NYCSHP Pharmacy Technician Certification Board (PTCB) Exam Review – Part 1

NYC Pharmacy Technician Executive Committee

July 20, 2021

Disclosures

- The presenters have prepared the topics based on their pharmacy practice experience
- Presenters do not have involvement in the development or review of pharmacy technician certification exam questions or content

Pharmacy Technician Law: April 25, 2021

- **Creates the Registered Pharmacy Technician as a permanent professional title**
  - The definition and title exists under the Department of Education and bill defines in statute what a Registered Pharmacy Technician can do, including compounding, which will resolve the ambiguity of previous guidance. Will openly allow pharmacy technicians:
    - "Assist [a] pharmacist, as directed, in compounding, preparing, labeling, or dispensing of drugs used to fill valid prescriptions or medication orders or in compounding, preparing, and labeling in anticipation of a valid prescription or medication order for a patient to be served by the facility…where such tasks require no professional judgment."
  - Registered Pharmacy Technician will be able to do the above **plus** what unlicensed persons can currently do (typing labels, entering Rx data, getting drugs from stock, counting dosage units, etc)

NYS Pharmacy Technician Registration and Certification

General Requirements:
Any use of the title "registered pharmacy technician" within New York State requires licensure.
To be licensed as a registered pharmacy technician in New York State you must:

- be of good moral character;
- be at least 18 years of age;
- have completed high school or its equivalent, as determined by the Department; and have received certification from a nationally accredited pharmacy technician certification program acceptable to the Department..
- PTCB or NHA certification

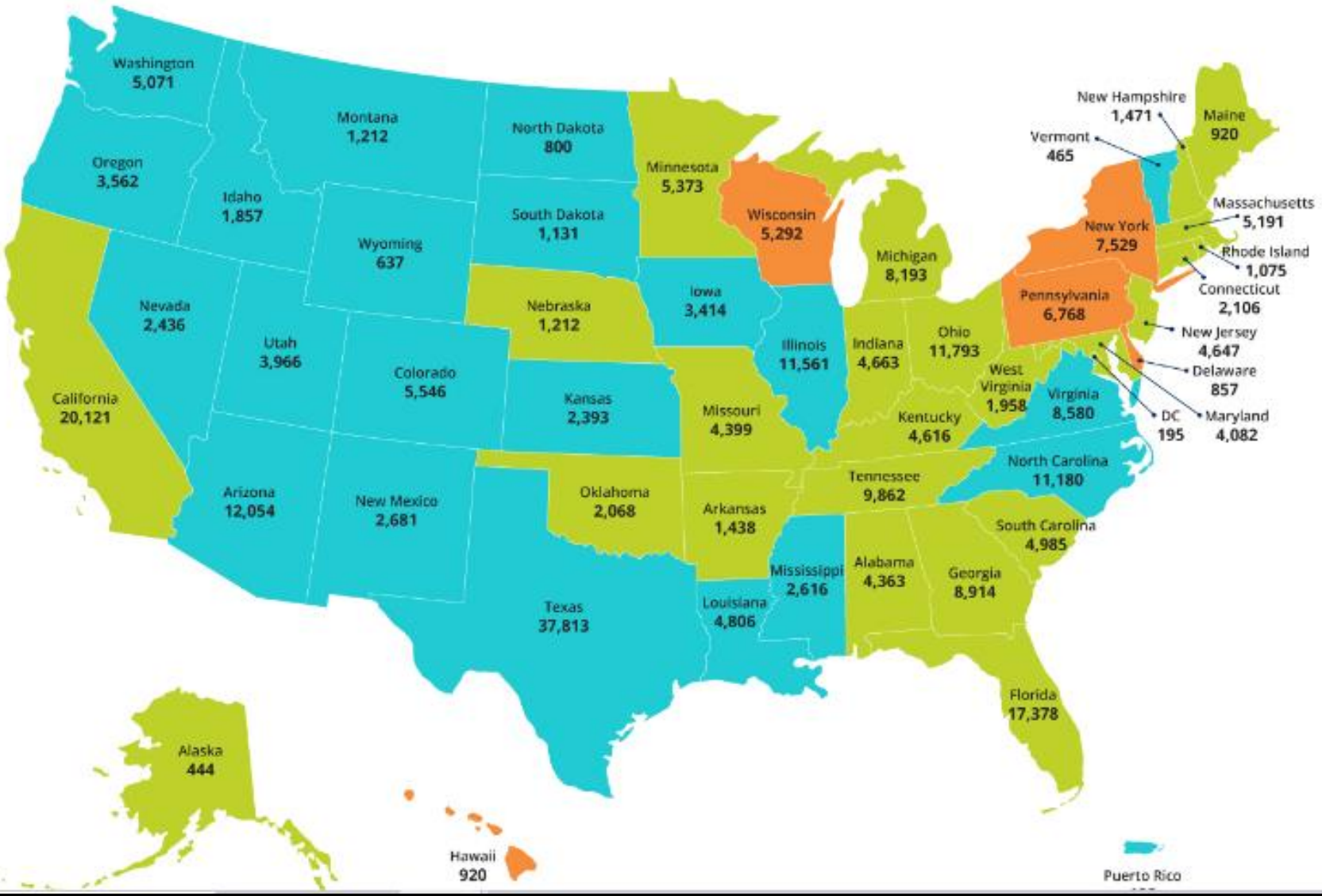
The specific requirements for licensure are contained in Title 8, Article 137-A, Section 6844 of New York's Education Law and Part 63 of the Commissioner's Regulations.

