Non-Sterile Compounding
Implementation of NAPRA Standards

Gwen Liu, RPh, BSc Pharm, ACPR, PharmD

Pharmacy Project Manager, Hamilton Health Sciences

Disclosures

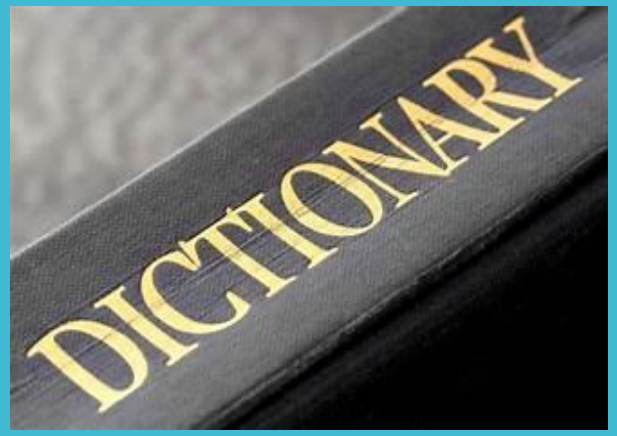
- I have no real or potential conflict of interest to disclose

Learning Objectives

- Review NAPRA non-sterile compounding definition
- Review history and rationale for non-sterile compounding standards
- Review requirements in NAPRA non-sterile compounding standards
- Review implementation deadlines for OCP
- Share Hamilton Health Sciences experience in implementing the NAPRA standards

- Non-sterile Compounding Definition
- Why is this important?
- NAPRA Non Sterile Preparations Implementation Plan
  - Phase 1: Risk and Gap Analysis
  - Phase 2: Personnel Training and QA
  - Phase 3: Facilities and Equipment

Non-sterile Compounding Definition



Non-Sterile Compounding:

"The mixing together of two or more ingredients (one is a pharmacologically active component) to create a final product in an appropriate form for dosing."

- can involve raw materials or the alteration of the form and strength of commercially available products.
- can include reformulation to allow for a novel drug delivery. "

Compounding **does not** include mixing, reconstituting, or any other manipulation that is performed in accordance with the directions for use on an approved drug's labelling material

Health Canada, Health Products and Food Branch Inspectorate. *Policy on manufacturing and compounding drug productsin Canada (POL-0051)*. Ottawa, ON: Health Canada; 2009. Available from: http://www.hc-sc.gc.ca/dhp-mps/compliconform/gmp-bpf/docs/pol_0051-eng.php

Non-sterile Compounding Definition

Solid oral preparations

Liquid oral preparations

Rectal preparations

Vaginal preparations

Topical (creams, gels, irrigations for non-internal and non-surgical body cavities)

Nasal and sinus preparations

Otic preparations


"We combined all your medications into ONE convenient dose."
NICKEL

How did we get here?

- NAPRA first developed "Guidelines to Pharmacy Compounding" in 2006
  - Based on the USP 27-NF 22 (2004)– Pharmacy Compounding Practices
- 2012: fungal meningitis outbreak due to contaminated sterile compound
- 2013: chemotherapy underdosing incident (Ontario and New Brunswick)
- Renewed emphasis on compounding safety
- 2016: Published Model Standards for Pharmacy Compounding of Hazardous and Non Hazardous Sterile Compounding

Why is this important?

- 2016 - Compounding tragedy in Ontario
- 2018 - NAPRA published Model Standards for Pharmacy Compounding of Non Sterile Preparations standards

Toronto · **GO PUBLIC**

Parents find son's lifeless body after pharmacy switches sleep medication for toxic dose of another drug

Boy's mother wants legislation that would force pharmacies to make prescription errors public

Rosa Marchitelli · CBC News ·
Posted: Oct 20, 2016 5:00 AM ET | Last Updated: October 21, 2016

Eight-year-old Andrew Sheldrick died after the pharmacy that dispensed his sleeping medication accidentally switched it for something else. He was found dead the morning after taking the wrong medication. (submitted by Melissa Sheldrick)

Eight-year-old Andrew Sheldrick went to bed on Saturday, March 12, after his mom gave him what she thought was his usual dose of medication for a sleep disorder. When his dad went to wake him in the morning, he found the boy dead.

"They did let us know that there was no amount of intervention that could have saved him. He had been gone for several hours by the time we found him," Andrew's mom, Melissa Sheldrick told Go Public.

For four and a half months, the family didn't know what caused Andrew's death.

Then in late July, a coroner's report concluded Andrew had not taken Tryptophan, the sleep medication he'd been prescribed, but Baclofen, a muscle relaxant drug used to treat muscle spasms caused by conditions such as multiple sclerosis.

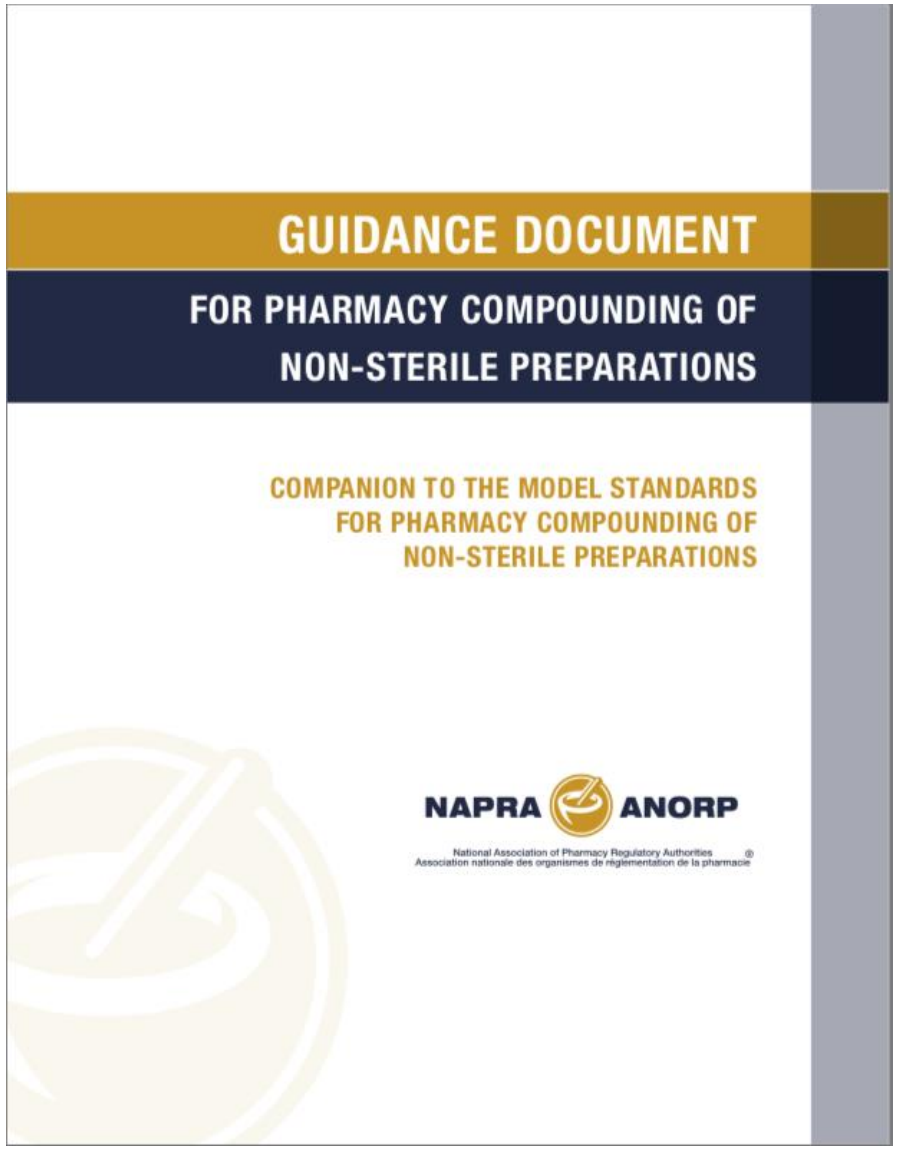
Boy had nearly 3 times the toxic dose in his system

