instructions and other drug information to nurses and instruct them to place it in the medication administration records?

Do I use dangerous abbreviations and dose expressions in any of my written material (notes, progress notes)?

Do I accept verbal orders for high-risk medications and chemotherapy?

Do I immediately write down all verbal orders and repeat them back (spelling drug names)?

Do I accept orders for resume previous medications or other incomplete orders?

Suggested Actions

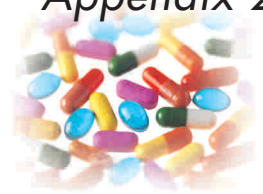
NA Yes No

Prohibit the use of error-prone abbreviations and dose expressions.

Adhere to policies to resolve conflicts stemming from disagreement regarding a medication order.

Contact prescribers for any doubts on medication orders.

Accept verbal orders only in an emergency and repeat back the order, spelling the drug name and sounding out any doses.



Medication safety audit list for pharmacists

Key element 4: Drug labelling, packaging, and nomenclature

To facilitate proper identification of drugs, health care organisations should provide all drugs in clearly labeled, unit-dose packages, and take steps to prevent errors with look-alike and sound-alike drug names, ambiguous drug packaging, and confusing or absent drug labels.

Questions to Consider

NA Yes No

Do I always check medication labelling for any unsafe conditions and notify my manager or buyer?

Are medications that sound or look alike separated in storage areas throughout the pharmacy and hospital, including automated dispensing cabinets?

Do I dispense all oral solutions in oral syringes that cannot be connected to IV tubing? Are the syringes labelled "for oral use only"?

Are the labels on medications, including those prepared by the pharmacy, easy to read? Do I ask nurses to notify the pharmacy if they are not, and does pharmacy immediately make changes to the appearance of the label?

Do all IV solution labels contain the total volume of solution, the concentration, and the total amount of drug additives?

Suggested Actions

NA Yes No

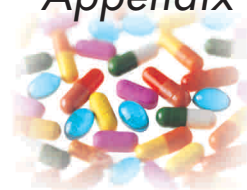
Ensure that all medications are properly labeled and request that different manufacturers be used if labels are ambiguous or unsafe.

Ensure that pharmacy labels and manufacturers labels are easy to read and contain the proper information for safe drug administration.

Notify other pharmacy personnel and your manager of any problems with the labeling of medications

Always include auxiliary labelling on medication that may contain odd strengths or must be diluted.

Medication safety audit list for pharmacists



Key element 5: Drug standardisation, storage, and distribution

Many errors are preventable simply by minimising floor stock, restricting access to high-alert drugs and hazardous chemicals, and distributing drugs from the pharmacy in a timely fashion. Whenever possible, health care organisations should also use commercially available solutions and standard concentrations to minimise error-prone processes such as preparation of IV admixture and dose calculations.

Questions to Consider

NA Yes No

If available, do automated dispensing cabinets contain software to allow a pharmacist to check the order before it can be obtained for administration?

Does pharmacy buy the majority of medications as commercially available premixed solutions and pre-filled syringes whenever they are available?

Are concentrated forms of electrolytes removed from patient care areas?

Are time frames established for *stat* doses and routine medication delivery?

Are high-alert medications restricted to the pharmacy or, if they are available on the patient care unit, are they secured?

Does pharmacy routinely review stocked medications with nurses on the patient care units?

Are only standard concentrations available for high-alert medications?

Does a process exist to remove discontinued medications in a timely manner?

Are sample medications allowed for inpatient use?

Are non-pharmacy personnel allowed in the pharmacy at times when the pharmacy staff are not present?



Medication safety audit list for pharmacists

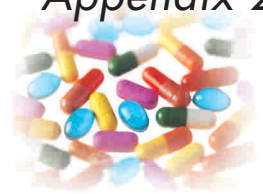
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Suggested Actions	NA	Yes	No
Request that the pharmacy purchase premixed, manufacturer-prepared solutions whenever available.			
Ensure that high-alert drugs are not available outside the pharmacy.			
Prohibit non-pharmacy personnel from entering the pharmacy when pharmacy staff are not present.			
Ensure that concentrated electrolytes are removed from areas outside the pharmacy.			
Do not allow pharmaceutical representatives on patient care units.			

Key element 6: Medication delivery device acquisition, use and monitoring

To avoid errors with drug delivery devices, health care organisations must assess the device's safety before purchase, ensure appropriate fail-safe protections (e.g. free-flow protection, incompatible connections, and safe default settings); limit variety to promote familiarity; and require independent double checks for potential device-related errors that could result in serious patient harm.

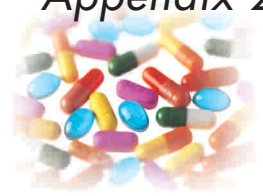
Question to Consider	NA	Yes	No
Do all infusion devices used in the hospital have free-flow protection?			
Do I normally examine new devices and supplies for error potential? Do I notify my manager and others when I think a safety problem may exist with supplies or equipment?			
Are oral syringes that cannot be connected to IV tubing or ports available in all patient care areas for oral solutions?			
Am I and/or fellow staff asked for our opinion before new medication equipment and devices are used in the hospital?			



Medication safety audit list for pharmacists

(continued)

Questions to Consider	NA	Yes	No
Is the variety of infusion devices limited within the hospital?			
Have I been trained on how to use infusion devices?			
When unsafe equipment is noted and reported, is the equipment removed or changed?			
Suggested Actions	NA	Yes	No
Notify administrators if pumps without free-flow protection are still available on patient care units.			
When mistakes in programming infusion pumps are made, fill out an error report and ask managers to look into the problem.			
Devote time, to participate in committees that evaluate the safety of devices and equipment.			
Ensure that oral syringes and labels to identify tubing are available on all patient care units.			
Always ask a fellow practitioner to double-check IV line hookups, IV solutions, and pump settings for high-alert medications.			
If you are unsure of how to operate infusion devices, ask for training and request that charts or cards for its usage are available with each pump.			



Medication safety audit list for pharmacists

Key element 7: Environmental factors

Environmental factors such as poor lighting, cluttered workspaces, noise, interruptions, high patient volume, and nonstop activity contribute to medication errors because health care providers are unable to remain focused. Staffing pattern deficiencies and excessive workload could contribute to a broad range of errors and present unique challenges to health care organisations today.

Questions to Consider

NA Yes No

Am I and/or other frontline staff informed of new services or expanded clinical programs well before they are instituted? Am I offered an opportunity to address any staffing or environment concerns with new services or programs?

Is an area free of distractions available to me when I am transcribing medications and charting patient vital signs and other important information?

Is there adequate space and lighting in the area where I obtain stock medications?

Am I required to work shifts longer than 12 hours except in an emergency?

Do I have at least 10 hours of rest between shifts and have an opportunity to take a rest and meal break during every shift?

Is staffing adequate on my unit for the number of patients and the level of patient acuity?

Does staff (including pharmacy, prescribers, and so on) interrupt me when I am administering medications?

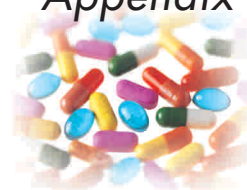
Suggested Actions

NA Yes No

Notify managers and administrators if there are unsafe environmental conditions.

Request that interruptions are kept to a minimum when you are administering medications.

Medication safety audit list for pharmacists



Key element 8: Staff competency and education

Staff education can play an important role when it is combined with system-based error-reduction strategies. Activities with the highest leverage include ongoing assessment of health care providers' baseline competencies and education about new medications, non-formulary medications, high-alert medications, and medication error prevention.

