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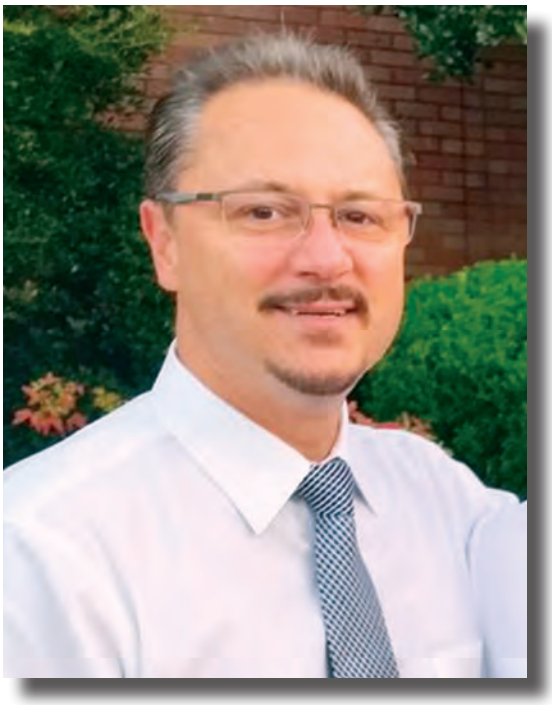

I started working in pharmacy doing deliveries when I was 16 years old for my father's pharmacies. My father, sister, and wife, Marla, are pharmacists. My daughter, Veronica, is a PY2 at Ole Miss. My sons, Rosario and Angelo, are going into medicine. I have practiced pharmacy for 31 years. I started my pharmacy career working at my father's independent pharmacies for five years. I then worked for Walgreens for 20 years, Fred's for three years, and now CVS. Pharmacy is my life.

I have seen the success and failures of many pharmacies over the course of my career. The pharmacies that have changed and adapted to the current environment have survived and prospered and the pharmacies that have not have closed. As a profession, now is the time we need to come together and change to further help our patients in Mississippi. I would urge you to get involved in MPhA, tell your stories, and take an active role to further advance this wonderful profession of pharmacy. To quote Dr Kris Harrell, Associate Dean of student affairs Ole Miss College of Pharmacy, "Get involved or get used to it."

MPhA mission statement is to promote, defend and expand the profession of pharmacy and its essential role in patient care by strengthening our core competencies in the areas of legislative/regulatory advocacy, continuing education, partnerships and coalition and financial/operational stability.

Pharmacy is a wonderful profession. We all help patients in our practice every day and to me, this is the best part of pharmacy.