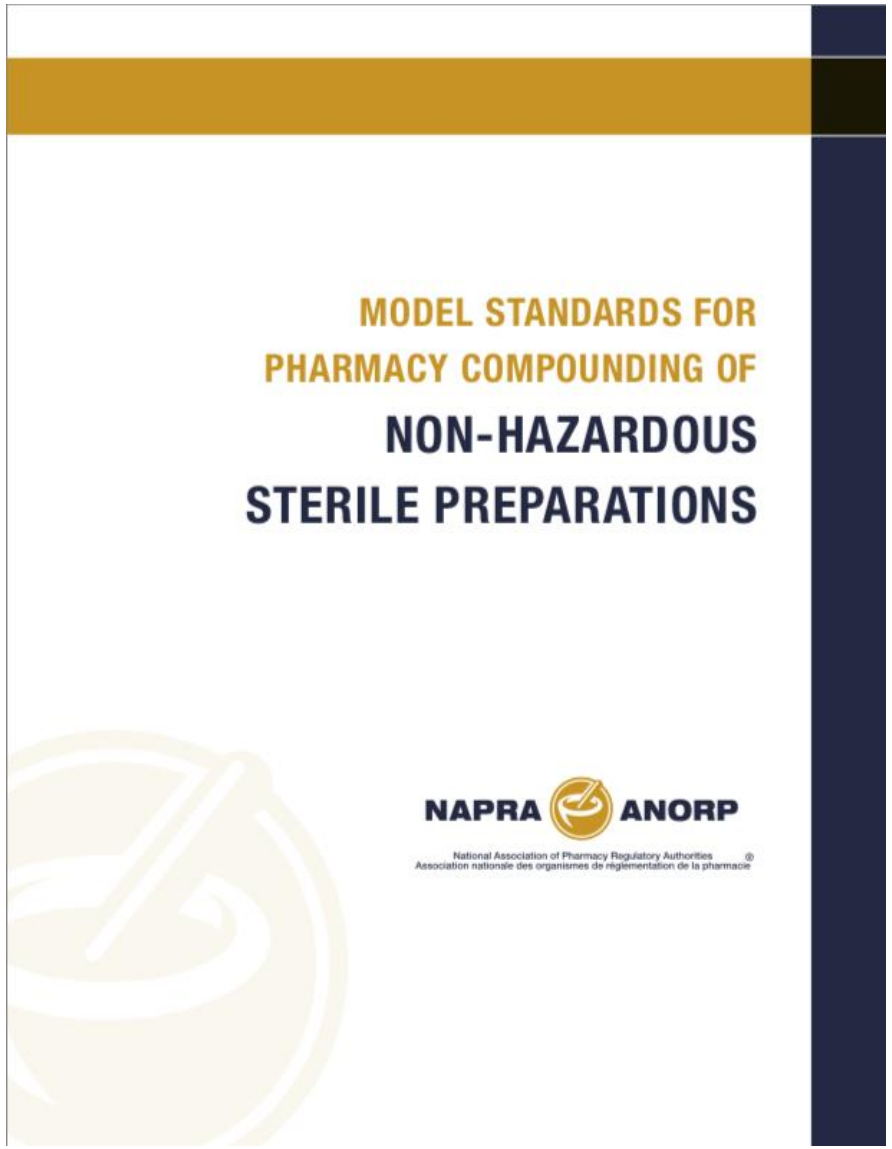
The coroner found the boy had almost three times the dose of Baclofen in his system that would be toxic to an adult, and no trace of the sleep drug Tryptophan.

NAPRA Non-sterile Compounding Standards

- Model Standards for Pharmacy Compounding of Non-sterile Preparations published in 2018
  - Adaptation of USP 795 standards and Adaptation of Ordre des pharmaciens du Quebec
  - Model Standards for Pharmacy Compounding of Non-Sterile Preparations
    - Model Standards
    - Guidance Document

ORDRE DES
PHARMACIENS
DU QUÉBEC

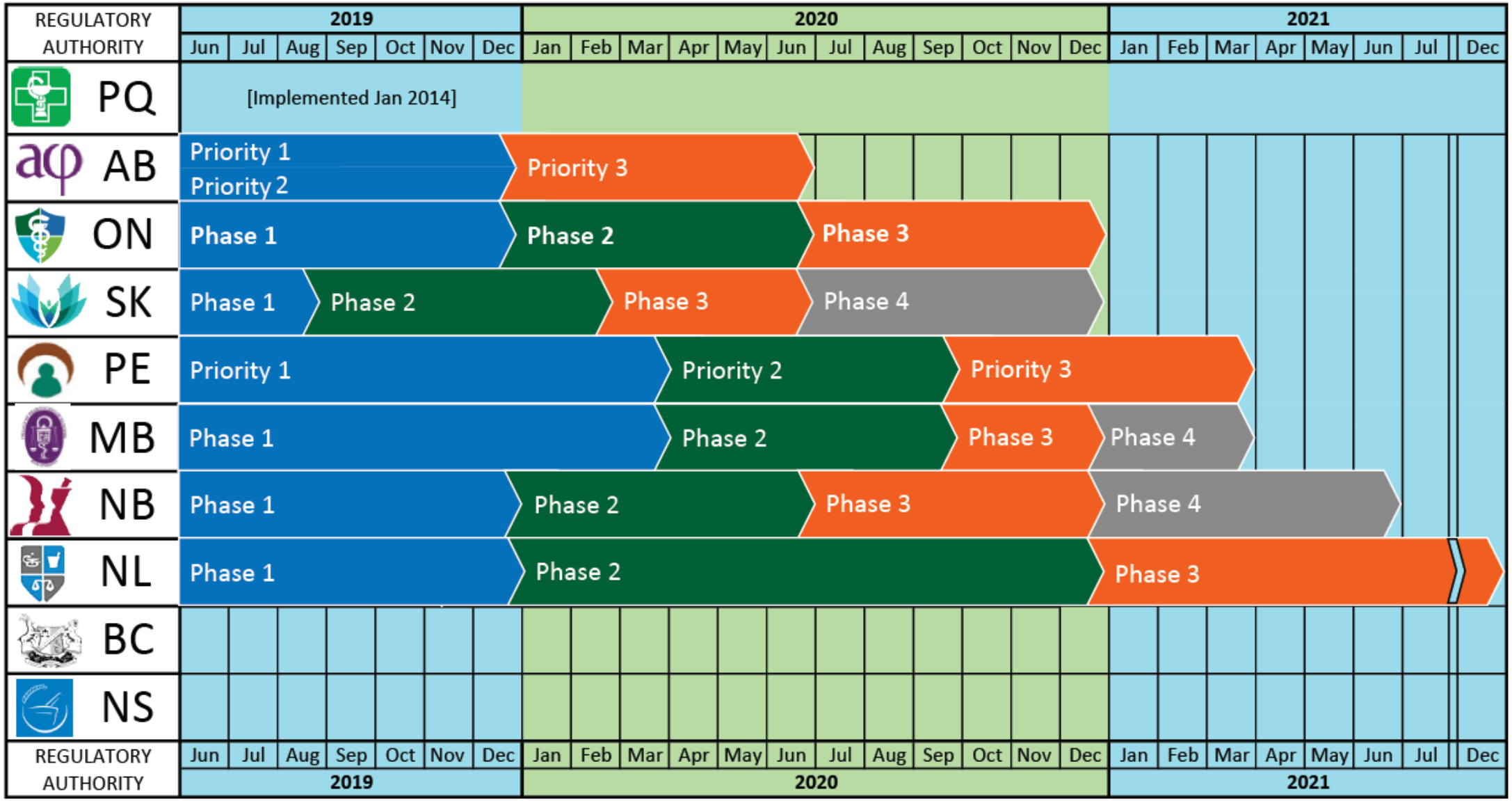




https://napra.ca/general-practice-resources/guidance-document-pharmacy-compounding-non-sterile-preparations

What is happening across Canada?

Implementation Across Canada



Ontario College of Pharmacists

- **Phase 1**: January 1, 2020 – Assessing Risks and Gaps
  - Evaluate current practices and determine what areas require work in order to be compliant with standards
- **Phase 2:** July 1, 2020 – Personnel Training and Quality Assurance
  - Highest workload
- **Phase 3:** January 1, 2021 – Facilities and Equipment
  - Planning

Where do I begin?

How do I Prepare for Implementation of the Upcoming Standards?

Phase 1:

- Gap Analysis
- Risk Assessment

Phase 2:

- Policies & Personnel
- Training
- Master Formulations
- Beyond Use Dates
- Label and Packaging
- Storage
- Unpacking/storage
- Cleaning
- Quality Assurance

Phase 3: Facilities

Phase 1

Assessing Risks and Gaps

Gap Analysis

- Self-Assessment Criteria for Non-Sterile Compounding Standards can be found on OCP website

Ontario College of Pharmacists
Putting patients first since 1871

PRINT

CLEAR FORM

Non-Sterile Compounding Standards – Self Assessment Criteria

The following chart outlines key NAPRA Model Standards for Pharmacy Compounding of Non-Sterile Preparations, divided by sections, with each statement in the first column representing a specific standard to be met. The guidance column references the corresponding sections of the accompanying NAPRA Guidance Document for Pharmacy Compounding of Non-sterile Preparations ("Guidance Document" or GD) and illustrates specific insights or activities required to ensure adherence to the standard.