Who does this mainly effect?

- Compounding Pharmacy Technicians

State Regulations and Map ✓

We are proud to work with 279,806 active PTCB CPhTs who dedicate themselves to patient safety. This map shows the number of PTCB CPhTs in each state as of December 31, 2020.



Figures are current as of December 31, 2020

PHARMACY TECHNICIAN REQUIREMENTS

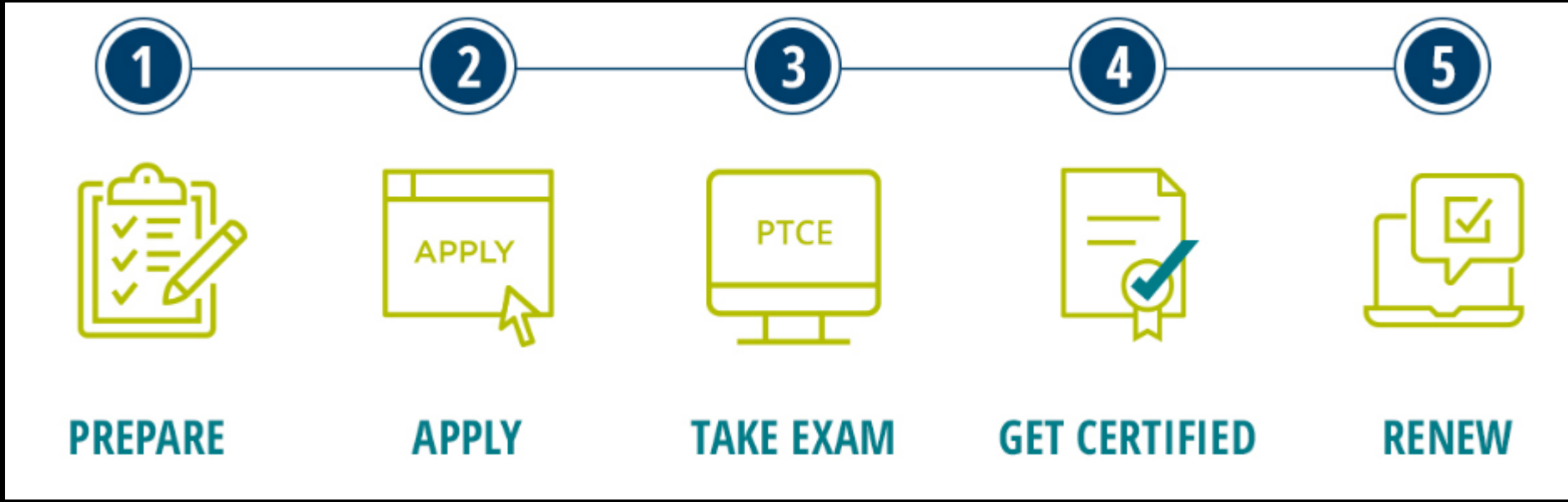
- Must be registered or licensed
- Must be nationally certified and registered or licensed
- No requirements

NY: 7,529 CPhTs

Pharmacy Technician Certification Board Exam

Are you ready to move your career forward?

Have you dreamed of growing your career to advance quality patient care and medication safety? By earning your PTCB Certified Pharmacy Technician (CPhT) Certification, you will be valued by pharmacy employers to perform a variety of tasks to support pharmacists and patients. Employers prefer, and many require, their pharmacy technicians be PTCB CPhTs.



Advantages to Becoming a Certified Pharmacy Technician (CPhT)

- PTCB CPhTs can reach higher to pursue more opportunities for career advancement, prestige in the workplace, and personal satisfaction from delivering the highest quality of care. By earning PTCB's CPhT credential, you clear the path to achieve other specialized and advanced credentials only offered by PTCB. The advantages of PTCB Certification include:
- Validated achievement and knowledge
- Improved employment opportunities
- Potential for higher salary
- Expanded responsibilities
- Career growth
- Increased focus on patient safety
- Prestige among coworkers

Pharmacy Technician Certification Board Exam

The Pharmacy Technician Certification Exam (PTCE) is broken up into 4 knowledge domains:

- Medications (40%)
- Federal Requirements (12.5%)
- Patient Safety and Quality Assurance (26.25%)
- Order Entry and Processing (21.25%)

Test Format:

- 90 Questions
- 80 will be scored

Time:

- 2 hours, but 10 mins is devoted to pre-exam tutorial and post-exam survey (1:50)

Medication Part 1 (40%) OTC/Dietary Supplements

Adrian Chatham, CPhT
Epic Credential Trainer
New York Presbyterian Hospital - Weill-Cornell

OTC/ Supplements

- Over The Counter medications/ supplements are non-prescription medications that customers can purchase without a prescription or provider consultation
- Just because an OTC or supplement is available without a prescription, doesn’t mean they do not have drug interactions are potential harm
- This is a review for those working in the hospital setting and community settings. I
- We will review important definitions and categories such as vitamin supplements

Water Soluble Vitamins:

Vitamins that dissolve in water in the body. Excess tends to be excreted through waste. Examples of Water-Soluble vitamins are:

<u>B Vitamins</u>:

- Thiamine (B1)
- Riboflavin (B2)
- Niacin (B3)
- Pantothenic Acid (B5)
- Pyridoxine (B6)
- Biotin (B7)
- Folate (B9)
- Cyanocobalamin (B12)

- Ascorbic Acid (Vitamin C): Not a B vitamin, but don’t forget this is water soluble as well.

Fat Soluble Vitamins:

Unlike Water Soluble vitamins, these vitamins dissolve in the bloodstream, and are usually consumed in High Fat meats and Food items. Examples of Fat-Soluble vitamins are:

- Retinol (Vitamin A)
- Ergocalciferol (Vitamin D)
- Tocopherol (Vitamin E)
- Phytonadione (Vitamin K)

Allergy Medications

Commonly used to treat seasonal allergies/Rhinitis

Antihistamines:

- Diphenhydramine (Benadryl) – most sedating
- Loratadine (Claritin)
- Cetirizine (Zyrtec)
- Fexofenadine (Allegra)

Intra-Nasally (Nasal):

- Fluticasone (Nasonex)

Ocular:

- Olopatadine hydrochloride Ophthalmic Solution 0.2% (Pataday)
- Ketotifen (Zaditor)

Cough and Cold Medications

Nasal decongestants:

- Phenylephrine (Sudafed PE)
- Pseudoephedrine (Sudafed)
  - -Requires ID to track amount of purchase
  - -Can cause harm if taken incorrectly

Expectorants:

- Guaifenesin (Robitussin, Mucinex)

Cough Suppressants:

- Dextromethorphan (Delsym, Robitussin DM, Mucinex DM)
  - -Can cause a ‘high” if taken more than recommended

Common OTC Supplements:

These are usually supplements recommended in conjunction with therapies and non-OTC medications that are not vitamins but supplements all the same.:

- Omega 3 & 3/6/9: Cholesterol and Diet Health
- Melatonin: Sleep Aid
- Azo (Cranberry/ Cranberry Supplements): For urinary tract health, and pain relief associated with period cramps/ UTI infections
- St. John’s Wort: Stress relief, mental wellness
- Saw Palmetto: Prostate Health

Common OTC Supplements Cont'd:

- Milk Thistle: Liver Health
- CoQ Enzyme 10: Gut health
- Florastor/Acidophilus: Promote healthy flora/gut health
- Formulations: At this point, it is a good time to mention and emphasize that a lot of these otc supplements that have been mentioned, come in different formulations. Vitamin C commonly comes in liquid form with a dropper, as well as Vitamin E. Omega 3 comes in a liquid form as well. When considering OTC supplements, take care to look at the different formulations they come in. A lot of people may not want to take certain vitamins and supplements as a tab/cap, but would be amenable to a liquid formulation. Take note! Let's continue:

Common OTC Supplements Topical:

Used for atopic dermatitis, allergies, as well as antibiotic and anti fungal treatments. Here are a few of the most common ones we see in both retail and hospital settings:

- Diphenhydramine Cream (Benadryl Cream): for itching and relief associated with allergic reactions like hives, and contact dermatitis
- Hydrocortisone Cream/Ointment (Cortisone): for allergies, eczema, dermatitis and itching/redness relief associated with these conditions
- Clotrimazole Cream (Lotrimin AF): Antifungal relief for athlete's foot, ring worm, thrush, fungal nails
- Neomycin/Bacitracin/Polymixin-B (Neosporin): Antibiotic ointment used for minor cuts, scrapes, and abrasions. Prevents bacterial infections

Common OTC Supplements Pain management:

This class of medications is used to treat a wide range of aches and pains as well as used in conjunction with other pain regiments. Often used for “breakthrough pain”, these can help with recovery and functioning for everyday activity while recovering from injury:

- Acetaminophen (Tylenol): Used for issues big and small, this is used for all sorts of aches and pains as well as fever
- Aspirin (Bayer, Baby Aspirin, Ecotrin): Used in tandem with non-OTC medications for heart health, headaches, fever etc. Key to note this belongs to the family of pain medications known as NSAIDS

Common OTC Supplements Pain management Cont'd:

NSAIDS or Non-Steroidal Anti Inflammatory Drugs, are mostly used to manage pain associated with arthritis, gout, and other forms of joint pain and discomfort. It is important to mention, while effective, they can lead to and cause ulcers if not taken with food. Caution should always be exercised when using these drugs. With that said here are a couple of examples:

- Ibuprofen (Advil): Another commonly used pain med, for lots of different pains. Can also help with fever, and cramps associated with period pain.
- Naproxen (Aleve): Usually prescribed for joint pain and arthritis

Common OTC Supplements Pain management Cont'd:

Formulations cont'd:

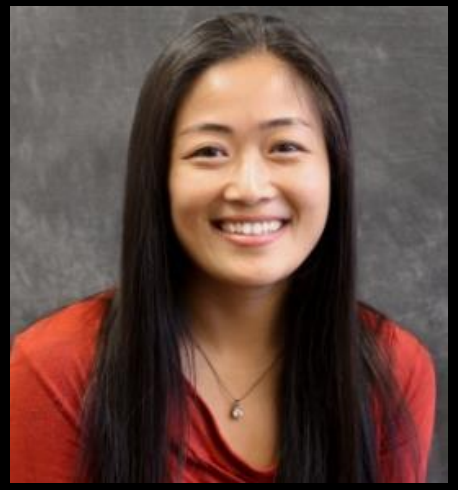
- Delivery systems with some of the vitamins and supplements
  - Some pain medications are available through
    - Transdermal patch delivery system and topical/creams
      - Capcasin
      - Methyl salicylate and menthol (Bengay)
      - Camphor and menthol (Icy hot)
      - Diclofenac (Voltaren)
      - Menthol (Mountain Ice, Biofreeze)
    - Considered when patients are looking for non-systemic pain alternatives
    - When it comes to pain management, these can be especially useful, since these can often be placed or applied at or close to the site that is causing difficulty/pain for the patient and could be immensely helpful when it comes to their injury/pain management.

Adverse Effects associated with OTC Supplements:

- Patients should be counseled about potential side effects, drug-drug, and food-drug interactions
  - Calcium can affect the absorption of antibiotics, levothyroxine, and various blood pressure medications.
  - Magnesium and aluminum supplements can cause issues with digoxin absorption
  - Aspirin in conjunction with warfarin can cause bleeding
  - Antihistamine allergy medications like diphenhydramine can cause drowsiness, and while they can relieve allergy symptoms a non-drowsy alternative like cetirizine or fexofenadine
  - Some medications can be absorbed in breastmilk and should be considered when patient is pregnant or nursing.
    - NSAIDS are not recommended in the last trimester of pregnancy
    - May affect the fetus and its development, as well as cause complications with delivery.

Top Take-Aways

- This is a general OTC and dietary supplements overview that you may see in the
  - Community setting
  - Hospital setting
- Good pharmacy practice includes becoming familiar with what is available at your institution(s) in the doses/strengths available and routes of administration
- If unfamiliar with an OTC or dietary supplement, check with your pharmacist for drug interactions, storage conditions, compatibility/incompatibility, and duplicate therapy in a patient's medication history
- Good luck with your studying and review!



Patient Safety and Quality Assurance

(Component of exam: 26.25%)

Jamie Chin-Hon, PharmD, MS, BCOP

Hematology-Oncology Pharmacotherapy Specialist

NYU Langone Hospital – Long Island

Overview

3.1 High-alert/risk medications and look-alike/sound-alike [LASA] medications

3.2 Error prevention strategies (i.e. prescription or medication orders to correct patient, Tall-man lettering, separating inventory, leading and trailing zeros, bar code usage, limit use of error-prone abbreviations)

3.3 Issues that require pharmacist intervention (i.e. drug utilization review [DUR], adverse drug event [ADE], OTC recommendation, therapeutic substitution, misuse, adherence, post-immunization follow-up, allergies, drug interactions)

Institute for Safe Medication Practices (ISMP)

- A non-profit organization dedicated to educate the healthcare community and consumers about safety medication practices
- Devoted entirely to learn from, share, and ultimately prevent medication errors
- Advocate to lead necessary changes in clinical practice, public policy, drug labeling, and packaging that may cause medication errors
- Operates the only national voluntary medication error reporting program, publishes newsletters, and offers educational programs, tools, and guidelines

High-alert and High-risk Medications

- Institute for Safe Medication Practices (ISMP) have identified high-alert medications as
  - Medications that are likely to cause
    - Significant harm to the patient, even when used as intended
    - Patient suffering
    - Additional costs to manage harm
- ISMP high-alert medication list
  - 19 categories
  - 14 specific medications
  - Goal of list is to improve identifying and managing these medications