Sincerely,

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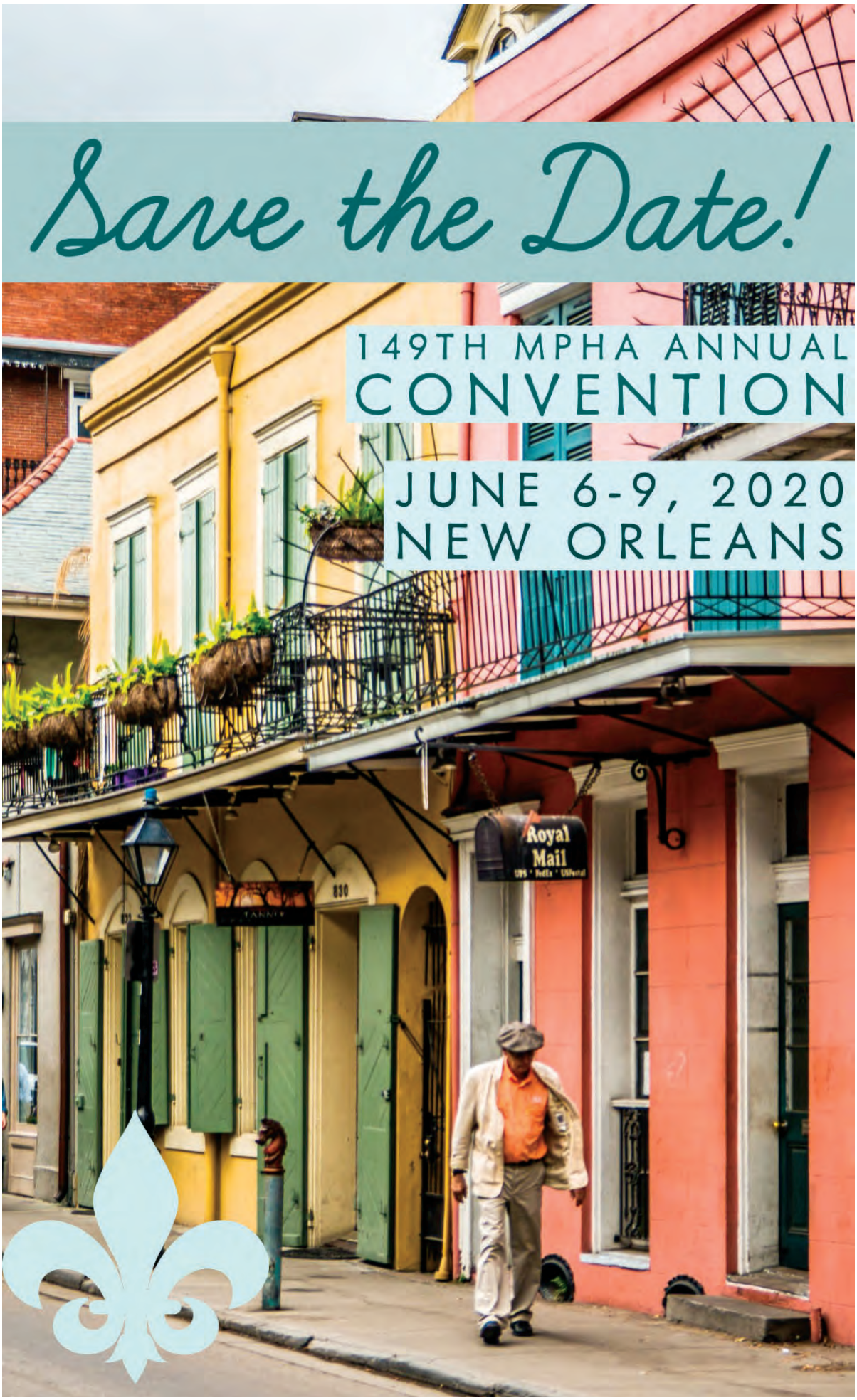
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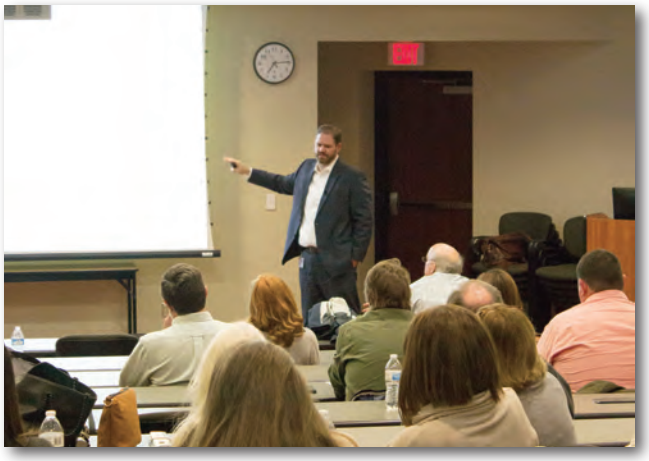