This document is provided to assist practitioners in understanding expectations, conducting a gap analysis to current processes, and preparing for full implementation of the Standards. For each standard, check the guidance that your pharmacy has in place and continue to work on achieving the remaining criteria prior to the implementation date.

Section 2: Objectives and Section 3: Regulatory Framework	
STANDARD	**GUIDANCE**
The pharmacist or pharmacy technician uses professional judgement to determine if non-sterile compounding is appropriate.	☐ The pharmacist or pharmacy technician must consider the general guidance in Section 2.1 of the Guidance Document when determining whether to compound a non-sterile preparation. **GD – Section 2.1**
	☐ The pharmacist must have an established patient-healthcare professional relationship prior to prior to compounding a non-sterile product for the patient. **GD – Section 3**
	☐ Review the questionnaire in Section 3.1 of the Guidance Document, which provides general guidelines to differentiate between non-sterile compounding and manufacturing activities. **GD – Section 3.1**
	☐ Pharmacy staff should review the Article -- *Compounding: Are you doing it?* (Pharmacy Connection Winter 2018)
	☐ Pharmacy staff should review the *Policy on Manufacturing and Compounding Drug Products in Canada* (POL-00051) on the Health Canada website.

Gap Analysis: Current State

- Regulatory Framework
- Risk Assessment for Compounding
- Requirements for All Compounding Activities
  - non-sterile compounding supervisor
  - establish policies and procedures
  - training
  - facilities and equipment
- Product and Preparation Requirements
  - BUD
  - Master formulation/compounding records
  - Verification
  - Labelling and packaging
  - Recall
- Quality Assurance
- Requirements for hazardous preparations

Gap Analysis

Hamilton Health Sciences

- Developed gap analysis document capturing current state of all sites
- Combination of OCP Regulations and Guidance Document
- STARTING POINT – areas of biggest risk

Green = Meets
Orange = Awaiting Info
Red = Do Not Meet
Yellow = Partially meets

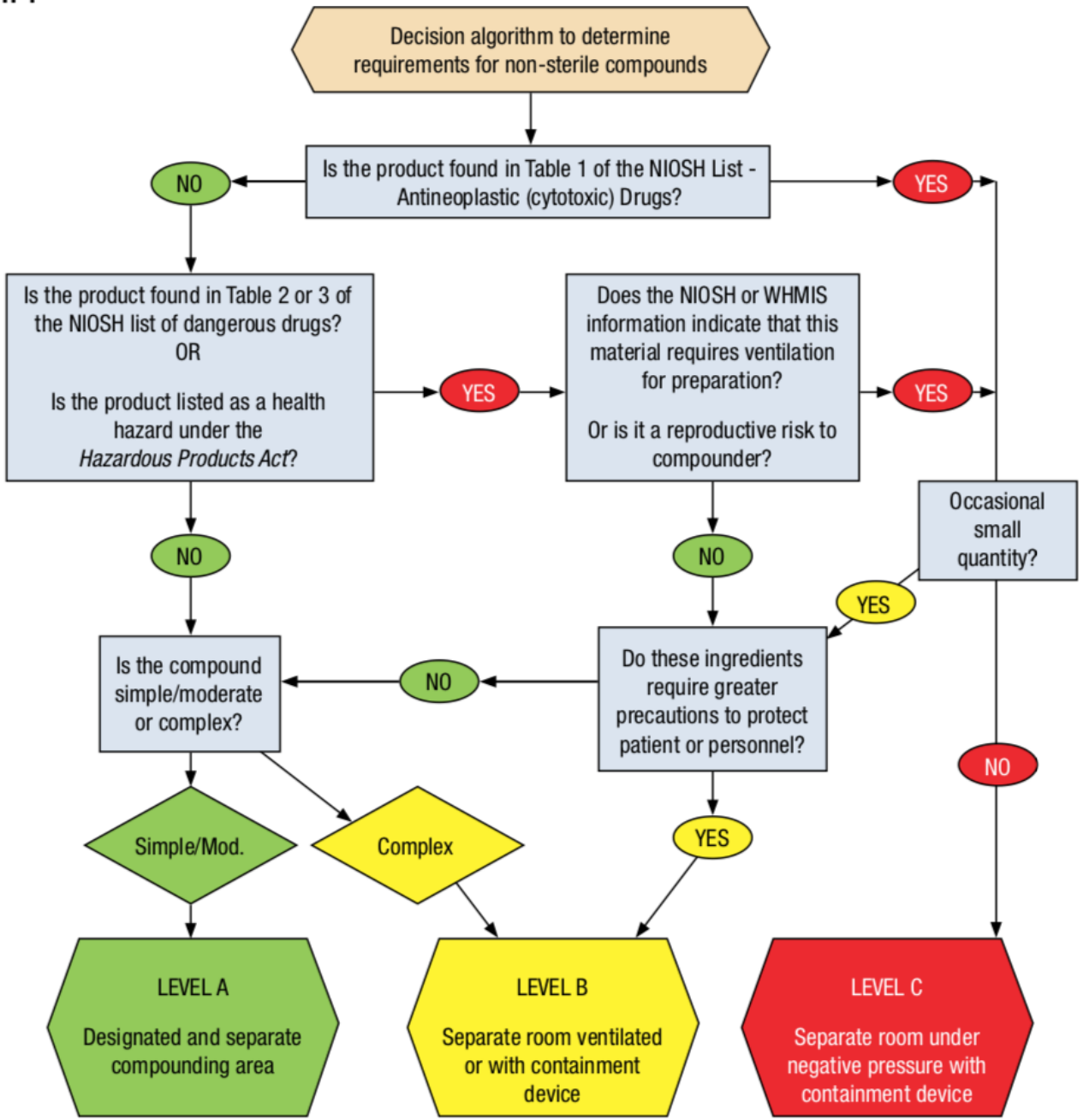
GAP ANALYSIS OF HAMILTON HEALTH SCIENCES

			Current State					
Criteria #	Criteria Statement	Criteria Musts	JH - Non Hazardous	JH hazardous	MUMC	HGH	SPH	WLMH
	Conduct a risk assessment for compounding non-sterile preparations, covering risk to preparation and risk to person(s).	The preparation must be compounded in an area free of interruption from other activities in the surrounding space	DNM	Meet	DNM	DNM	Meet - closed space - narcotics in same area, inventory unpacking area is located in the same place so could contaminate area with dust and particulate	DNM
		The area must be large enough for compounding equipment and ingredients. There must be room to store equipment and products in an orderly manner, in clean and secure surroundings	Meet	Meet	Meet	DNM - open shelving - not orderly	Meet - open shelving	N/A
		The compounder must ensure that nothing in the surrounding area (either personnel, objects or materials) contaminates the preparation being compounded	DNM	Meet	Meet	DNM - contaminated - surface non porous, chips on corners and sides	Meet	N/A
		The compounder must be protected from materials that may be hazardous or harmful	Meet	Meet	Meet	Meet	Meet	N/A
		The compounding area must be contained, so that it does not create a hazardous environment for others	DNM	Meet	Meet	Meet - do not do hazardous products	Meet	N/A
	Document the risk assessment, clearly explaining how risk to preparation and risk to person(s) have been mitigated.	Rationale for risk assessment and mitigation must be documented on the Master Formulation Record Procedures for mitigating risk must be documented on the Master Formulation Record Rationale and procedures must be referenced Rationale and procedures must be clear to all Rationale and procedures must be reviewed at least every 12 months	Meet - non sterile compounding committee reviewing MFR - rationale needs to be included for compounding hazardous products (meagan - lead), review every 12 months, process needs to be created	Meet	Meet	N/A	Meet	N/A
	Implement the level of requirements commensurate with the risk.	Level A Simple and moderate compounds : Separate space designated for compounding	DNM	N/A	PM (fridges to be moved to area creating more traffic)	DNM	Meet - better space proposed in designated room away from traffic and inventory	N/A
		Level B Complex compounds, Separate, well-ventilated room Larger workspace and appropriate equipment Environment conducive to few or no interruptions Greater protection from cross-contamination	PM - need appropriate equipment, designated work space for non sterile.Frequent interruptions	N/A	DNM	N/A	N/A	N/A