Questions to Consider

NA Yes No

If I am asked to train new staff, are my staffing duties curtailed so that I can adequately perform this function?

Are all employees orientated to the safe use and storage of medications within the hospital? Does pharmacy participate in this orientation?

Did I receive orientation on prescribing, dispensing and administration of medications?

Have I been given opportunity to spend time in the patient care areas and with nursing staff to learn their processes for medication preparation and administration?

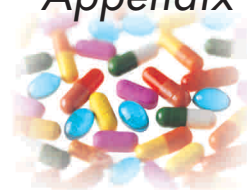
Am I and other staff trained on how to respond to a medication error?

Am I offered opportunities to attend off-site educational programmes to enhance my skills?

Do I routinely provide nurses with new drug information and information on non-formulary medications?

Do I present in-service programmes to nurses and prescribers on new medications and medication protocol?

Medication safety audit list for pharmacists



Key element 9: Patient education

Patients can play a vital role in preventing medication errors when they have been educated about their medications and encouraged to ask questions and seek satisfactory answers. Because patients are the final link in the process, health care providers should teach them how to protect themselves from medication errors and seek their input in related quality improvement and safety initiatives.

Questions to Consider

NA Yes No

Do I follow up on patients who are considered high risk or are taking high-alert medications?

Do I always follow up on questions from nurses and/or patients regarding medications?

Are patients offered an opportunity to speak with a pharmacist about their medications? Do I have an opportunity to provide direct patient education?

Is written medication education information that is current and easy to understand available for patients?

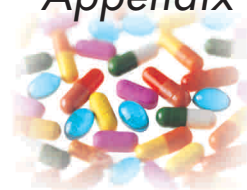
Does a program exist to educate patients and their caregivers that they are an important part of safe medication use?

Do I always encourage patients and their caregivers to ask questions about medications?

Key element 10: Quality process and risk management

Health care organisations need systems for identifying, reporting, analysing and reducing the risk of medication errors. A non-punitive culture of safety must be cultivated to encourage frank disclosure of errors and near misses, to stimulate productive discussions, and identify effective system-based solutions.

Strategically placed quality control checks are also necessary. Simple redundancies that support a system of independent double checks for high-risk, error-prone processes promote the detection and correction of errors before they reach and harm patients.



Medication safety audit list for pharmacists

(continued)

Questions to Consider

NA Yes No

Are reports of errors and near misses freely exchanged among the hospital staff? Is there a fear to report errors because of embarrassment or reprisal?

Is support provided for staff members who have been involved in an error?

Is there an individual in my institution whom I view as an advocate for patient safety?

Are medication errors discussed at medical staff meetings? Are suggestions for system improvement made and sent to the administrative staff?

Do I receive and routinely review publications to become aware of medications with error potential?

Do prescribers order paediatric medications in total dose and mg/kg dose and chemotherapy in total dose and mg/m² dose?

For high-alert medications, do I ask another practitioner to double-check my calculations and the medication I may have prepared and to document it?

Do I perform drug use evaluation on medications that have a heightened error potential?

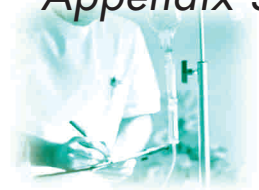
Suggested Actions

NA Yes No

Practise and support a blame-free environment and allow for the open discussion of errors for staff education.

Report all medication errors and near misses.

Allow a fellow practitioner to double-check all calculations and the medication before dispensing high-alert medications.



Medication safety audit list for nurses

Key element 1 : Patient information

To guide appropriate drug therapy, health care providers need readily available demographic and clinical information (such as age, weight, allergies, diagnoses, and pregnancy status) and patient monitoring information (such as laboratory values, vital signs, and other parameters) that gauge the effects of medications and the patients' underlying disease stages.

Questions to Consider

NA Yes No

Is bar-coded medication administration used for all patients?

Are medication doses routinely adjusted for patients with renal or liver impairment?

Does our information technology system provide easy and electronic access to all patient information (history, allergies, laboratory values, diagnostic tests, medications, etc.) at any terminal with password entry?

Does patient information include both inpatient and outpatient medications and laboratory results?

Do paper order forms contain prompts for prescribers to enter allergies, height, weight, and disease conditions?

Are allergies clearly visible on all order forms, medication administration records and on patient charts?

Do all patients have bar-coded name bracelets and coloured allergy bracelets?



Medication safety audit list for nurses

(continued)

Suggested Actions	NA	Yes	No
Place allergy sticker on all medication order sheets and medication administration records.			
Support policies and procedures that back physicians, nurses and pharmacists documentation of patient information			
Notify pharmacy of any new allergies or changes in a patient's health status.			
Request that nurses and physicians have access to view the current medication profile.			

Key element 2 : Drug Information

To minimise the risk of error, the drug formulary must be monitored and revised periodically. Up-to-date drug information must be readily accessible to health care providers through references, protocols, order sets, computerised drug information systems. MARs, and regular clinical activities by pharmacists in patient care areas.

Question to Consider	NA	Yes	No
Are pharmacists available on my patient care unit to assist prescribers and nurses with medication choices, answer drug enquiries and participate in patient education?			
Unless it is an emergency, does a pharmacist screen all medication orders before medications are available to me for administration?			
Are special precautions (dosing charts, auxiliary labels, protocols, preprinted order sets, etc.) available to me for high-alert medications and/or high-alert treatments and procedures?			



Medication safety audit list for nurses

(continued)

Questions to Consider	NA	Yes	No
Do I have access to online drug information resources (such as MICROMEDEX) on all terminals in the hospital?			
Do I have access to the Internet so I can obtain timely drug information when necessary?			
Are the most current drug references available on my unit?			
Are all preprinted order sets and protocols current and updated at least annually?			
Does the hospital drug formulary contain very little duplication of therapeutically equivalent products?			
Suggested Actions	NA	Yes	No
Support the establishment and/or growth of a clinical pharmacy program with the goal of having pharmacists available on patient care units to follow high-risk patients or patients receiving high-risk medications.			
Support the use of protocols and standard order sets to prescribers.			
Ask that pharmacists inform all nurses of new medications that are added to the formulary and provide information on any nonformulary medication that may be used.			



Medication safety audit list for nurses

Key element 3: Communication of drug orders and other drug information evaluation

Because failed communication is the cause of many errors, health care organisations must eliminate communication barriers between health care providers and standardise the way that orders and other drug information is communicated.

Questions to Consider

NA Yes No

Does the CPOE system contain alerts for unsafe orders?

Do prescribers enter orders directly into a CPOE system linked with pharmacy and nursing system?

Are time frames established for *stat* doses, and routine medication delivery?

Is there a hospital-wide policy and procedure to resolve conflicts on potentially unsafe medication orders?

Do I immediately contact the prescriber if I have a question on any new order, even if it is about handwriting?

Do I always take the medication administration records to the patient's bedside before I administer medications?

Do I use any dangerous abbreviations and dose expressions in any of my written material?

Do I accept verbal orders for high-risk medications and chemotherapy?

Do I immediately write down all verbal orders and repeat them back (spelling drug names)?

Are medication administration times standardised throughout the hospital and are dosing windows used?

Suggested Actions

NA Yes No

Prohibit the use of error-prone abbreviations and dose expressions.

Adhere to policies to resolve conflicts stemming from disagreement regarding a medication order.