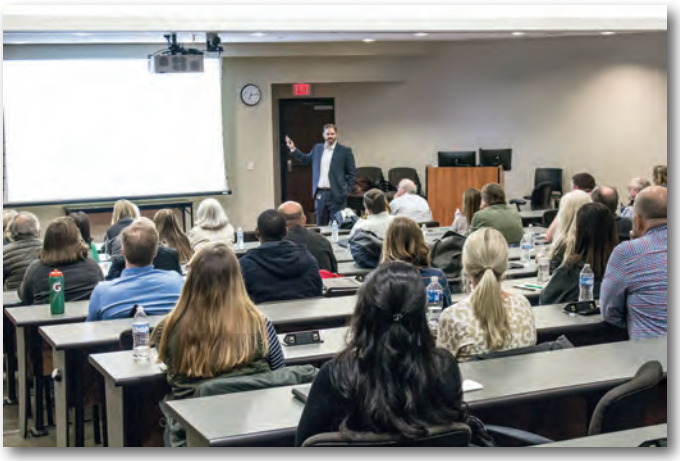
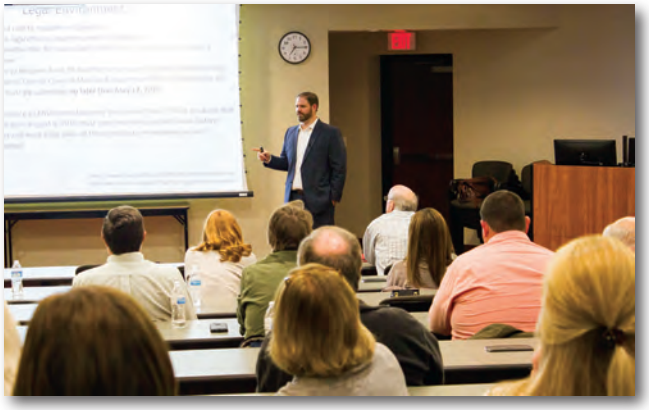
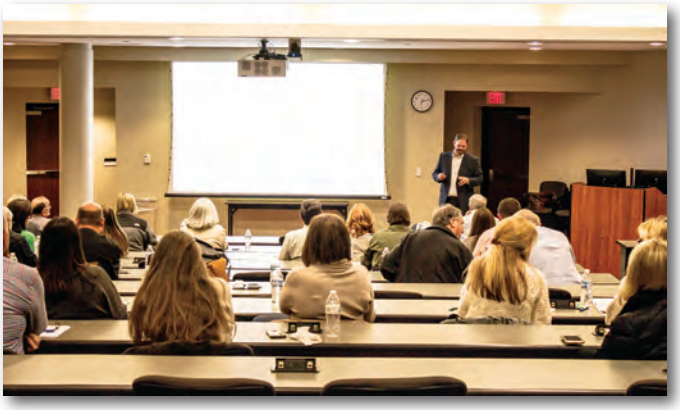
MPHA HOSTS A LAST CHANCE SEMINAR FOR 2019