Risk Assessment

Guidance document – Diagram 4.2

Diagram 1



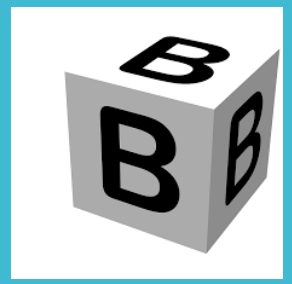
Risk Levels of Non-sterile Compounds

- **Level A**
  - Simple and moderate compounds as defined in USP 795 and Health Canada
  - "Simple"
    - Peer reviewed journal article for preparation
      - specific quantities of all compound
      - compounding procedure
      - equipment
      - stability data
      - appropriate BUDs;
  - OR reconstituting or manipulating commercial products that may require the addition of one or more ingredients as directed by the manufacturer
  - Example: dexamethasone oral suspension

Risk Levels of Non-sterile Compounds

- **Level A cont'd**
  - **"moderate"**
    - Special calculations or procedures to determine quantities of components per preparation
    - Stability data for specific formulation may not be available
    - Example: mixing 2 manufactured creams together with no stability data

Risk Levels of Non-sterile Compounds



- **Level B**
  - Complex compounds as defined in USP 795
  - "complex"
    - Making a preparation that requires special training, environment, facilities, equipment, and procedures to ensure appropriate therapeutic outcomes.
    - Example: transdermal, suppositories
  - Small quantities of ingredients or preparations that require ventilation and are compounded occasionally

Risk Levels of Non-sterile Compounds

- **Level C**
  - Hazardous drugs classified by National Institute for Occupational Safety and Health as Group 1
  - Hazardous materials classified by Workplace Hazardous materials Information System (WHMIS) as representing a health hazard, such as those that are irritating to the respiratory tract, the skin or mucous membranes
  - NIOSH Group 2 and 3 drugs for which large quantities of active pharmaceutical ingredients are used routinely
  - Example: azathioprine oral suspension, tacrolimus oral suspension

Risk Assessment

- Level B issues
  - Definition of frequency
  - Occasional small quantity?
  - HHS removed Level B (room for interpretation)
- Level C facility available?
  - Consider outsourcing
- Utilize MSDS sheets for risk assessment
- Review required every 12 months

Phase 2 - July 2020

Personnel Training and Quality Assurance

Roles and responsibilities

- **Non-sterile compounding supervisor**
  - Develop, organize, oversee non-sterile compounding
  - Ensure staff are trained and know policies and procedures
  - Ensures risk assessment is performed for each preparation
  - Ensures appropriate facilities, equipment and references are available for use
  - Ensures master formulation records and BUDs are developed using scientific references
  - Ensure quality assurance program in place

Roles and responsibilities

- **Compounding staff must:**
  - Compound according to approved formulas
  - Comply with policies and procedures
  - Ensure all compounding standards have been met
  - Hazardous training for storage, handling, and disposal of drugs

Develop Policy and Procedures

Must review every 3 years

Hamilton Health Sciences	Page 1 of 11
Posting Date: 2018-09-27 **Posting History Dates:** **Next Review Date:** 2021-09-27	
Title: PHARM- Non-Sterile Compounding Policy	

Applies to: Hamilton Health Science Pharmacy Staff Only.

1.0 Purpose

To outline procedures based on current standards with best practice for safe preparation and compounding of non-sterile pharmacy products by HHS pharmacists and pharmacy technicians.

2.0 Equipment/Supplies

- Balances and Weights
- Appropriate labels
- Appropriate bulk or patient specific containers and supplies for compounding and storage
- Purpose-built refrigerators to store medications in pharmacy
- Glass or stainless steel work surfaces ideal as they are non-reactive, additive or absorptive
- Personal Protective Equipment (PPE)
- Chemo pads if appropriate for hazardous or chemo decanting.
- Biological Safety Cabinet (BSC) for hazardous compounding
- Laminar Flow Hood

3.0 Policy

3.1 General Statements

3.1.1 Hamilton Health Sciences provides a safe working environment for all staff and patients. Pharmacy compounded non-sterile preparations are identified and labeled according to current established standards to ensure safety of the pharmacy work environment for staff.

3.1.2 Non-sterile compounding is considered the preparation by mixing and assembling of a medication. This includes proper labeling. Compounded non-sterile products include but are not limited to the following types of medications: oral liquids, oral powders, creams, ointments, other topical products (i.e. gels, lotions, powders, and emulsions), suppositories, mouthwash, sachets, tablets and capsules.

3.2 Responsibilities

3.2.1 **Pharmacy Site Manager**

- The pharmacy manager is responsible for developing, organizing and supervising all activities related to pharmacy compounding of non-sterile preparations.
- If these responsibilities are assigned to a pharmacist or pharmacy technician, the

Training

Table 1

#	ELEMENTS TO COVER IN TRAINING OF COMPOUNDING PERSONNEL			
1.	**FOR THE COMPOUNDING OF NON-STERILE PREPARATIONS**	**PH**	**PT**	**NR**
1.1	Know the relevant federal/provincial/territorial legislation and regulations related to pharmacy compounding, as well as other governing standards, guides or guidelines.	X	X	
1.2	Know and apply all policies and procedures related to the pharmacy compounding of non-sterile preparations, especially those related to hand hygiene, personal protective equipment, airflow principle, facilities, material, equipment, behaviour of personnel in compounding rooms, forms and logs to be completed, labelling, storage, distribution to patients, quality controls (sampling), and maintenance and cleaning of compounding areas.	X	X	X
1.3	Know physical and chemical properties, such as stability, physical–chemical compatibility and incompatibility, osmolality and osmolarity.	X		
1.4	Know pharmaceutical and medical abbreviations.	X	X	X
1.5	Know and understand the importance of particulate and microbial contamination.	X	X	X
1.6	Perform pharmacy non-sterile compounding tasks meticulously, precisely and competently.	X	X	X
1.7	Know the operation and correct use of equipment, materials and automated instruments available for the non-sterile preparations to be compounded. Know how to calibrate the equipment and instruments used.	X	X	X
1.8	Be able to recognize errors in the compounding technique of compounding personnel.	X	X	
1.9	Have a good command of the pharmaceutical calculations required to compound non-sterile preparations.	X	X	X
1.10	Understand the importance of and apply accurate measurements.	X	X	X
1.11	Apply cleaning measures for non-sterile preparation compounding rooms, facilities and materials.	X	X	X
1.12	Know the data to be monitored in controlled rooms (temperature, pressure) and document the data in the appropriate logs. Know and apply the corrective measures to be applied when irregularities are identified.	X	X	X
1.13	Know how the secondary ventilation system (heating, ventilation and air conditioning system) operates. Know, apply or enforce appropriate corrective measures when an irregularity is identified.	X	X	X
1.14	Know and apply quality assurance measures for the various compounded non-sterile preparations.	X	X	
1.15	Know and follow the verification process.	X	X	X
1.16	Know and use the incident/accident documentation logs.	X	X	X
1.17	Know drug delivery systems.	X	X	X
1.18	Perform a risk assessment to determine level of risk.	X	X	
1.19	Determine beyond-use date.	X	X	
1.20	Develop Master Formula.	X	X	
2.	**FOR THE COMPOUNDING OF HAZARDOUS NON-STERILE PREPARATIONS**	**PH**	**PT**	**NR**
2.1	Have the competency required to compound non-sterile preparations.	X	X	X
2.2	Identify hazardous products in the composition of non-sterile preparations.	X	X	X
2.3	Know and apply deactivation and decontamination measures.	X	X	X
2.4	Know and use the protection measures necessary to avoid exposure to hazardous products.	X	X	X