Accept verbal orders only in an emergency and repeat back the order, spelling the drug name and sounding out any doses.



Medication safety audit list for nurses

Key element 4: Drug labelling, packing, and nomenclature

To facilitate proper identification of drugs, health care organisations should provide all drugs in clearly labelled, unit-dose packages, and take steps to prevent errors with look-alike and sound-alike drug names, ambiguous drug packaging, and confusing or absent drug labels.

Questions to Consider

NA Yes No

Do I label all filled syringes with the name and strength of the medication?

Are medications that sound or look alike separated in storage areas, including automated dispensing cabinets?

Do I keep all oral medications in their original packaging until the point of medication administration at the bedside?

Do I notify prescribers to include indications for medications that may be associated with look-alike or sound-alike mix-ups?

Are the labels on medications, including those prepared by the pharmacy, easy to read?

Do I notify pharmacy if they are not, and does pharmacy immediately make changes in the appearance of the label?

Do I always check medication labelling for any unsafe conditions and notify pharmacy immediately?

Suggested Actions

NA Yes No

Ensure that all medications contain a label until the time of administration.

Ensure that pharmacy labels and manufacturer labels are easy to read and contain the proper information for safe drug administration.

Notify pharmacy of any problems with labelling of medications and expect that someone will get back with an answer and/or remedy.



Medication safety audit list for nurses

Key element 5: Drug standardisation, storage, and distribution evaluation

Many errors are preventable simply by minimising floor stock, restricting access to high-alert drugs and hazardous chemicals, and distributing drugs from the pharmacy in a timely fashion. Whenever possible, health care organisations should also use commercially available solutions and standard concentrations to minimise error-prone processes such as preparation of IV admixtures and dose calculations.

Questions to Consider

NA Yes No

Does pharmacy prepare the majority of parenteral, IV push medications, oral solutions, and oral tablets and capsules in unit-dose form?

Are the majority of medications prepared for use by the manufacturer?

Are high-alert medications restricted to the pharmacy or if available on the patient care unit, are they secured?

Have all concentrated forms of electrolytes been removed from patient care units?

Is medication stock on my unit routinely reviewed by nursing staff and pharmacy?

Are only standard concentrations available for high-alert medications?

Are sample medications allowed for inpatient use?

Am I notified when medications are delivered to the unit?

Does a process exist to remove discontinued medications in a timely manner?

Are stock medications for internal use separated from external use medications and from testing solutions and other nondrug substances?

Are nurses or other non-pharmacy personnel allowed in the pharmacy at times when the pharmacy staff are not present?

Suggested Actions

NA Yes No

Request for premixed, manufacturer-prepared solutions where available.



Medication safety audit list for nurses

Key element 6: Medication delivery device acquisition, use, and monitoring

To avoid errors with drug delivery devices, health care organisations must assess the devices' safety before purchase; ensure appropriate fail-safe protections (such as free-flow protection, incompatible connections, and safe default settings); limit variety to promote familiarity; and require independent double checks for potential device-related errors that could result in serious patient harm.

Questions to Consider	NA	Yes	No
Do I always get another practitioner to check IV solutions and pump settings for all high-alert medications?			
Do all infusion devices used in the hospital have free-flow protection?			
Do I normally examine new devices and supplies for error potential?			
Do I notify my manager and others when I think a safety problem may exist with supplies or equipment?			
Are oral syringes that can be connected to IV tubing or ports available on my unit for oral solutions?			
Do I routinely label all infusion lines (i.e. IV, gastric, arterial)?			
Am I and/or fellow staff asked for our opinion before new medication equipment and devices are used in the hospital?			
Is the variety of infusion devices limited within the hospital?			
Is adequate training for nursing staff provided for the use of new infusion devices and medication administration equipment?			
Are there adequate infusion devices for patients who need them?			
When unsafe equipment is noted and reported, is the equipment removed or changed?			
Suggested Actions	NA	Yes	No
When mistakes in programming infusion pumps are made, fill out an error report and ask managers to look into the problem.			
Devote time, to participate in committees that evaluate safety in devices and equipment.			



Medication safety audit list for nurses

Key element 7: Environmental factors

Environmental factors such as poor lighting, cluttered workspaces, noise, interruptions, high patient acuity, and nonstop activity contribute to medication errors because health care providers are unable to remain focused. Staffing pattern deficiencies and excessive workload could contribute to a broad range of errors and present unique challenges to health care organisations today.

Questions to Consider

NA Yes No

Am I and /or other frontline staff informed of new services or expanded clinical programs well before they are instituted? Am I offered an opportunity to address any staffing or environment concerns with new services or programs?

Is an area free of distractions available to me when I am transcribing medications and charting patient vital signs and other important information?

Is there adequate space and lighting in the area where I obtain stock medications?

Am I required to work shifts longer than 12 hours except in an emergency?

Do I have at least 10 hours of rest between shifts and have an opportunity to take a rest and meal break during every shift?

Is staffing adequate on my unit for the number of patients and the level of patient acuity?

Do staff (including pharmacy, prescribers, and so on) interrupt me when I am administering medications?

Suggested Actions

NA Yes No

Notify managers and administrators if there are unsafe environmental conditions.

Request that interruptions are kept to a minimum when you are administering medications.



Medication safety audit list for nurses

Key element 8: Staff competency and education

Staff education can play an important role when it is combined with system-based error-reduction strategies. Activities with the highest leverage include ongoing assessment of health care providers' baseline competencies and education about new medications, nonformulary medications, high-alert medications, and medication error prevention.

Questions to Consider

NA Yes No

Did I receive orientation on prescribing, dispensing, and administration of medications?

Have I had an opportunity to spend time in the pharmacy and with pharmacy staff to learn their processes for medication preparation and dispensing?

Are all employees oriented to the safe use and storage of medications within the hospital?

Am I and/or other staff trained on how to respond to a medication error?

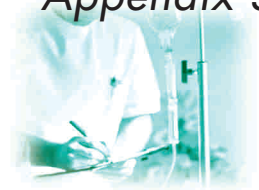
Does pharmacy staff present in-service programs on new medications and medication protocols to nursing staff?

Am I offered opportunities to attend off-site educational programs to enhance my skills?

Am I provided with information on new medications prescribed for my patients?

If I am asked to train new staff, are my staffing duties curtailed so I can adequately perform this function?

Medication safety audit list for nurses



Key element 9: Patient education

Patients can play a vital role in preventing medication errors when they have been educated about their medications and encouraged to ask questions and seek satisfactory answers. Because patients are the final link in the process, health care providers should teach them how to protect themselves from medication errors and seek their input in related quality improvement and safety initiatives.

Questions to Consider

NA Yes No

Do I always follow up on questions from patients regarding their medications?

Do I always encourage patients and caregivers to ask questions about medications?

Do I provide patients and their caregivers with written, easy-to-understand information about their medications?

Are patients offered an opportunity to speak with a pharmacist about their medications?

Does a programme exist to educate patients and their caregivers that they are an important part of safe medication use?



Medication safety audit list for nurses

Key element 10 : Quality process and risk management

Health care organisations need systems for identifying, reporting, analysing, and reducing the risk of medication errors. A nonpunitive culture of safety must be cultivated to encourage frank disclosure of errors and near misses, to stimulate productive discussions, and to identify effective system-based solutions.

Strategically placed quality control checks are also necessary. Simple redundancies that support a system of independent double checks for high-risk, error-prone processes promote the detection and correction of errors before they reach and harm patients.