ISMP List of High-Alert Medications. Updated August 23, 2018

High-alert and High-risk Medications: Categories

Examples of Classes/Categories	Medication examples
Adrenergic agonist agents (IV)	Epinephrine, phenylephrine, norepinephrine
Adrenergic antagonists agents (IV)	Propanolol, metoprolol, labetolol
Anesthetic agents (inh, IV)	Propofol, ketamine
Antiarrhythmic agents (IV)	Lidocaine, amiodarone
Antihrombotic agents (anticoagulants, antithrombotics)	Warfarin, enoxaparin, heparin, rivaroxaban, alteplase
Chemotherapeutic agents (IV, Subcut, IM, PO)	VinCRIstine, DOXOrubicin, Cyclophosphamide
Ionotropic agents	Digoxin, milrinone
Insulin (Subcut, IV)	Insulin glargine, regular, intermediate
Sedation agents	Dexmedetomidine, midazolam, lorazepam
Opioids (IV, PO, transdermal)	Morphine, hydromorphone, fentanyl, methadone
Neuromuscular blocking agents	Succinylcholine, rocuronium, vecuronium
Oral antidiabetic agents	chlorproPAMIDE, Glimepiride, glyburide, glipiZIDE, TOLBUTamide
IV fluids	Hypertonic sodium chloride (3% sod chlor)
Solutions	TPN and PPN preparations, cardioplegic solutions, dialysis solutions

ISMP List of High-Alert Medications. Updated August 23, 2018

High-alert/risk medications: Specific Medications

Specific Medications
EPINEPRHrine Subcut
Epoprostenol
Insulin Unit-500
Magnesium sulfate
Methotrexate oral (rheumatologic use)
Nitropruside sodium for injection
Opium tincture
Oxytocin IV
Potassium chloride
Potassium phosphate
Promethazine
Vasopressin IV and intraosseous

ISMP List of High-Alert Medications. Updated August 23, 2018

High-alert/risk medications: Management

- Although mistakes may not be more common with these medications, the consequence of an error are more devastating to patients
- Management strategies
  - Standardize to reduce medication errors
    - Ordering
    - Storage
    - Preparation
    - Administration
  - Limit access to high-alert medications
  - Use auxiliary labels
  - Use automated alerts
  - Require Independent double checks

ISMP List of High-Alert Medications. Updated August 23, 2018

Look-alike/sound-alikes [LASA]

- ISMP maintains a list to identify and educate about medications that look alike and sound alike, to prevent confusing and using the wrong medication unintentially

ISMP List of High-Alert Medications. Updated August 23, 2018

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3.1 Look-alike/sound-alikes [LASA]

Gabapentin: helps with neuropathic pain, seizures, restless leg syndrome

Gemfibrozil: helps lower cholesterol

An antibiotics with more gram-positive bacteria coverage

An antibiotic with more gram negative bacterial coverage

Hyralazine: for high blood pressure and heart failure

Hydroxyzine: for itching and anxiety

Error prevention strategies

- Minimize clutter
  - In the pharmacy, on the unit medication room, at computer stations, iv room
- Read back method to spell out medication names
  - Generic names
- Use barcodes
  - Barcode scanning can for efficiency and safety
- Be aware of high-alert medications and LASA medications
- Two independent reviews (double check)
  - High-alert medications
  - LASA
- Be proactive
  - Find unsafe practices, bring them up to your leadership, promote change

Tzipora Lieder, RPh, 10 Strategies to Reduce Medication Errors. Drug Topics Journal. April 2020. 164(4)

Patient Safety Take-Aways

- Become familiar with ISMP high-alert medications
- Triple check look-alike sound-alike medications for spending and dosage
- Physically separate the storage of medications that may have similar strengths within the same medication
- Label bins and utilize auxiliary labels to separate medications that may have similar labeling
- Utilize error-prone technology such as bar code systems, automated dispensing cabinets, and computer systems
- Report medication errors to prevent future errors

Patient Safety and Quality Assurance

(Component of exam: 26.25%)