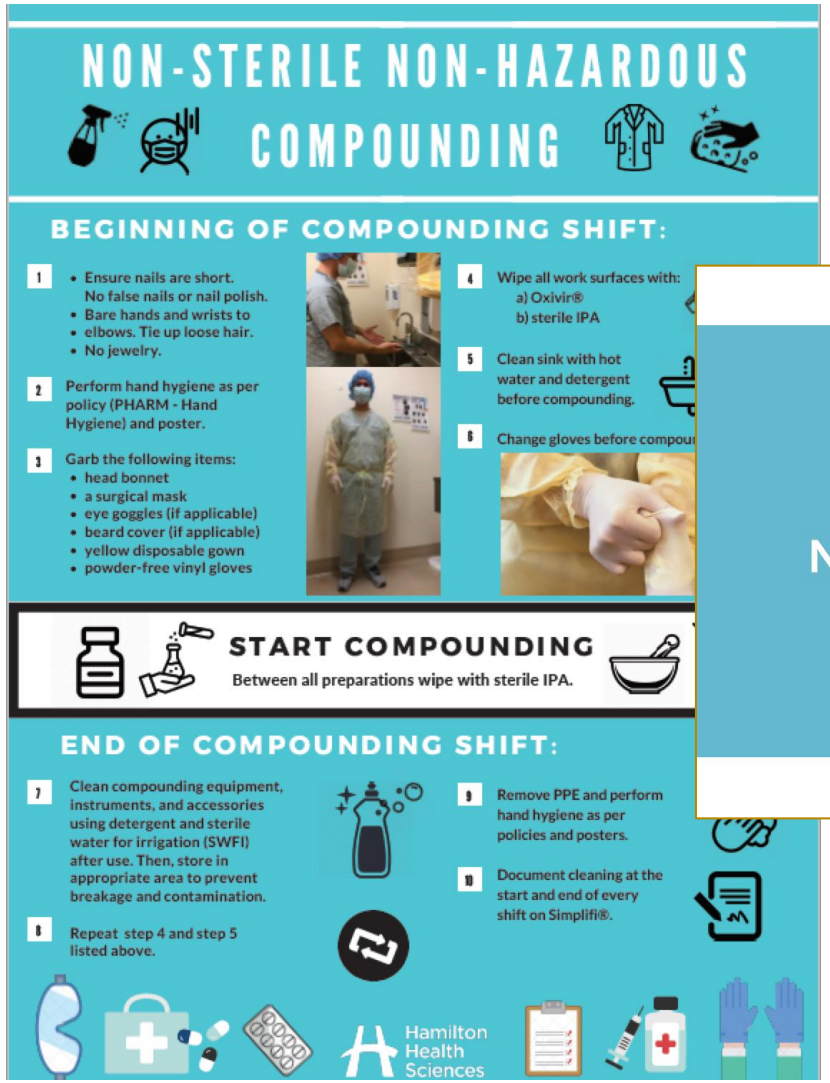
NATIONAL ASSOCIATION OF PHARMACY REGULATORY AUTHORITIES (NAPRA)

- Designate Non-sterile compounding supervisor
- Develop training materials
  - In-house vs outsourced options
- Annual evaluation of compounding staff

Training

- Compounding staff:
  - Training program
  - Skills assessment program
  - Documentation
- Cleaning personnel:
  - Properly trained

Develop Training Materials



Master Formulation Records

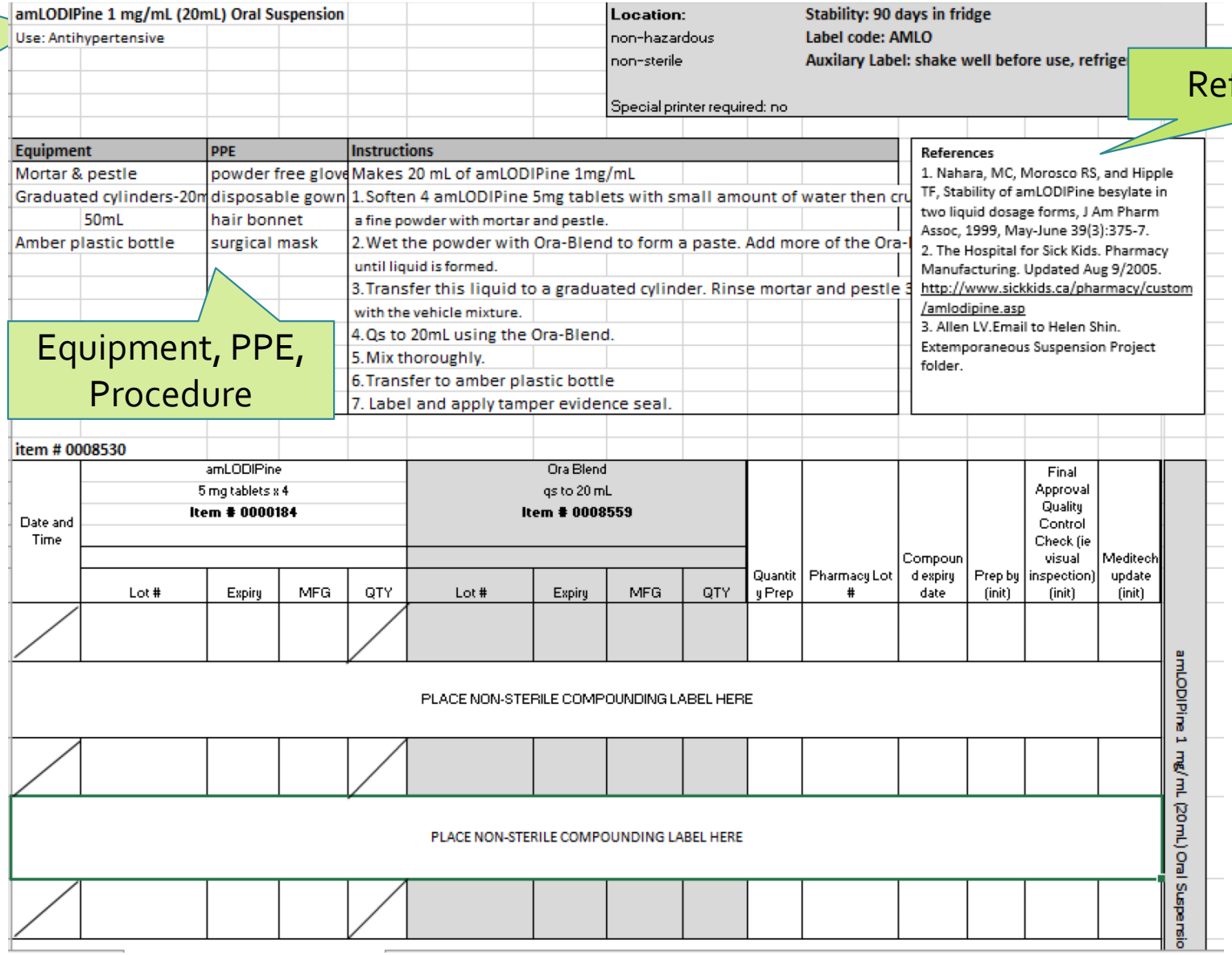
Refer to Guidance Document for required components of Master Formulation

Name, Concentration, Form, Route

Preparation Area, Stability, Storage, Labelling

References

Equipment, PPE, Procedure



amLODIPine 1 mg/mL (20mL) Oral Suspension

Use: Antihypertensive

Location: non-hazardous non-sterile

Special printer required: no

Stability: 90 days in fridge

Label code: AMLO

Auxilary Label: shake well before use, refrige

Equipment	PPE	Instructions
Mortar & pestle	powder free glove	Makes 20 mL of amLODIPine 1mg/mL
Graduated cylinders-20m	disposable gown	1. Soften 4 amLODIPine 5mg tablets with small amount of water then cru
50mL	hair bonnet	a fine powder with mortar and pestle.
Amber plastic bottle	surgical mask	2. Wet the powder with Ora-Blend to form a paste. Add more of the Ora-
		until liquid is formed.
		3. Transfer this liquid to a graduated cylinder. Rinse mortar and pestle 3
		with the vehicle mixture.
		4. Qs to 20mL using the Ora-Blend.
		5. Mix thoroughly.
		6. Transfer to amber plastic bottle
		7. Label and apply tamper evidence seal.

References

1. Nahara, MC, Morosco RS, and Hipple TF, Stability of amLODIPine besylate in two liquid dosage forms, J Am Pharm Assoc, 1999, May-June 39(3):375-7.
2. The Hospital for Sick Kids. Pharmacy Manufacturing. Updated Aug 9/2005. http://www.sickkids.ca/pharmacy/custom/amlodipine.asp
3. Allen LV.Email to Helen Shin. Extemporaneous Suspension Project folder.

item # 0008530

Date and Time	amLODIPine 5 mg tablets x 4 **Item # 0000184**				Ora Blend qs to 20 mL **Item # 0008559**				Quantity Prep	Pharmacy Lot #	Compound expiry date	Prep by (init)	Final Approval Quality Control Check (ie visual inspection) (init)	Meditech update (init)
	Lot #	Expiry	MFG	QTY	Lot #	Expiry	MFG	QTY						

PLACE NON-STERILE COMPOUNDING LABEL HERE

PLACE NON-STERILE COMPOUNDING LABEL HERE

amLODIPine 1 mg/mL (20mL) Oral Suspensio

Master Formulation Records

- official or assigned name, strength and dosage form of the preparation
- expected yield
- calculations
- description and quantity of all ingredients
- compatibility and stability data, including references when available
- references used to develop the formula and the consultation date, as appropriate
- equipment needed to compound the preparation (and any special cleaning instructions)
- personal protective equipment (PPE)
- source or origin of the formula