Questions to Consider

NA Yes No

Is the current culture in the hospital one that is blame-free when it involves committing an error? In the post-event review, are practitioners who make an error disciplined in cases where malicious or illegal activity is absent?

Is there an individual in my institution whom I view as an advocate for preventing medication errors?

Are reports of errors and near misses freely exchanged among hospital staff?

Is there a fear to report errors because of embarrassment or reprisal?

Do administrators regularly visit my unit and seek staff input on ways to help prevent medication errors?

Is psychological counselling provided for employees who are involved in serious error that causes patient harm?

Do prescribers order pediatric medications in total dose plus mg/kg dose and chemotherapy in total dose and mg/m² dose?

For high-alert medications, do I ask another practitioner to double-check my calculations and the medication I am about to administer and to document it?

Suggested Actions

NA Yes No

Practise and support a blame-free environment that allows for the open discussion of error for staff education.

Notify administrators if system changes are needed within the organisation.

Report medication errors and near misses.



List of error-prone abbreviations

Abbreviation	Intended Meaning	Misinterpretation	Correction
µg	Microgram	Mistaken as "mg"	Use "mcg"
AD, AS, AU	Right ear, left ear, each ear	Mistaken as OD, OS, OU (right eye, left eye, each eye)	Use "right ear," "left ear," or "each ear"
OD, OS, OU	Right eye, left eye, each eye	Mistaken as AD, AS, AU (right ear, left ear, each ear)	Use "right eye," "left eye," or "each eye"
D/C	Discharge or discontinue	Premature discontinuation of medications if D/C (intended to mean "discharge") has been misinterpreted as "discontinued" when followed by a list of discharge medications	Use "discharge" and "discontinue"
HS	Half-strength	Mistaken as bedtime	Use "half-strength" or "bedtime"
hs	At bedtime, hours of sleep	Mistaken as half-strength	
IU	International unit	Mistaken as IV (intravenous) or 10 (ten)	Use "units"
o.d. or OD	Once daily	Mistaken as "right eye" (OD-oculus dexter), leading to oral liquid medications administered in the eye	Use "daily"
q.d. or QD	Every day	Mistaken as q.i.d., especially if the period after the "q" or the tail of the "q" is misunderstood as an "i"	Use "daily"
SC, SQ, sub q	Subcutaneous	SC mistaken as SL (sublingual); SQ mistaken as "5 every;" the "q" in "sub q" has been mistaken as "every" (e.g., a heparin dose ordered "sub q 2 hours before surgery" misunderstood as every 2 hours before surgery)	Use "subcut" or "subcutaneously"
TIW or tiw	3 times a week	Mistaken as "3 times a day" or "twice in a week"	Use "3 times weekly"
U or u	Unit	Mistaken as the number 0 or 4, causing a 10-fold overdose or greater (e.g., 4U seen as "40" or 4u seen as "44"); mistaken as "cc" so dose given in volume instead of units (e.g., 4u seen as 4cc)	Use "unit"

Reference: ISMP Medication Safety Alert! November 27, 2003. Volume 8 Issue 24



ISMP's list of high-alert medications

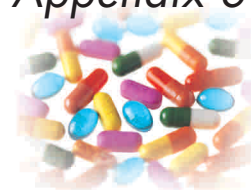
High-alert medications are drugs that bear a heightened risk of causing significant patient harm when they are used in error. Although mistakes may or may not be more common with these drugs, the consequences of an error with these medications are clearly more devastating to patients.

Class/Category of Medications

adrenergic agonists, IV (e.g., epinephrine)
 adrenergic antagonists, IV (e.g., propranolol)
 anesthetic agents, general, inhaled and IV (e.g., propofol)
 cardioplegic solutions
 chemotherapeutic agents, parenteral and oral
 dextrose, hypertonic, 20% or greater
 dialysis solutions, peritoneal and hemodialysis
 epidural or intrathecal medications
 glycoprotein IIb/IIIa inhibitors (e.g., eptifibatide)
 hypoglycemics, oral
 inotropic medications, IV (e.g., digoxin, milrinone)
 liposomal forms of drugs (e.g., liposomal amphotericin B)
 moderate sedation agents, IV (e.g., midazolam)
 moderate sedation agents, oral, for children (e.g., chloral hydrate)
 narcotics/opiates, IV and oral (including liquid concentrates, immediate- and sustained- release)
 neuromuscular blocking agents (e.g., succinylcholine)
 radiocontrast agents, IV
 thrombolytics/fibrinolytics, IV (e.g., tenecteplase)
 total parenteral nutrition solutions

Specific Medications

amiodarone IV
 colchicine injection
 heparin, low molecular weight, injection
 heparin, unfractionated, IV
 insulin, subcutaneous and IV
 lidocaine IV
 magnesium sulfate injection
 methotrexate, oral, non-oncologic use
 nesiritide
 nitroprusside sodium injection
 potassium chloride injection, concentrate
 potassium phosphates injection
 sodium chloride injection, hypertonic
 warfarin

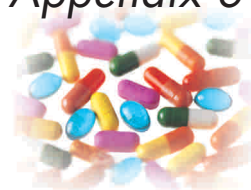


Medications with similar looking/sounding names

Many drug names can look or sound alike. Factors such as poor handwriting and poorly communicated verbal instructions can worsen the problem. This may lead to potentially harmful medication errors. The tabulation below provides a list of similar looking/sounding names available in local pharmacies.

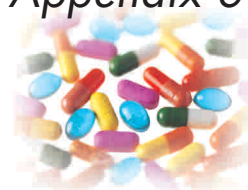
Note: Brand names are in capital letters and generic names are in small letters.

ACTIVELE.....	ACTONEL
ADRIAMYCIN.....	IDAMYCIN
ALKERAN.....	LEUKERAN
ALKERAN.....	MYLERAN
Amantadine.....	Rimantadine
AMARYL.....	REMINYL
Amiloride.....	Amlodipine.....Amiodarone
Amitriptyline.....	Aminophylline
Amitriptyline.....	Imipramine.....Nortriptyline
Amoxicillin.....	Ampicillin
ANAFRANIL.....	TOFRANIL
Aqueous cream.....	AQUREA cream (Urea Cream)
ARTREX.....	ARTANE.....ATARAX
ASACOL.....	OSCAL
ATARAX.....	ANAREX.....ARTREX
ATROVENT.....	SEREVENT
Azithromycin.....	Erythromycin
BACTRACIN.....	BACTROBAN
Benzylpenicillin (Penicillin G).....	Benzathine Penicillin.....Procaine Penicillin
Budesonide.....	Bumetanide
Bupivacaine.....	Ropivacaine
Bupropion.....	Buspirone
Calciferol.....	Calcitriol.....Calcitonin
Calcium chloride.....	Calcium gluconate.....Calcium acetate
Captopril.....	Carvedilol
Carbamazepine.....	Carbimazole
Carboplatin.....	Cisplatin
Carboprost.....	Carboplatin
CARDURA.....	CORDARONE
Cefazolin.....	Cefadroxil.....Cefoxitin
Cefazolin.....	Cephalexin
Ceftazidime.....	Cefuroxime.....Ceftriaxone
Chlorpromazine.....	Clomipramine
Chlorpropamide.....	Chlorpromazine.....Chlordiazepoxide
Cimetidine.....	Ranitidine.....Famotidine
Clonazepam.....	Clorazepate
Clonazepam.....	Clozapine
Clonidine.....	Colchicine
Clonidine.....	Codeine
Clonidine.....	Clomiphene.....Clomipramine