On December 9 and 10, 2019, MPhA hosted a Last Chance Seminar for CEs. Dr. Dave Weldon, Associate Dean of Pharmacy and Assessment at William Carey University presented this CE. Pharmacists chose between two locations, Biloxi and Jackson. Nearly 100 pharmacists from across the state attended a 2-hour CE on Vaping and Juuling.









An Overview of USP 800 and Its Impact on Multiple Practice Settings

Mary Reagan Baladi Richardson, 2020 PharmD Candidate, University of Mississippi School of Pharmacy
Hunter Arnold, PharmD
Lewis Waits, 2020 PharmD Candidate, University of Mississippi School of Pharmacy

Abstract

The goal of this article is to provide Mississippi pharmacists with current updates regarding USP 800 regulatory requirements and detail the impact of these requirements on various practice sites. This update will provide an overview of information for pharmacists to use to prepare for the requirements from these regulations.

Overview:

General Chapter 800 of the Unites States Pharmacopeia (USP 800) applies to all healthcare personnel who handle hazardous preparations.[1] The National Institute for Occupational Safety and Health (NIOSH) maintains a list of antineoplastic and other hazardous drugs.[2] The term hazardous drugs (HD) includes, not only those that are used for chemotherapy, but also hormones, antiviral drugs, and other miscellaneous drugs.[2] These drugs have been determined to have significant risk of reproductive toxicity, organ toxicity, genotoxicity, carcinogenicity, teratogenicity or other developmental toxicity.[2] This list can be found online and lists the toxicity or safe handling that is required for each drug (https://www.cdc.gov/niosh/docs/2016-161/pdfs/2016-161.pdf).[2] Any drug on this list is deemed hazardous to either the patient or the healthcare professional handing them and is subject to USP 800 regulations.[1]

General Principles for Sterile and Nonsterile Compounding:[1]

One of the major areas where change will be enacted is in the reception of hazardous drugs. The organization must establish standard operating procedures for receiving HDs. HDs should be received from the wholesaler in impervious plastic to separate them from other medications in the order. Upon receipt of HDs, these drugs should be removed from their shipping containers in an area that is neutral or negative pressure relative to surrounding areas. Then, HDs must be transported to the HD storage area immediately. Personal protective equipment must be worn when unpacking HDs. Also, a spill kit must be accessible in the area. This process will have a drastic impact on all practice settings.

Proper equipment and air quality control is critical for any HD compounding. Three categories of engineering controls are needed. The primary control is a ventilated device, C-PEC (containment primary engineering controls). The containment part is vital, as it is designed to protect the worker and the environment from HD exposure while handling HDs. The secondary control, C-SEC (containment secondary engineering control), is the room in which the C-PEC is placed. Again, it is designed to contain the potential hazard within the compounding room. Supplemental engineering controls such as closed system drug-transfer devices (CSTDs) are used to complement the primary and secondary systems. Both sterile and nonsterile HDs must be compounded within a C-PEC located in a C-SEC.

Personal protective equipment (PPE) provides protection to workers from residues and aerosols of HDs. Each institution must develop standard operating procedures for PPE based on risk of exposure. PPE must be worn when handing HDs including during receipt, storage, transport, sterile and nonsterile compounding, administration, deactivation, cleaning, and disinfecting. The frequency of needing to change PPE will undoubtedly increase the cost of these protective measures to the institutions.

Table 1: Type of PPE and when to use each.[1]

Table 1

Type of PPE	Directions for use
Gloves	-Chemotherapy gloves should be worn when handling all HDs (must be powder free gloves). -When chemotherapy gloves are used, they must be changed every 30 minutes.
Gowns	-Must be disposable and impermeable to HDs -Must close in the back, be long sleeved, and have closed cuffs that are elastic or knit -Coated gowns offer better protection than uncoated gowns. -Must be changed every 2-3 hours. -Gowns worn in HD handling areas must not be worn to other areas.
Head, Hair, Shoe, and Sleeve Covers	-A second pair of shoe covers must be donned before entering C-SEC to compound HDs and removed before exiting the C-SEC. -Beard and moustache covers should be donned, if applicable -Sleeve covers may be used if risk of contact with HDs is greater.
Eye and Face Protection	-Goggles must be used when eye protection is needed in the compounding of HDs (eyeglasses and safety glasses do not protect adequately) -Face shields in combination with goggles provide a full range of protection
Respiratory Protection	-Surgical masks do not provide respiratory protection from HD exposure -A surgical N95 respirator provides the greatest protection.

All personnel who handle HDs in any way (dispensing, receiving, compounding, etc.) must be trained based on their job functions and training must include an overview of entities list of HDs and risks, review of the entities standard operating procedures (SOPs) related to handling of HDs, proper use of PPE, proper use of equipment and devices, response to known or suspected HD exposure, spill management, and proper disposal of HDs and trace contaminating materials. Training shall be conducted by a designated individual decided upon by the institution. Training and competency should be reevaluated for all individuals every 12 months.