Lilia Davenport, PharmD

PGY-2 Hematology-Oncology Pharmacy Resident

Baptist Health Miami Cancer Center

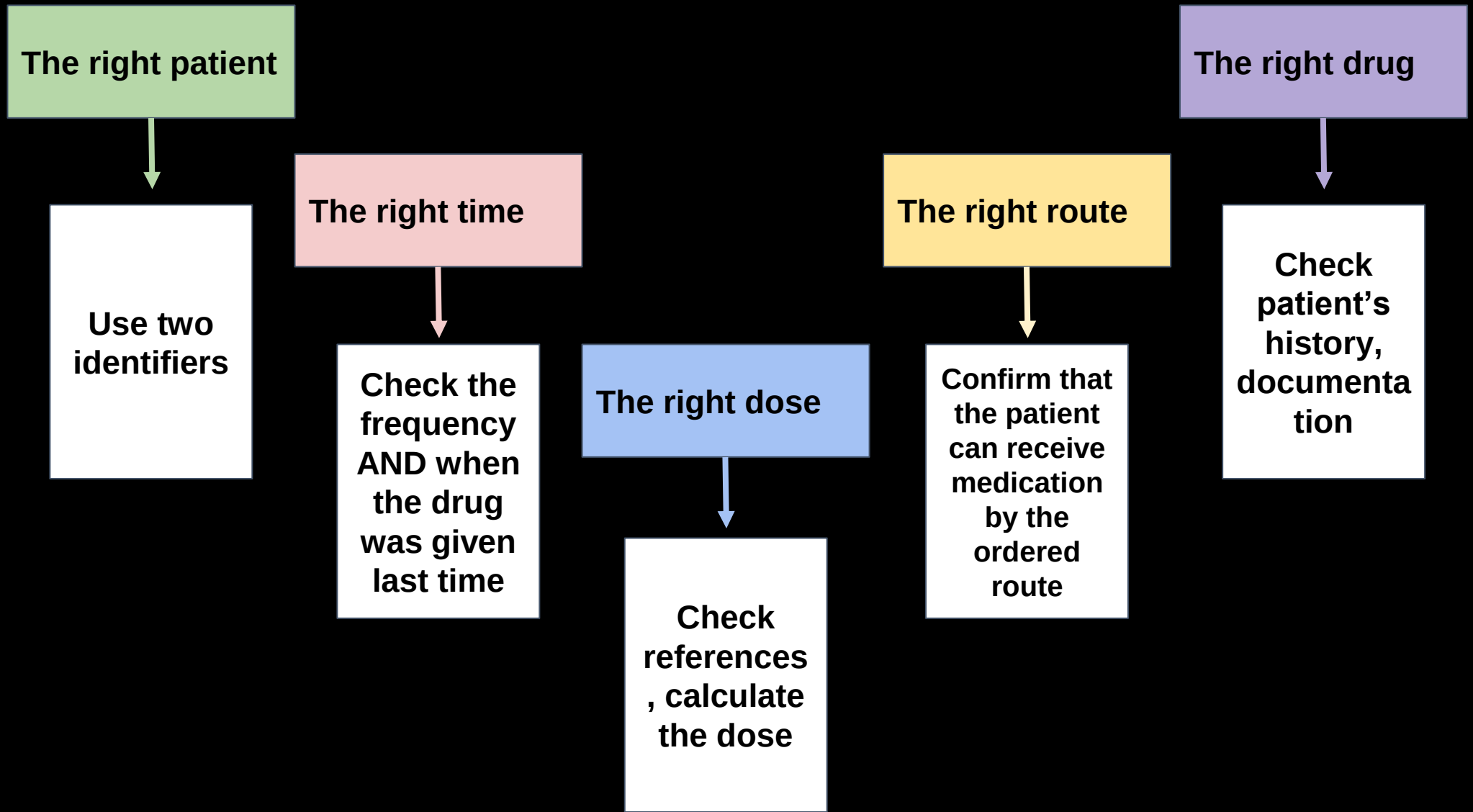
Overview

3.4. Types of prescription errors (i.e. abnormal doses, early refill, incorrect quantity, incorrect patient, incorrect drug