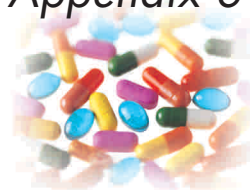
Medications with similar looking/sounding names

COZAAR.....	HYZAAR	
Cyclosporine.....	Cycloserine.....	Cyclophosphamide
Dactinomycin.....	Daptomycin	
DAIVOBET.....	DAIVONEX	
Daunorubicin.....	Doxorubicin	
DIAMOX.....	VERMOX	
DIFFLAM.....	DAFLON	
Dimenhydrinate.....	Diphenhydramine	
DIOVAN.....	ZYBAN	
DIXARIT.....	DEANXIT.....	DUXARIL
Donepezil.....	Doxepin.....	Dothiepin
Dopamine.....	Dobutamine	
Doxapram.....	Doxepin.....	Doxazosin
ESMERON.....	Esmolol	
Esomeprazole.....	Omeprazole	
Etidronate.....	Etomidate	
Famotidine.....	Frusemide	
FLIXONASE.....	FLIXOTIDE	
Fluconazole.....	Flucytosine	
Fludrocortisone.....	Hydrocortisone	
Fluoxetine.....	Fluvastatin	
Fluoxetine.....	Fluvoxamine	
Folic acid.....	Folinic acid	
FUCIDIN.....	FUCICORT	
GENGRAF.....	PROGRAF	
Gliclazide.....	Glipizide.....	Glibenclamide
Glibenclamide.....	Glimipiride	
GLUCOBAY.....	GLUCOPHAGE	
HUMULIN (insulin products).....	HUMALOG insulin	
Hydralazine.....	Hydroxyzine	
Hydroxyurea.....	Hydroxyzine	
Hydrochlorothiazide.....	Hydroxychloroquine	
Hypromellose.....	HYPOTEARs	
IMDUR.....	IMURAN	
Infliximab.....	Rituximab	
ISMO.....	ISORDIL	
Isosorbide mononitrate.....	Isosorbide dinitrate	
KALETRA.....	KEPPRA	
LAMICTAL.....	LAMISIL	
Lamivudine.....	Lamotrigine	
LANTUS insulin.....	Lente insulin	



Medications with similar looking/sounding names

Leucovorin.....	LEUKERAN	
LIBRIUM.....	LIBRAX	
LORAMET.....	Lorazepam	
LOSEC.....	LASIX	
LOETTE.....	LOSEC	
Magnesium Carbonate Aromatic Mixt.....	Magnesium Trisilicate Mixt	
Mecobalamin.....	Moclobemide	
Medroxyprogesterone.....	Methylprednisolone	
MERCILON.....	MARVELON	
MERISLON.....	MESTINON	
Meropenem.....	Imipenem	
Methimazole.....	Metronidazole	
Methylphenidate.....	Methylprednisolone	
Metoprolol.....	Misoprostol	
Metronidazole.....	Miconazole	
Mitomycin.....	Mitoxantrone	
Multivitamin.....	MOTILIUM	
NASACORT.....	NASONEX	
NEOGOBION.....	NEUROBION.....	NEURONTIN
NEORAL.....	NIZORAL	
NEUROGEN E.....	NEUROBION, NEUROFORTE	
NOVORAPID.....	NOVOMIX.....	NOVONORM
Nifedipine.....	Nicardipine.....	Nimodipine
NORVASC.....	NOOTROPIL	
Ofloxacin.....	Ciprofloxacin.....	Moxifloxacin
PANADOL.....	PANADIENE	
Penicillin G.....	Pencillin V	
Penicillin.....	Penicillamine	
Piracetam.....	Piroxicam	
PRAVACHOL.....	Propranolol	
Prednisolone.....	Methylprednisolone	
PREGAINE (shampoo).....	REGAINE (Minoxidil scalp lotion)	
PROCTOLOG.....	PROCTOSEDYL	
Promethazine.....	Prochlorperazine	
Promethazine & Codeine Linctus.....	Promethazine Elixir	
Propranolol.....	Propafenone	
PROSCAR.....	PROZAC	
Pyridostigmine.....	Pyridoxine	
Quinidine.....	Quinine	
RAPAMUNE.....	VIRAMUNE	
REMICADE.....	REMINYL.....	REMERON



Medications with similar looking/sounding names

RHINOCORT - nasal.....	PULMICORT-inhaler
Salmeterol.....	Salbutamol
Selegiline.....	Sertraline
SENOKOT.....	SINEMET
SERETIDE.....	SEREVENT
SEROXAT.....	SEROQUEL
SINEMET (L-dopa/Carbidopa).....	MADOPAR (L-dopa/Benserazide)
SINUPRET.....	SINGULAR
Somatropin.....	Somatostatin
STEMETIL.....	STILAMIN
Streptokinase.....	Streptomycin
Sulfasalazine.....	Sulfadiazine
Sumatriptan.....	Zolmitriptan
T3 (liothyronine).....	T4 (levothyroxine)
TAMIFLU.....	Tamoxifen
TAXOL.....	TAXOTERE
TAZOCIN.....	TARGOCID
TENORMIN.....	TENORET
TEQUIN.....	Teicoplanin
Terbinafine.....	Terbutaline
TOBRADEX.....	TOBREX
TRANXENE.....	TRANDATE..... TRENTAL
Trifluoperazine.....	Thioridazine
Trimebutine.....	Trimetazidine
URSOFALK.....	SALOFALK
VADILEX.....	VIDEX..... VALTREX
VALCYTE.....	VALTREX
Valganciclovir.....	Valaciclovir
VERAGEL.....	Voltaren gel
Vinblastine.....	Vincristine
Vit B1 (Thiamine).....	Vit B6 (pyridoxine)
Vitamin B Complex Inj.....	Vitamin B12 Inj
XANAX.....	XATRAL
XANAX.....	ZANTAC
ZADINE.....	ZADITEN
ZERIT.....	ZESTRIL
ZOCOR.....	ZOLOFT
ZOMIG.....	ZELMAC
Zopiclone.....	Zolpidem
ZOVIRAX.....	ZOLADEX
ZYPREXA.....	ZYRTEC



Pre-packaging of drugs

Practice standards for pre-packing of drugs for healthcare institutions and pharmacies in Singapore

Introduction

As far as possible, drugs should be purchased in ready dispensing packs. However, this is sometimes not possible and medicines need to be repacked from the original bulk pack into smaller packs to facilitate the dispensing process in the pharmacy. These smaller packs are known as pre-packs. The types of pharmaceutical items repacked as pre-packs include tablets, capsules, liquids, ointments, creams and powders.

Objective

This section spells out the Standard Operating Procedure (SOP) when preparing pre-packs to ensure that the pre-packs are systematically packed without errors in the quantity required with the correct labelling and expiry dates.

Premises

- Designate an area or workbench for the preparation of pre-packs.
- Clean all work surfaces before and after each preparation. The premises must be kept clean at all times.
- Pre-pack internal and external preparations in separate areas or rooms.
- Store internal and external pre-packs in separate areas or rooms.

Instruments and Equipment

- Use different sets of instruments and apparatus to prepare pre-packs of internal and external preparations. The separate sets of instruments and apparatus should be stored separately.
- Rinse or wash instruments and apparatus before and after use.
- Calibrate and maintain equipment used to prepare pre-packs at appropriate intervals. A certified technician from an approved company can be contracted to carry out the calibration.
- If an external company is unable to provide certification of the equipment, the pharmacy staff may conduct internal quality control checks to verify the accuracy or precision of the equipment or alternatively engage the services of the biomedical engineering department of the institution.