Master Formulation Records

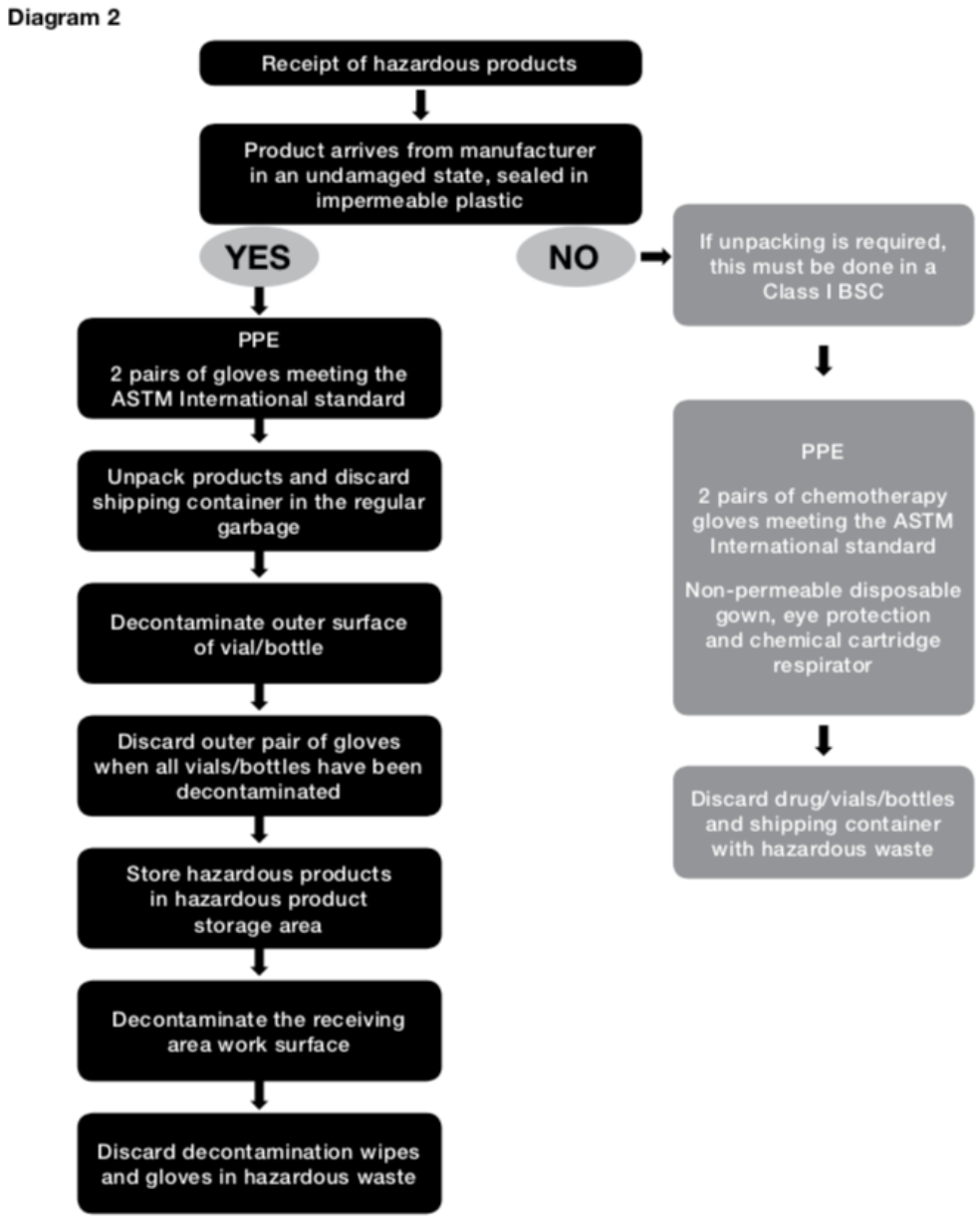
- mixing instructions, which may include:
  - order of mixing
  - mixing temperatures or other environmental controls
  - duration of mixing
  - other factors pertinent to replication of the preparation as compounded
- sample labelling information, which should contain, in addition to legally required information:
  - generic name and quantity or concentration of each active ingredient
  - assigned BUD
  - storage conditions
  - prescription or control number, whichever is applicable
- type of container used in dispensing
- packaging and storage requirements
- description of final preparation
- quality control procedures and expected results

Beyond Use Date:

Date after which a compounded preparation shall not be used

Type of Preparation	NAPRA Beyond Use Date
Non-aqueous formulation	6 months or earliest expiry of any active ingredient
Water-containing formulations	14 days F
Water-containing topical/dermal, mucosal liquid and semi-solid formulations	30 days

Unpacking Hazardous Products



- Unpacking hazardous undamaged state
  - double chemo gloves precautions
- Damaged hazardous products on arrival
  - C-PEC hood required
  - unpacking area adjacent to hazardous non sterile compounding area for C-PEC use

Storage

Non-Hazardous

- Must meet manufactures storage recommendations
- Prevent cross contamination
- Temperature & humidity controlled
- Closed cupboard system

Hazardous

- Area must be separate from unpacking area
- Dedicated room
- Negative pressure
- Well ventilated (12 ACPH to exterior)
- System to prevent spills
  - Best storage below counter height, drawers or shelves with lips
- Signage indicated hazardous

Cleaning

Develop cleaning working group

- Housekeeping
- Pharmacy Manager/Technician
- Infection control

Discussions:

- Cleaning chemicals/procedures required
  - disposable mop pads
- Cleaning personnel (RPhT vs housekeeping)
- Frequency of cleaning
  - Walls, shelves, sinks, counters, carts
- Increased costs?

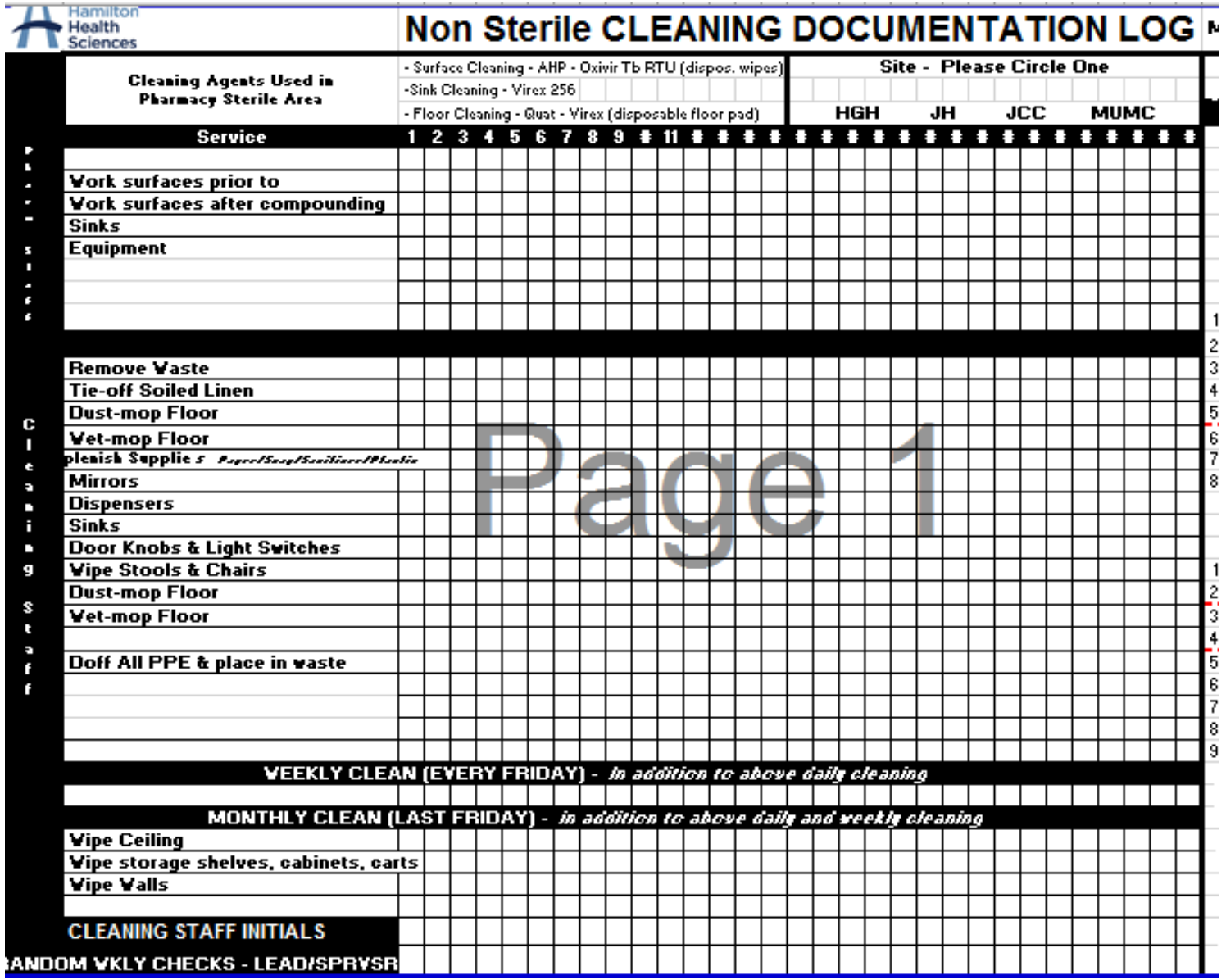
Cleaning

Develop daily cleaning procedures for compounding staff

- beginning of shift, during and after shift
- consider agents used to clean work surfaces and equipment
  - Purified water (USP 1231)
  - Cleansers for sink, work surfaces and equipment