Updates to sterile compounding:[1]

Sterile compounding of HD must follow standards in both USP 797 and USP 800. Sterile HD compounding must be performed in a C-PEC that provides ISO Class 5 or better air quality, such as a Class II or III biological safety cabinet (BSC). ISO Class 5 environments have fewer than 100 particles larger than 0.5 microns per cubic foot A laminar airflow workbench (LAFW) or compounding aseptic isolator (CAI) can not be used for the compounding of antineoplastic HDs, as it does not provide adequate containment. A Class II or III BSC or compounding aseptic containment isolator (CACI) are acceptable. A table with more information can be found at this link: https://www.ncbi.nlm.nih.gov/books/NBK55867/

Table 2: Engineering Controls for Sterile HD Compounding Requirements.[1]

Updates to nonsterile compounding:[1]

Nonsterile compounding of HD must follow standards in both USP 795 and USP 800. It is difficult to deactivate, disinfect, and clean HD contamination. Because of this, walls, ceilings, floors, fixtures, shelving, cabinets and counters in the nonsterile compounding area must be free from cracks and crevices. They must be made of smooth, impervious, and non-shedding materials. Deactivation must render the compound inert or inactive. Products such as peroxide formulations and sodium hypochlorite are used for this. Decontamination must remove HD residue, so products such as alcohol, peroxide, or sodium hypochlorite are used here. Cleaning must remove organic and inorganic material, such as a germicidal detergent. Decontamination of the C-PEC must occur between compounding of different HDs and at least daily. Floors, walls, and shelving must be cleaned

Table 2

Configuration of C-SEC	C-PEC	C-SEC	Maximum Beyond Use Date (BUD)
ISO Class 7 buffer room with an ISO class 7 anteroom	-Externally vented -Examples: Class II BSC or CACI	-Externally vented -30 air changes per hour (ACPH) -Negative pressure between 0.01 and 0.03 inches of water column relative to adjacent areas	Refer to most recent USP 797 regulations
Containment segregated compounding area (C-SCA)	-Externally vented -Examples: Class II BSC or CACI	-Externally vented -12 ACPH -Negative pressure between 0.01 and 0.03 inches of water column relative to adjacent areas	Refer to USP 797 for CSPs (compounded sterile products) prepared in a segregated compounding area

at least monthly to reduce potential contamination level. The facility structure itself and the extensive cleansing process can cause a huge expense to the outpatient compounding pharmacy that compounds hormone replacement therapy, as all estrogens and progestins are labeled HDs.

Table 3: Engineering controls for Nonsterile HD Compounding.[1]

C-PEC	C-SEC
- Externally vented (preferred) or redundant HEPA filtered in series - Class I biological safety cabinet (BSC) or containment ventilated enclosure (CVE)	- Externally vented - 12 ACPH - Negative pressure between 0.01 and 0.03 inches of water column relative to adjacent areas

Updates to community pharmacy practice:[1]

This chart shows commonly used drugs in the community pharmacy setting that are contained in the NIOSH list. According to the new USP 800 regulations, all entities must maintain a list of hazardous drugs from the NIOSH list that the institution handles. This list must be reviewed, at least, every 12 months. Some dosage forms of these drugs may not pose any significant risk of exposure (tablets/ capsules). However, dust from the tablets can lead to direct skin contact or inhalation exposure that can be harmful. Clean equipment should be dedicated for use solely with HDs and should be decontaminated after each use. Tablet and capsule forms of antineoplastic drugs should not be placed in automatic counting or dispensing machines.

An assessment of risk can be performed to determine the relevant risk of exposure and must consider type of HD, dosage form, risk of exposure, packaging, and manipulation. If an assessment of risk is performed, the entity may maintain alternative containment strategies. However, if the assessment of risk is not performed, the entity must follow the USP 800 listed containment strategies.