Pre-packaging of drugs

Personnel

- Ensure staff are familiar with the SOP established to prepare pre-packs and that new staff are routinely orientated on the process.
- Ensure staff are trained to operate all the equipment in the room.
- Ensure staff observe a high level of hygiene and cleanliness during prepackaging.
- Ensure staff pay extra attention during the labelling process.

Correct Work Practice

1 Prior to Packaging

- Only one prepackaging activity is carried out at any one time. Finish one product before commencing on the next.
- Do not carry over the prepackaging of a product to the next day. Once started, complete prepackaging that product.
- Do not pre-pack items with similar look, shape, size and colour at the same time. This may lead to a mix up of medicines and thus result in medication errors. Pre-pack powders of one type at a time to prevent cross contamination of products.
- Prepare the Pre-Packs Preparation Form (**Appendix 7a**). For each product, document:
 - name of preparation.
 - quantity of medicine in each pre-pack, i.e. pack size.
 - specimen label.
 - date of prepackaging.
 - source, batch number and expiration date of the bulk preparation.
 - the institution batch number. In the case of a recall of the medicine, this batch number would allow easy identification for the recall.
 - names of staff involved in each of the prepackaging steps ie staff engaged in prepackaging, labelling and checking.
 - print the labels with indelible ink or use pre-printed labels. The information on the labels should be clear and of the appropriate size
 - Pharmacist or Senior Pharmacy Technician checks the labels. Verify the information in the pre-pack form against the labels generated.



Pre-packaging of drugs

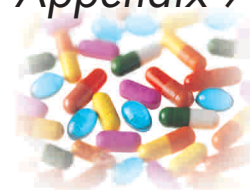
2 Pre-Packaging

- Put on disposable caps to cover hair completely and put on a mask to cover the nose and the mouth properly. Wear clean gowns over the uniforms.
- Wash hands and arms, up to the elbow with water and pat dry with fresh clean towels.
- Wear fitting gloves.
- Prepare containers and start pre-packaging.
- Senior Pharmacy Technician checks that the pre-packaging process is carried out according to SOP.

3 Post-Packaging

- Pharmacist or Senior Pharmacy Technician:
 - checks the final products by random sampling; checks the caps of bottles for tightness to prevent spillage of contents, quantity per pack and correct labelling.
 - tears off and discard all unused labels.
- Document the request and supply of the pre-packs.
- Discard caps and masks and send gown for washing.

Keep the pre-packaging records in the premises for at least 2 years before destruction.



Pre-packaging of drugs

PRE-PACKS PREPARATION FORM

Drug Name and Strength _____

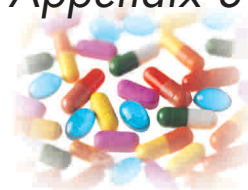
Date of Packing _____

PART I: PREPARATION

Manufacturer :	Brand name :
Manufacturer's batch no. :	Expiry date :
Original pack size :	Pack size of pre-packs :
Pre-packs batch no. :	
Specimen label	
Prepared by :	Checked by : (Name & designation)

PART II: FINAL PRODUCT CHECK

Expected quantity of pre-packs	
Actual quantity of pre-packs	
Reason for discrepancy (if any) :	
Packed by :	Checked by : (Name & designation)
Date :	



Drug safety notification form

To: _____

The following drug has been found to have safety issue(s):

Purchase reference/GPO Tender Ref:

Product Name (Brand name and generic name)

Dosage form (tablet, capsule, injectable, etc)

Pack Size

Strength

Name of Manufacturer

Purchase Order No

Affected Quantity (if applicable)

Delivery Order No

Date of Delivery

Problem(s) noted:

Forwarded for your information and necessary action.

Reported by:

Signature / Date

Name / Designation

Cc Director (Pharmaceutical Purchasing), Group Purchasing Office (Fax No: 6222-1917)



Medication safety tips for patients

1. Keep a current list of any food and medication allergies. Be sure to discuss your allergies with your doctor, pharmacist and other health care providers.
2. Maintain an up-to-date list of all the medications you take, including vitamins, over-the-counter products and herbal remedies in a medication log. Be sure to:
 - Keep a written list of the name, dose and reason you're taking each medication
 - Update the list to include new prescriptions or allergies
 - Review the list with your doctor at each office visit
 - Carry the list with you at all times
3. Read prescription labels carefully. Always follow the directions exactly. If a medication you have taken before looks different in any way, speak with your pharmacist immediately.
4. If you have questions about a prescription – including possible side effects or interactions with other medications or foods – contact your doctor or pharmacist.
5. Let your doctor or pharmacist know if you experience any problems with your medications. Contact your doctor immediately if you stop taking your medications for any reason.
6. Ask your doctor if a new prescription you receive replaces any of your current medications.
7. When you see multiple physicians, let them know when you start or stop taking a medication.
8. Keep medications in their original containers, except when you place them in a medication organiser (pillbox).
9. If you are keeping track of your medications by using a pillbox, fill each compartment ahead of time for each day of the week.
10. Mark your calendar for when you will need prescription refills.
11. Discard any medications that have expired.
12. Whenever possible, fill all your prescriptions at the same pharmacy. By doing this, the pharmacy staff will be able to review your record for potential allergies or interactions with your other prescriptions.

How to take your medicine safely



How To Take Your Medicine Safely

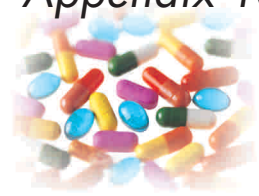
如何安全地
服用您的药物

**Bagaimana Untuk
Mengambil Ubat Anda
Dengan Selamatnya**

உங்களது மருந்துகளைப்
பாதுகாப்பாகச்
சாப்பிடுவது எப்படி



**Changi
General Hospital**
SingHealth



How to take your medicine safely

Before Taking Your Medicine, Make Sure:

- It's the correct medicine
- It's not expired
- You're not allergic to the medicine
- You read the label carefully
- You understand the instructions
- You take the right dose at the right time

Give Your Healthcare Team Important Information

Tell them:

- All the medicines and supplements you're taking. These include:
 - Prescription medicines
 - Over the counter products eg. cough syrups
 - Vitamins, traditional medicines and dietary supplements
- If you have any allergies or problems after taking a medicine
- If you are pregnant, planning a pregnancy or nursing a baby
- If you have other medical conditions
- If cost is a concern

Know Your Medicines

- Bring a list of your medicines and the dosages whenever you consult a doctor or pharmacist
- Know your medicine and what you're taking it for
- Know how to take or use your medicine
 - Find out how much to take, when to take and for how long
- Stay with the treatment plan
 - Continue taking your medicine at the same time, with the same dosage unless otherwise directed by a doctor or a healthcare professional

Other Important Points

- Check if the medicine interacts with any food or other medications
- Find out if there's any food, medicine or activity to avoid
- Find out what are the possible side effects after taking the medicine
- Never share medicines
- Find out what to do if you forget a dose



How to take your medicine safely

Storage

- All medicines should be kept out of the reach of children
- Take note of the appropriate storage conditions
- Do not accumulate unwanted medicines
- Discard all expired medications