Cleaning

Develop documentation logs



Hamilton Health Sciences

Non Sterile CLEANING DOCUMENTATION LOG

Cleaning Agents Used in Pharmacy Sterile Area	- Surface Cleaning - AHP - Oxivir Tb RTU (dispos. wipes) -Sink Cleaning - Virex 256 - Floor Cleaning - Quat - Virex (disposable floor pad)	Site - Please Circle One HGH JH JCC MUMC

Service	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
Pharmacist																															
Work surfaces prior to																															
Work surfaces after compounding																															
Sinks																															
Equipment																															
Cleaning Staff																															
Remove Waste																															
Tie-off Soiled Linen																															
Dust-mop Floor																															
Wet-mop Floor																															
Replenish Supplies *Paper/Soap/Sanitizer/Plastic*																															
Mirrors																															
Dispensers																															
Sinks																															
Door Knobs & Light Switches																															
Wipe Stools & Chairs																															
Dust-mop Floor																															
Wet-mop Floor																															
Doff All PPE & place in waste																															
WEEKLY CLEAN (EVERY FRIDAY) - *in addition to above daily cleaning*																															
MONTHLY CLEAN (LAST FRIDAY) - *in addition to above daily and weekly cleaning*																															
Wipe Ceiling																															
Wipe storage shelves, cabinets, carts																															
Wipe Walls																															
CLEANING STAFF INITIALS																															
RANDOM WKLY CHECKS - LEAD/SPRVSR																															

Quality Checks

- Accuracy
- Label
- Physical appearance (e.g. expected appearance,)
- Visual checks (e.g. emulsions – phase separation, separation, precipitation, cloudiness, discoloration, leakage)
- Container integrity (e.g. leaks, cracks, improper seals)

Quality Assurance

	Frequency	Calibration
Temperature & Humidity	Daily	Yearly
CPEC	Air Flow – Daily	Certified – 6 months Pre-Filter Inspection – 6 months
Training	Annually	
Cleaning	Daily	
Hazardous Wipe Sampling	Every 6 months	
Policy review	Every 3 years	
Equipment		As per manufacturer
Review Risk Assessment for non-sterile preparations	Yearly	

Phase 3 - Jan 2021

Personnel Training and Quality and Assurance

Establish Facility Requirements

Level A

- Separate space designated for compounding
- Closed door cabinets for storage
- Away from traffic
- Work surfaces – smooth, non-porous
- Stored off floor, well lit

- **Level B**
  - well ventilated, closed off room (minimum 12 air exchanges per hour) & negative pressure OR room with a ventilated containment device

Establish Facility Requirements

- **Level C**
  - Physically separate, externally vented room through HEPA filtration
  - 12 ACPH, negative pressure (-2.5 Pa)
  - CPEC – externally vented or have redundant HEPA filters in series (Class 1 BSC, Class 2 BSC or CACI)
  - Can use sterile chemo cleanroom with C-PEC (Class 2 B2 BSC) if:
    - Ensure all sterile compounding completed for day
    - Does not occur when sterile compounding in progress
    - Full decontamination and deactivation of hood clean required following completion

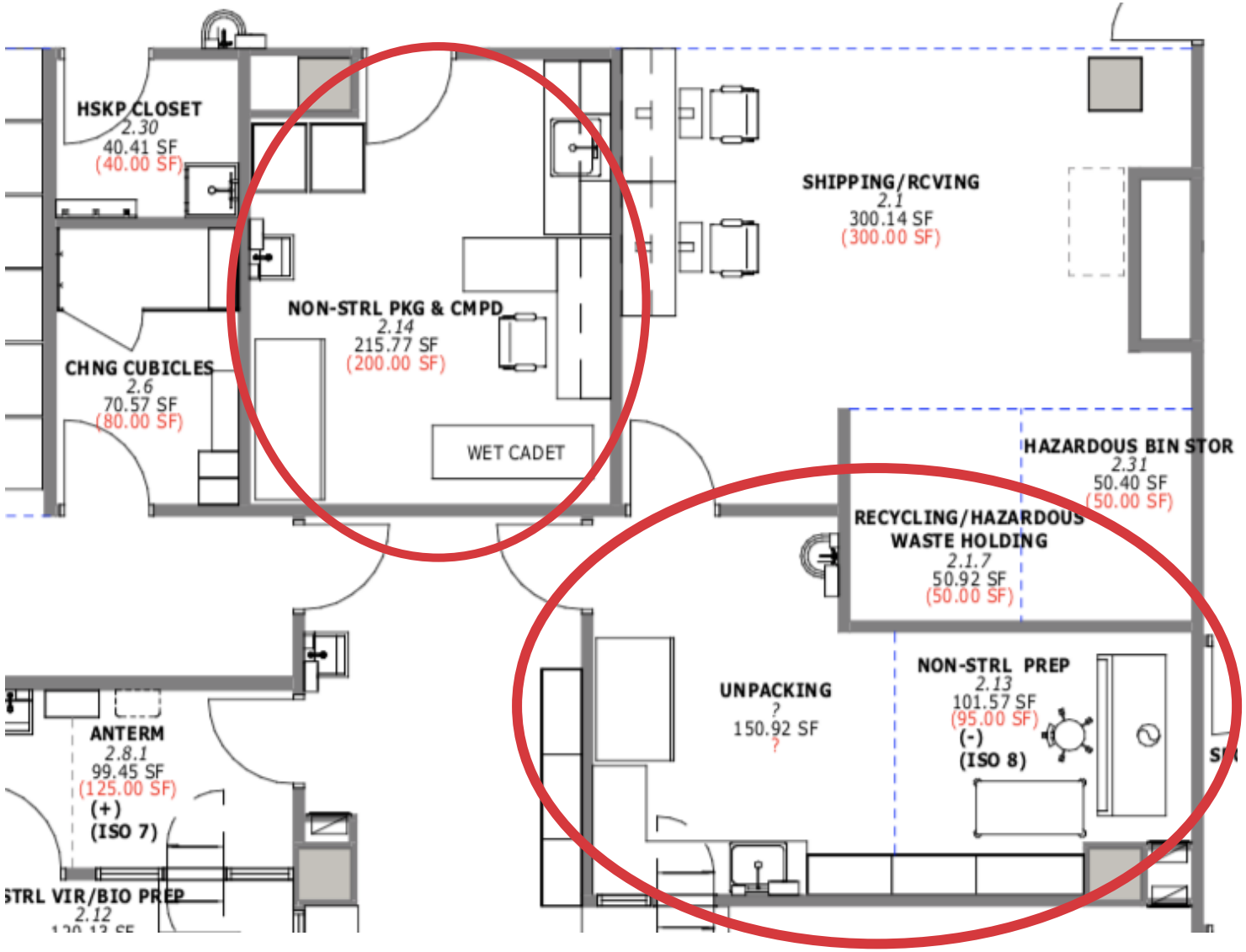
Establish Facility Requirements

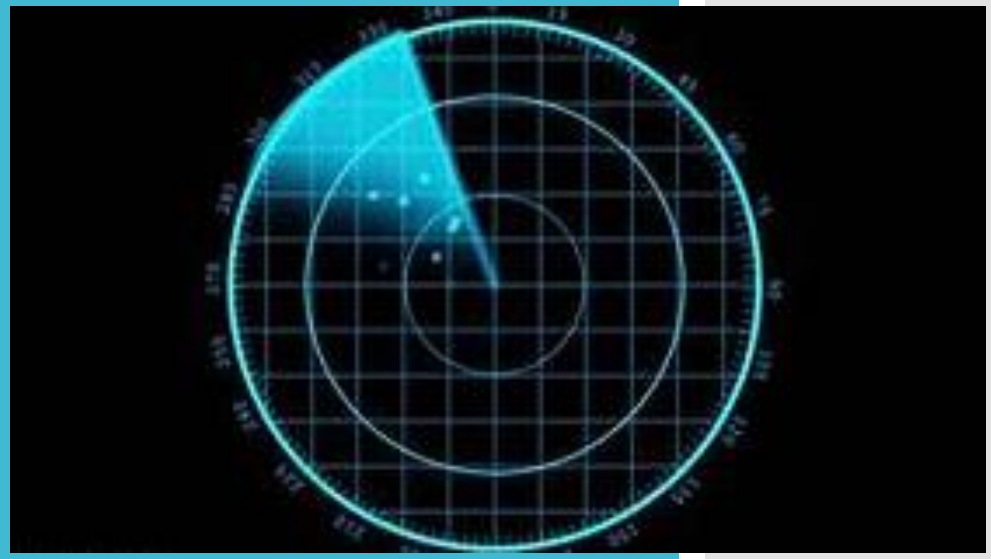
- **Level C cont'd**
  - Eyewash station
  - Appropriate area for unpacking products that appear damaged
  - Smooth impermeable surfaces resistant to cleaning products
  - Storage of hazardous products