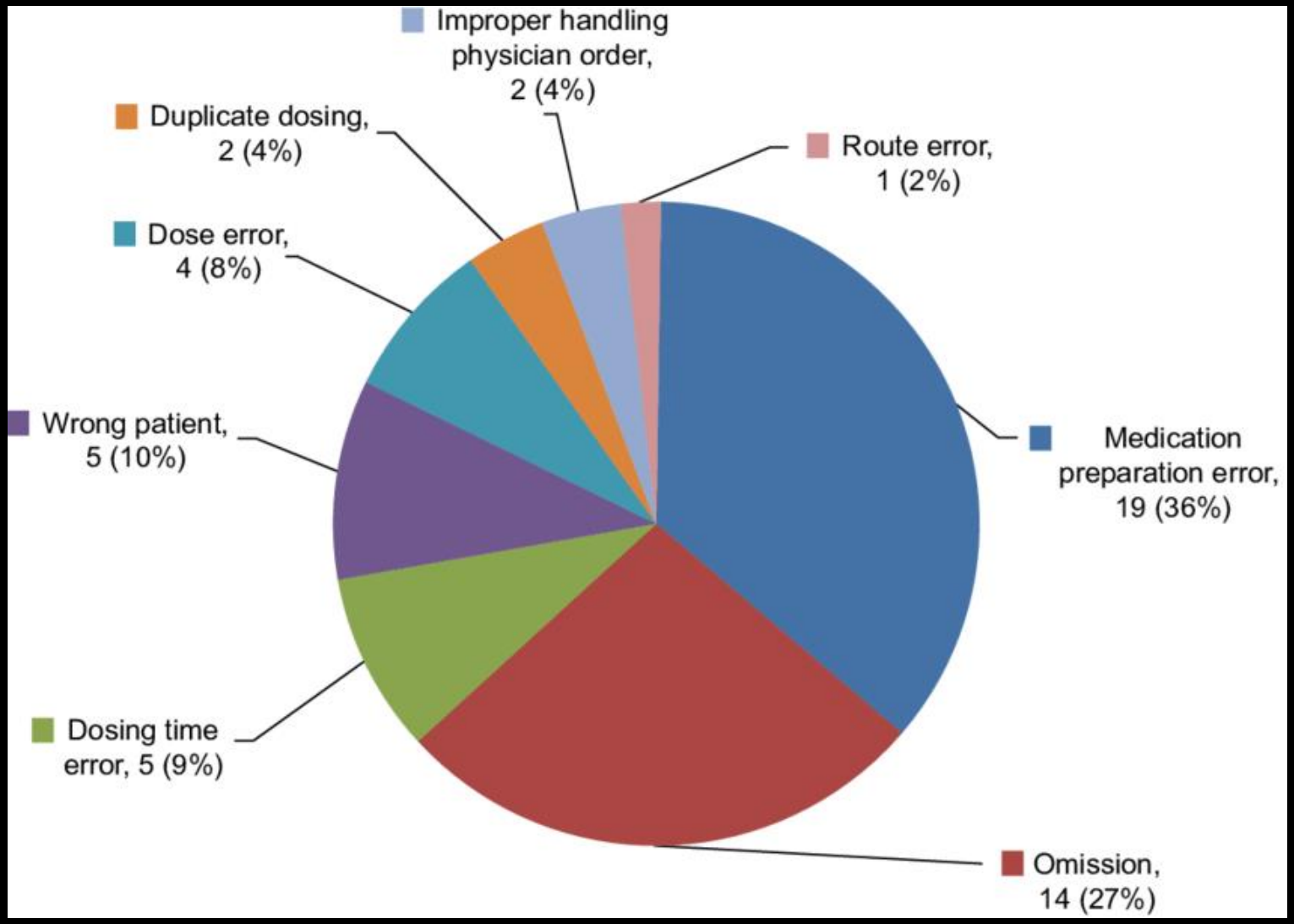
3.5. Event reporting procedures (i.e. medication errors, adverse effects, product integrity, MedWatch, near miss, root-cause analysis [RCA]

3.6 Hygiene and cleaning standard (i.e. handwashing, personal protective equipment (PPE), cleaning counting trays, countertop, and equipment)

Issues that require pharmacist intervention



3.4. Types of Medication Errors



3.5. Reporting Medication Errors

- Documenting pharmacy errors are important for improving the medication dispensing process

- Reporting medication errors can help identify system failures and prevent future errors

https://www.ismp.org/error-reporting/what-we-do-your-report

Reporting Medication Errors

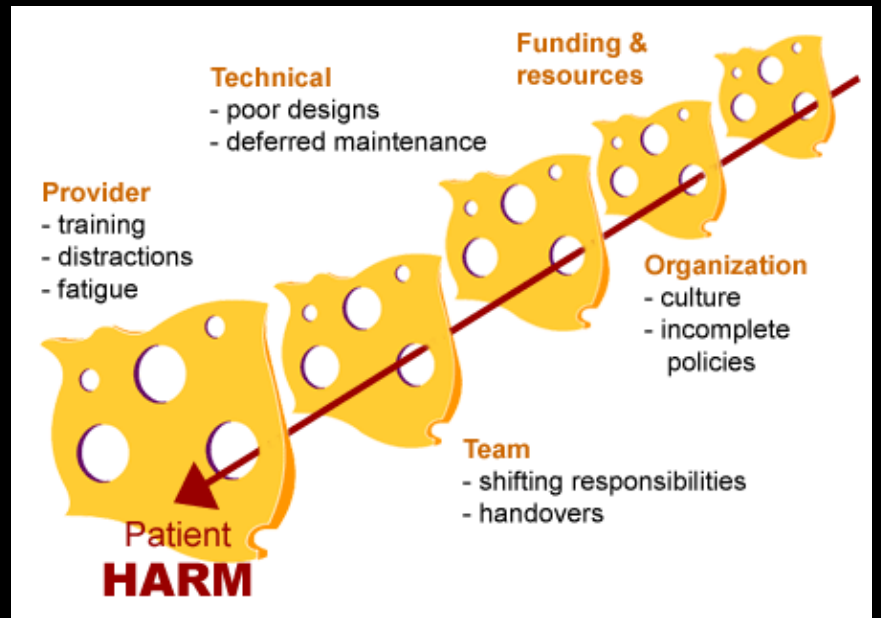
Medication Error Reporting System (MERP)	• Operated by ISMP and USP • Consumers and healthcare providers may report potential or actual medication errors confidentially
MedWatch	• Operated by FDA • Consumers and healthcare providers may voluntarily report medication errors
MedMARx	• Confidential medication error reporting program designed for hospitals • Shares prevention strategies with other health systems
The NY Patient Occurrence Reporting and Tracking System (NYPORTS)	• Operated by the New York Department of Health • Mandatory adverse event reporting system for healthcare providers

www.ismp.org/report-error/merp
www.accessdata.fda.gov/scripts/medwatch/index.cfm
www.medmarx.com
www.health.ny.gov/facilities/hospital/nyports

Near-miss medication errors

-Any event or situation that didn't produce patient injury, but only because of chance.