Hazard Communication Program:[1]

Entities are required to establish standard operating procedures and policies to ensure worker safety when handing HDs. Elements of the plan must include a written plan that describes how the standard will be implemented. All containers of hazardous chemicals must be labeled, tagged and marked with the appropriate hazard warnings. Institutions must have a safety data sheet (SDS) for each hazardous chemical used and must ensure that the SDSs for each hazardous chemical used are readily accessible when personnel are in the work areas. Personnel must be trained before the initial assignment to work with a hazardous chemical and personnel must confirm in writing that they understand the risks of handling HDs.

Table 4: NIOSH List HDs Applicable to Community Pharmacy and Outpatient Compounding Pharmacy.[2]

Abacavir	Estrogens/	Medroxyprogesterone	Paliperidone	Tacrolimus
Anastrazole	Estradiol	Megestrol	Phenytoin	Tamoxifen
Azathioprine	Finasteride	Mercaptopurine	Progesterone	Valganciclovir
Capecitabine	Fosphenytoin	Methimazole	Raloxifene	Warfarin
Carbamazepine	Ganciclovir	Methotrexate	Rasagiline	
Cyclosporine	Hydroxyurea	Mycophenolate/	Risperidone	
Divalproex	Leflunomide	mycophenolic acid	Sirolimus	
Entecavir	Letrozole	Oxcarbazepine	Spironolactone	

Conclusions:

While all of these regulations must be implemented, SOPs for handing HDs should include hazard communication program, occupational safety program, designation of HD areas, receipt, storage, compounding, use and maintenance of proper engineering controls, hand hygiene and use of PPE, deactivation, decontamination, cleaning, and disinfection, dispensing, transport, administering, environmental monitoring, disposal, spill control, and medical surveillance.[1] USP 800 imposed new regulations for the handling of HDs that can inflict added cost to institutions in terms of PPE and labor required to train and maintain SOPS. The enforcement of USP 800 has had its implementation postponed by the Mississippi Board of Pharmacy due to appeals of certain provisions.[3] However, once these issues are resolved, USP 800 will go into effect in our state and will drastically change most practice sites. Awareness of the changes coming, along with taking steps to meet the upcoming requirements, can help facilitate a smooth transition into compliance with USP 800.

Disclosures: None

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1. USP General Chapter Hazardous Drugs-Handling in Healthcare Settings. USP. https://www.usp.org/compounding/general-chapter-hazardous-drugs-handling-healthcare. Accessed December 20, 2019.

2. NIOSH [2016]. NIOSH list of antineoplastic and other hazardous drugs in healthcare settings, 2016. By Connor TH, MacKenzie BA, DeBord DG, Trout DB, O'Callaghan JP. Cincinnati, OH: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health, DHHS (NIOSH) Publication Number 2016-161 (Supersedes 2014-138).

3. Mississippi Board of Pharmacy The Script October 2019 available at: https://www.mbp.ms.gov/Documents/TheScript/TheScript_Volume2.pdf. Accessed January 14, 2020.

See Page 17 for Quiz

Tracking Patient Adherence

Regan Tyler, PharmD
Walgreens PGY1 Community Resident

Chris McLaurin, PharmD
Walgreens Store 10270 Pharmacy Manager

Eric Pittman, PharmD
Project Director, Mississippi Evidence-Based DUR Initiative
University of Mississippi Center for Pharmaceutical Marketing and Management

Abstract

Goal: As healthcare continues to move towards more value-based services, patient adherence to therapies must remain a top priority to promote optimal health outcomes. The goal of this article is to educate pharmacists about utilizing Proportion of Days Covered (PDC) to measure adherence and reinforce the necessity of assisting patients in finding ways to take their medications consistently and appropriately.

Objectives:

1. Define patient adherence and its significance in value-based services.
2. Describe PDC and its use by governing bodies to determine patients' levels of adherence to their prescribed therapies.
3. Identify additional adherence measures and their place in monitoring therapy.
4. Use patient counseling to promote positive adherence habits.
5. Implement calculating PDC given a patient's medication list and a specified timeframe.