Establish Facility Requirements

- Determine facility requirements
  - No minimum size requirement
  - Should be large enough for staff to work comfortably and safely with room to store equipment and products in orderly manner in clean and secure surroundings
- If multi-site organization, consider consolidation of sites
- Create business plan for corporate review if facilities do not meet standards
  - Early initiation
  - Ministry funding vs Capital funding
  - Fiscal year capital plan consideration
- Plan ahead! Takes time to receive funding.

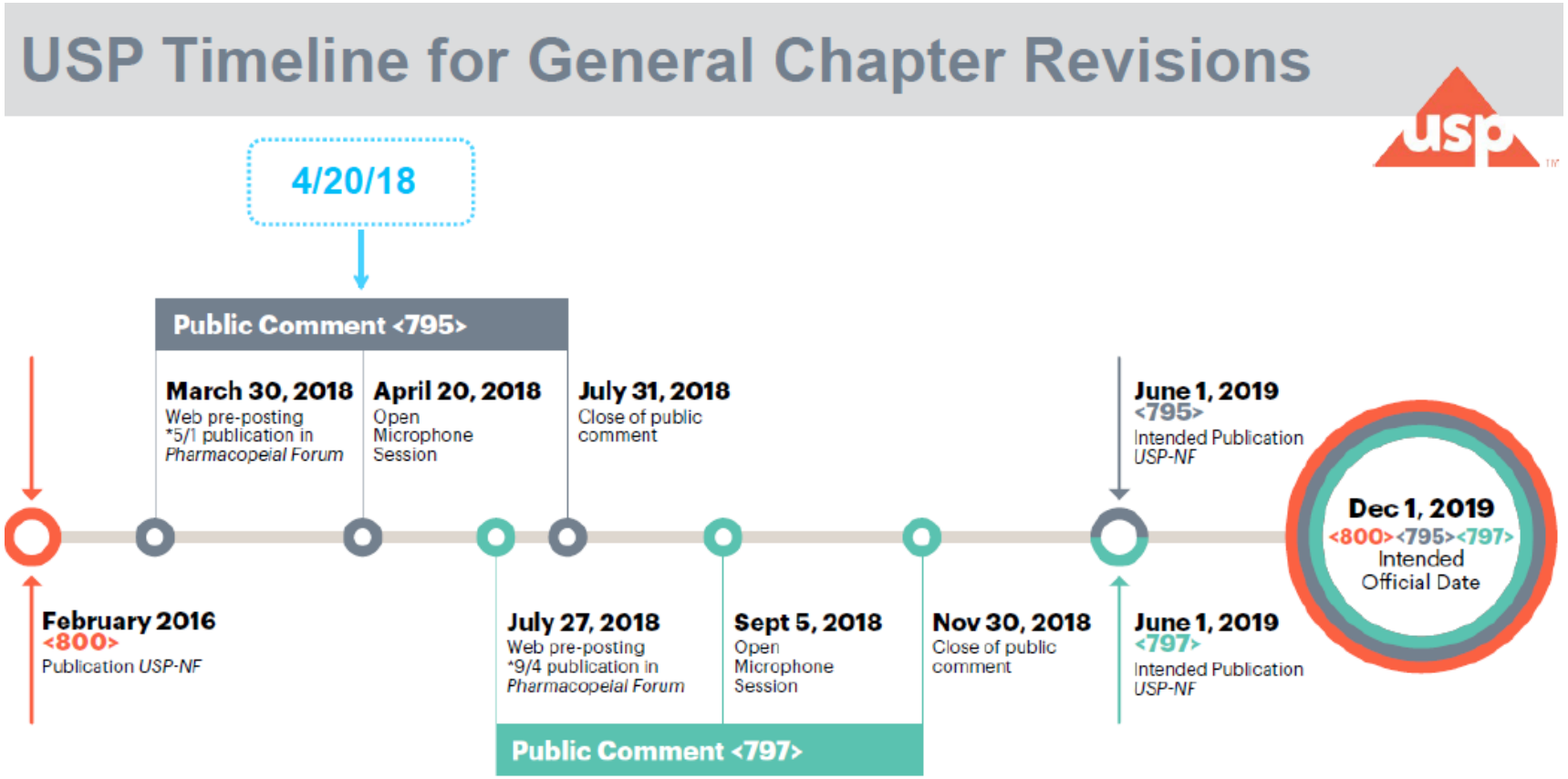
Example: Non-sterile non-hazardous and hazardous compounding area





Keep on your radar….

What's Next?



Sept 23, 2019: USP postponed official date to address appeals on publications for 795, 797.

USP (2018, April 20). Open Microphone Session on USP General Chapter <795> Pharmaceutical Compounding – Nonsterile Preparations. Presentation. www.usp.org/compounding/general-chapter-795

USP Update

- Expected update following release of USP 795
- USP 795 proposed revisions include:
  - Handling and storage → Hazardous Drugs
  - PPE Procedures
  - Packaging and Drug Preparation Containers
  - Compounding Documentation
  - Cleaning frequency requirements – after spills, surface contamination
    - Every 3 months – walls, ceilings, storage shelving
    - Daily – floors

USP (2018, April 20). Open Microphone Session on USP General Chapter <795> Pharmaceutical Compounding – Nonsterile Preparations. Presentation. www.usp.org/compounding/general-chapter-795

USP Update

- Equipment – containment ventilated enclosure (CVE)
  - -measuring, weighting or manipulating powders or airborne contamination from drug particles
- Quality Control
- BUD revision
- Level Requirement Revisions
- Adverse event reporting

USP (2018, April 20). Open Microphone Session on USP General Chapter <795> Pharmaceutical Compounding – Nonsterile Preparations. Presentation. www.usp.org/compounding/general-chapter-795

Beyond Use Date:

New proposed upcoming USP 795 changes….

Type of Preparation	NAPRA Beyond Use Date
Non-aqueous formulation	~~6 months~~ 90 days RT
Preserved water-containing formulation	30 days RT
Non-preserved water-containing formulations	14 days F
Solid dosage forms	180 days RT

What not to do…

References

Health Canada, Health Products and Food Branch Inspectorate. *Policy on manufacturing and compounding drug products in Canada (POL-0051)*. Ottawa, ON: Health Canada; 2009. Available from: http://www.hc-sc.gc.ca/dhp-mps/compliconform/gmp bpf/docs/pol_0051-eng.php

Kastango, E. Lessons Learned from Compounding Tragedy. CJHP 2013. 66(3):152-153

USP (2018, April 20). Open Microphone Session on USP General Chapter <795> Pharmaceutical Compounding – Nonsterile Preparations. Presentation. www.usp.org/compounding/general-chapter-795

National Association of Pharmacy Regulatory Authorities (NAPRA). *Model standards for pharmacy compounding of non- sterile preparations.* Ottawa, ON: NAPRA; 2018.Available from: https://napra.ca/sites/default/files/documents/Mdl_Stnds_Pharmacy_Compounding_Nonsterile_Preparations_March2018_FINAL.pdf

National Association of Pharmacy Regulatory Authorities (NAPRA). *Guidance document for pharmacy compounding of non- sterile preparations.* Ottawa, ON: NAPRA; 2018.Available from: https://napra.ca/sites/default/files/documents/Mdl_Stnds_Pharmacy_Compounding_Nonsterile_Preparations_Guidance_June2018_FINAL.pdf

United States Pharmacopeial Convention (USP). In: *USP compounding compendium*. Rockville, MD: USP; 2016.Available from: https://www.usp.org/compounding [Contains all USP chapters useful to pharmacists, including *General chapter <795>: pharmaceutical compounding — nonsterile preparations*]

Questions?

Contact: liug@hhsc.ca