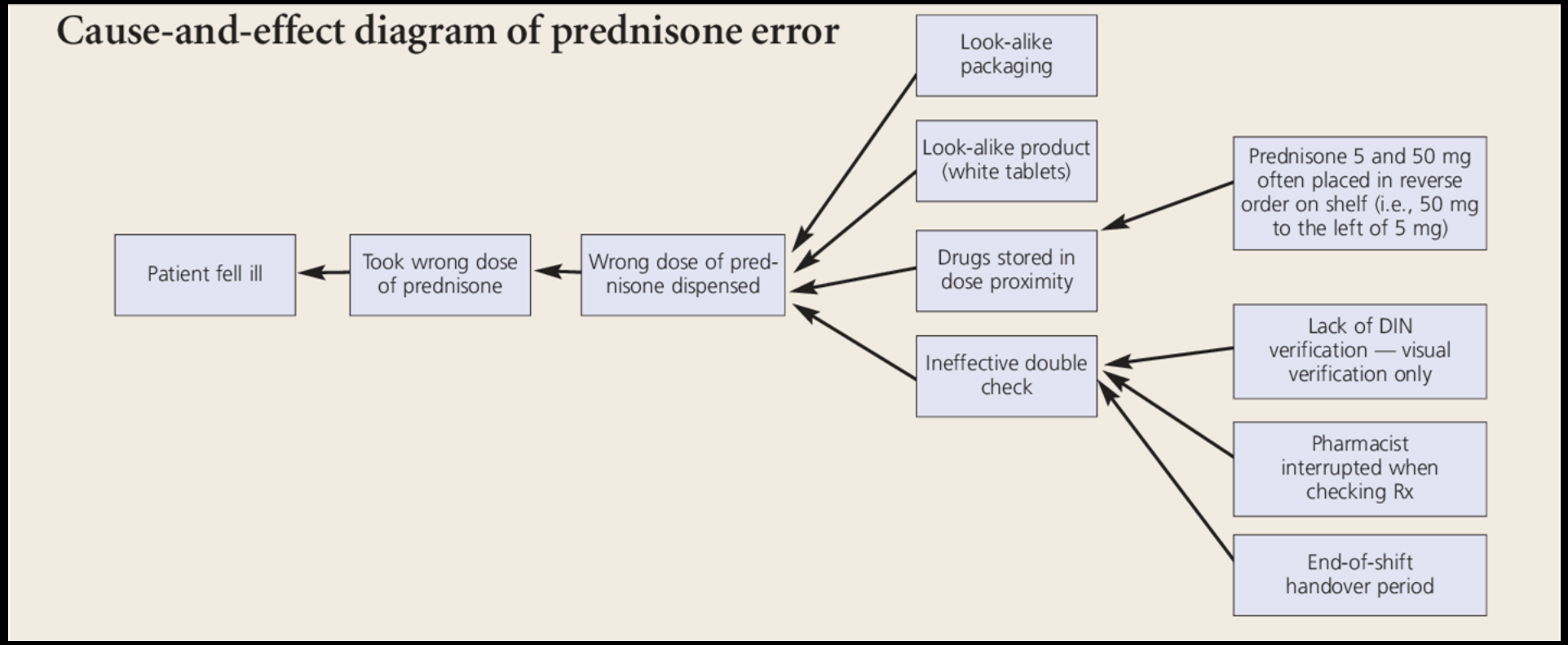
-For reporting purposes, a near miss is considered an error, as is a medication error that doesn't result in patient harm.
-Reporting of near-misses helps to avoid patient harm in the future.



Near-miss medication errors provide a wake-up call : Nursing2021. LWW.

Root cause analysis (RCA)

RCA is a popular and often-used technique that helps people answer the question of why the problem occurred in the first place.



MedWatch

- The FDA Safety Information and Adverse Event Reporting Program

- Allows medical professionals and the public to report medication errors and medical product injuries

Commissioner, O. of the. (n.d.). *MedWatch: FDA Safety Information & Adverse Event Reporting Program*. U.S. Food and Drug Administration.

3.6. Non-Sterile Compounding: Best Practices

- Ensure compounding area is clean and sanitary before compounding:

Clean your workspace before and after product preparation

Remove jackets, sweaters, and jewelry

Wash hands and arms with soap and water

Follow your pharmacy's cleaning and garbing procedures

www.ashp.org/DocLibrary/BestPractices

Patient Safety Take-Aways

- Know the FIVE RIGHTS of medication administration
- Identify types of medication errors
- Know how to report a medication error at your institution
- Participate in root cause analysis
- Exercise best practices of non-sterile compounding

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