For More Information, Speak To A Healthcare Professional

eg. your family doctor or pharmacist

You can also send in enquiries via:

a) **Ask mypharmacist**
www.mypharmacy.com.sg

b) **Ask a CGH Nurse**
www.cgh.com.sg

Or call our **CGH Mainline** at 6788 8833

在服用您的药物之前，请确保：

- 药物是正确的
- 药物还未过期
- 您不曾对该药物产生敏感
- 您已仔细地阅读过标签
- 您明白标签上的指示
- 您在正确的时间服用正确的剂量

提供您的保健小组重要的讯息

让他们知道：

- 您是否在服用任何药物或补品。这些包括：
 - 处方药物
 - 无需处方可购得的药物，如咳嗽药水
 - 维他命、中药和饮食补充品
- 您是否曾对某种药物产生过敏或副作用
- 您是否怀孕、打算怀孕或正在哺乳
- 您是否有其它的健康问题
- 您是否对药物的价格非常关注



How to take your medicine safely

认识您的药物

- 每当您向医生或药剂师查询时，请携带一张列出您的药和服用剂量的清单。
- 了解您的药物和服用该药物的原因。
- 了解如何服用或使用您的药物
 - 查询服用的剂量、时间和疗程。
- 遵循治疗计划
 - 除非医生或药剂师另有指示，否则继续在同样的时间、服用同样的药物和剂量。

其它重要事项

- 查看该药物是否会和任何食物或药物相互影响。
- 查询是否需要避免吃某种食物、药物，或是否不宜进行某项活动。
- 查询服用该药物之后可能会产生的副作用。
- 不可与他人共用您的药物。
- 查询如果忘了服用药物该怎么做。

如和储藏您的药物

- 所有的药物都必须储藏在儿童接触不到的地方。
- 注意适当的储藏条件。
- 不要积存您已不需要的药物。
- 丢弃所有过期的药物。

欲知更多资讯，请问您的保健专员例如家庭医生或药剂师查询。

您也可以将疑问传送到以下网址：

a) 询问护士

www.cgh.com.sg

b) 询问药剂师

www.mypharmacy.com.sg

或拨打我们樟宜综合医院的总机 6788 8833



How to take your medicine safely

Sebelum Ambil Ubat Pastikan:

- Ubat itu betul.
- Ubat itu masih sesuai digunakan.
- Anda tidak alah terhadap ubat tersebut.
- Anda membaca arahan dengan teliti.
- Anda memahami arahan yang diberikan.
- Anda mengambil ubat pada masa dengan dos yang tepat.

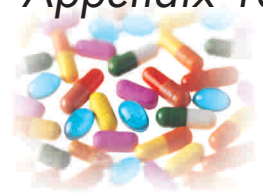
Berikan Tim Penjagaan Kesihatan Anda Maklumat Yang Penting

Beritahu mereka:

- Semua ubat dan vitamin tambahan yang anda makan, termasuk:
 - Ubat-ubatan yang disyorkan oleh doktor.
 - Ubat-ubatan yang dibeli dari farmasi misalnya sirap batuk.
 - Vitamin, Ubat-ubatan Tradisional dan pil penambah kepada diet anda.
- Jika anda mengalami sebarang alah atau masalah selepas pengambilan ubat tersebut.
- Jika anda sedang hamil, merancang untuk kehamilan ataupun menyusui bayi.
- Jika anda mempunyai kondisi kesihatan yang lain.
- Jika anda bimbang tentang kos rawatan.

Mengenali Ubat Anda

- Bawa senarai dan dos ubat apabila anda berjumpa dengan doktor atau ahli farmasi.
- Kenali ubat anda dan sebab pengambilan ubat itu.
- Ketahui bagaimana untuk mengambil atau menggunakan ubat anda.
 - misalnya dos, bila dan jangka masa.
- Pastikan anda menghabiskan tempoh rawatan
 - teruskan ambil ubat anda pada masa yang sama, dengan dos yang sama kecuali menerima arahan lain daripada doktor atau pakar perubatan.



How to take your medicine safely

Butir-Butir Penting Yang Lain

- Ketahui samada ubat tersebut boleh berinteraksi dengan sebarang makanan atau ubat yang lain.
- Ketahui samada sebarang makanan, ubat atau kegiatan yang harus dihindari.
- Ketahui kesan-kesan sampingan yang mungkin berlaku selepas pengambilan ubat tersebut.
- Jangan kongsi ubat anda dengan orang lain.
- Ketahui tindakan yang sewajarnya jika anda terlupa mengambil ubat.

Cara Menyimpan Ubat

- Jauhkan semua ubat daripada kanak-kanak.
- Ketahui kondisi penyimpanan yang sesuai.
- Jangan simpan ubat yang tidak diperlukan lagi.
- Buangkan semua ubat yang telah habis tempoh.

Untuk Keterangan Lanjut, Jumpailah Seorang Pakar Perubatan, Misalnya, Doktor Keluarga, Ahli Farmasi.

Anda juga boleh menghantar pertanyaan melalui

a) **Tanya ahli farmasi**
www.mypharmacy.com.sg

b) **Tanya Jururawat CGH**
www.cgh.com.sg

Ataupun hubungi talian utama CGH 6788 8833

உங்களது மருந்தைச் சாப்பிடுவதற்குமுன், இவற்றை உறுதிப்படுத்துங்கள்:

- அது சரியான மருந்துதான்
- அது காலாவதியாகாதது
- அந்த மருந்தால் உங்களுக்கு ஒவ்வாமை ஏற்படாது
- மருந்தில் உள்ள குறிப்புகளைக் கவனமாகப்
- படித்துவிட்டீர்கள்
- குறிப்புகள் உங்களுக்குப் புரிகின்றன
- சரியான நேரத்தில் சரியான அளவில் மருந்தைச்
- சாப்பிடுகிறீர்கள்



How to take your medicine safely

உங்களது சுகாதாரப் பராமரிப்புக் குழுவிடம் முக்கியத் தகவல்களைக் கூறுங்கள்

அவர்களிடம் சொல்லுங்கள்:

- நீங்கள் சாப்பிடும் அனைத்து மருந்துகள், ஊட்ட மருந்துகள் ஆகியவற்றின் விவரங்களை இவற்றில் பின்வருவன அடங்கும்:
 - மரு துவ தரு மரு துக
 - கடைமில் வாங்கும் பொருட்கள் எ.கா இருமல் மருந்து
 - வைட்டமின் ஊட்டச்சத்து, பாரம்பரிய மருந்துகள் மற்றும் உணவுக் கட்டுப்பாட்டு மருந்துகள்
- ஏதாவது மருந்தைச் சாப்பிட்டதும் உங்களுக்கு ஒவ்வாமை அல்லது பிரச்சனைகள் ஏற்பட்டிருந்தால்
- நீங்கள் கர்ப்பமாக இருந்தால், கர்ப்பமாகத் திட்டமிட்டிருந்தால் அல்லது குழந்தைக்குத் தாய்ப்பால் ஊட்டிக் கொண்டிருந்தால்
- உங்களுக்கு வேறு ஏதாவது மருத்துவப் பிரச்சனைகள் இருந்தால்
- விலை ஒரு பிரச்சனையாக இருந்தால்

உங்களது மருந்துகளைத் தெரிந்துகொள்ளுங்கள்

- மருத்துவரை அல்லது மருந்தாளரைக் காணச் செல்லும்போதெல்லாம் உங்களது மருந்துகள், அவற்றைச் சாப்பிடும் அளவுகள் ஆகிய விவரங்களின் பட்டியலை எடுத்துச் செல்லுங்கள்.
- உங்களது மருந்துகளின் பெயரையும் அவற்றை எதற்காகச் சாப்பிடுகிறீர்கள் என்பதையும் தெரிந்து கொள்ளுங்கள்
- உங்களது மருந்தை எப்படிச் சாப்பிடுவது அல்லது பயன்படுத்துவது என்று தெரிந்து கொள்ளுங்கள் எவ்வளவு, எப்போது, எவ்வளவு காலத்திற்குச் சாப்பிட வேண்டும் என்று கேட்டு அறிந்திடுங்கள்.
- சிகிச்சைத் திட்டத்தைத் தொடர்ந்திடுங்கள்
 - உங்களது மருந்துகளை அதே நேரத்தில், அதே அளவுகளில் தொடர்ந்து சாப்பிடுங்கள். மருத்துவர் அல்லது சுகாதாரப் பராமரிப்பு நிபுணர் கூறினால் மட்டுமே இதில் நீங்கள் மாற்றம் செய்யலாம்.

மற்ற முக்கிய குறிப்புகள்

- உங்களது மருந்து ஏதாவது உணவுடன் அல்லது வேறு மருந்துகளுடன் சேர்ந்து செயல்படுமா என்று கேளுங்கள்.
- நீங்கள் ஏதாவது உணவு, மருந்து அல்லது நடவடிக்கையைத் தவிர்க்க வேண்டுமா என்று தெரிந்து கொள்ளுங்கள்.
- மருந்தைச் சாப்பிட்ட பிறகு ஏற்படக்கூடிய பக்க விளைவுகளைப் பற்றி கேட்டு அறிந்திடுங்கள்
- மருந்துகளை ஒருபோதும் பகிர்ந்து கொள்ளாதீர்கள்
- ஒரு வேளையில் மருந்தைச் சாப்பிட மறந்துவிட்டால் என்ன செய்வது என்று தெரிந்து கொள்ளுங்கள்.

பத்திரப்படுத்துதல்

- எல்லா மருந்துகளும் பிள்ளைகளின் கைக்கு எட்டாத இடத்தில் இருக்க வேண்டும்.
- மருந்துகளைப் பத்திரப்படுத்தும் முறையைக் கவனித்திடுங்கள்.
- தேவையில்லாத மருந்துகளைச் சேர்த்து வைக்காதீர்கள்
- மருந்துகளை ஒருபோதும் பகிர்ந்து கொள்ளாதீர்கள்
- காலாவதியான மருந்துகள் அனைத்தையும் வீசி எறிந்துவிடுங்கள்

மேல்விவரங்களுக்கு, சுகாதாரப் பராமரிப்பு நிபுணருடன் பேசுங்கள்

எ.கா. உங்களது குடும்ப மருத்துவர் அல்லது மருந்தாளர்

நீங்கள் பின்வரும் வழிகளிலும் கேள்விகளை அனுப்பலாம்:

அ) எனது மருந்தாளரிடம் கேட்டல்
www.mypharmacy.com.sg

ஆ) CGH தாதுமிடம் கேட்டல்
www.cgh.com.sg

அல்லது எங்களது CGH மத்திய தொலைபேசி சேவையை 67888833 எண்ணில் அழைத்திடுங்கள். நோயாளி பாதுகாப்புக் குழுவின் தயாரிப்பு



Useful information

1. Organisations offering information on safe medication practices

Organization	Web Site	Features
Institute for Safe Medication Practices (ISMP)	www.ismp.org	Medication safety alerts (Acute care, Community / ambulatory care, Consumer or Nursing versions) – newsletters aimed at patient safety issues. Consults on medication error problems (offers site visits). Web site has frequently asked questions section. Message board for asking questions. Self-assessment tool for hospitals and community pharmacy practice. Education program.
Joint Commission on Accreditation of Healthcare Organizations (JCAHO)	www.jcaho.org	Sentinel event alerts and patient safety newsletters are available. Identify underlying causes and suggest steps for prevention.
California Institute for Health Systems Performance (CIHSP)	www.cihsp.org	Provides a compendium of suggested practices, an 86-page document outlining strategies for improving patient safety.
National Coordinating Council for Medication Error Reporting and Prevention (NCCMERP)	www.nccmerp.org	Provides taxonomy for medication errors (definitions of medication errors, error types etc.). Provides recommendations for various process, such as bar coding.
VA National Center for Patient Safety	www.patientsafety.gov	Provides clear explanations of commonly used QA tools (FMEA and Root Cause Analysis). "TIPS" – topics in patient safety.
American Hospital Association	www.aha.org	Section devoted to quality and patient safety. "Successful Safety Practice" section with many pertinent articles related to patient safety.
US Pharmacopeia (USP)	www.usp.org	Drug information on over 11,000 generic and brand name drugs. Practitioner reporting news that includes examples of reported medication errors. On-line reporting mechanism for medication errors.
Med-E.R.R.S.	www.med-errs.com	Subsidiary of ISMP. Assists pharmaceutical companies in evaluating labeling, packaging and nomenclature for safety. Why include this for practitioners? They can always use practitioner participation in the review process, visit the site and see what the evaluation process is like.
American Society of Health-system Pharmacists (ASHP)	www.ashp.org	Relatively new section on patient safety. Extensive bibliography. Medication Use System Safety Strategy



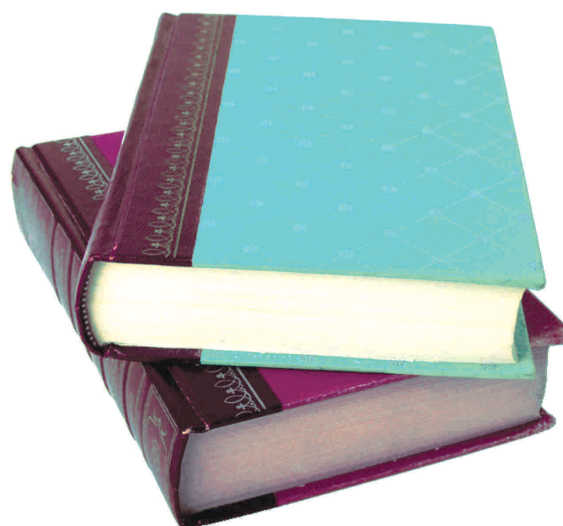
Useful information

2. Books

1. Cohen, Michael R., Ed. Medication Errors. Washington, D.C. American Pharmaceutical Association. 1999. (Contains a special chapter on high-alert medications and dangerous abbreviations; rich with insight and practical advice on reducing the risk of error.)
2. Corrigan, Janet, et al. To Err is Human: Building a Safer Health System. Washington, D.C. National Academies Press. 1999. (Comprehensive overview of medical error, containing many practical suggestions and recommendations from several trusted sources.)
3. Leape, Lucian, et al. Reducing Adverse Drug Events. Boston, MA: Institute for Healthcare Improvement. 1998. (Concepts to reduce adverse events and a model for improvement.)

3. Patient Information Brochures

1. **Your Role in Safe Medication Use: A Guide for Patients and Families** is available from the Massachusetts Hospital Association at www.mhalink.org
2. **Partners in Quality: Taking an Active Role in Your Health Care** is available from the Hospital & Healthsystem Association of Pennsylvania at www.hap2000.org
3. **How to Take Your Medications Safely** is available from the ISMP at www.ismp.org
4. **Just Ask!** is available from the U.S. Pharmacopeia at www.usp.org
5. **Your Medicine: Play It Safe** is available from the Agency for Healthcare Research and Quality (AHRQ) at www.ahrq.gov





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