Disclosure: Authors of this article do not have anything to disclose concerning possible financial or personal relationships with commercial entities that may have a direct or indirect interest in the subject matter of this article.

Tracking Patient Adherence

What is patient adherence?

The American Pharmacists Association (APhA) defines medication adherence as "the extent to which a patient's behavior corresponds with the agreed-upon recommendations from a healthcare provider".[1] Adherence is sometimes incorrectly substituted for similar medication tracking terms—compliance and persistence. Medication adherence differs from medication compliance in that with adherence, patients play a role in the decisions that affect their overall healthcare; by definition, compliance simply describes a measurement of how well the patient passively follows provider instructions.[1] Adherence and persistence may also be used interchangeably, but persistence refers solely to the duration of time from therapy initiation to discontinuation.[1] Therefore, it is important to utilize these terms correctly when describing a patient's medication habits. Table 1 below describes the terms and their place in patient care tracking.

Medication adherence is an essential metric to follow, especially in patients with chronic conditions.[2] Its measurement provides feedback to healthcare professionals that can be used to determine if inadequate response to medication can be attributed to problems directly related to therapy or nonadherence issues. Patients with suboptimal

Table 1 Medication Tracking Terms[1]

	Definition	Measurement
Medication adherence	The extent to which a patient's behavior corresponds with agreed-upon recommendations from a healthcare provider	Percentage
Medication compliance	The extent to which a patient passively follows the advice of their provider	Percentage
Medication persistence	The duration of time from initiation to discontinuation of therapy	Continuous variable in terms of number of days in which the therapy was available

adherence face problems that affect both the individual and the healthcare system as a whole, including increased healthcare costs related to under-treatment, unnecessary disease complications and progression, and lower Medicare reimbursement rates with growing claims linked to adherence. While significant, accurate determination of adherence can be challenging. In the absence of specialized monitoring devices, patient self-reported adherence is often utilized to estimate how well the patient is choosing to take their medication as prescribed.[2] Electronic health records, personal healthcare records, patient portals, and electronic pillboxes provide some objective information regarding a patient's adherence that can piece together the characteristics of a patient's medication habits.[2] Once this information is gathered, the next key is determining how to calculate medication adherence.

Patient adherence tracking tools

Pharmacy refill record

One of the simplest ways to measure a patient's medication adherence is through the pharmacy refill record. By using the record, pharmacists and pharmacy support staff can easily determine if a patient is being adherent to a therapy by looking at days' supplied and the last time the patient filled their medication.[3] This method does not provide information on whether or not the patient is taking the therapy correctly but gives an objective overview of the patient's adherence.[3] Adherence to an entire drug regimen must be evaluated separately. For example, if a patient is on multiple therapies for one disease state, each drug's adherence must be analyzed independently. While this adherence measurement tool has setbacks, it is still prominently used today due to its ability to quickly and easily give a broad picture of a patient's adherence to a particular therapy.

Proportion of Days Covered (PDC)

$$PDC = \left(\frac{\text{Number of days in period "covered"}}{\text{Number of days in period}} \right) \times 100\%$$

Figure 1 PDC Calculation, Pharmacy Times[5]

PDC is used to measure adherence by looking at an individuals' prescription claims for a specific medication class. PDC is the recommended adherence measure by the Pharmacy Quality Alliance (PQA) and is utilized by the Centers for Medicare and Medicaid Services (CMS) as the adherence metric to determine plan ratings.[4] Some of the most commonly analyzed medication classes include non-insulin antidiabetics (biguanides, sulfonylureas, thiazolidinediones, dipeptidyl peptidase-4 inhibitors, SGLT-2 inhibitors), statins, antihypertensives (renin-angiotensin system antagonists, calcium channel blockers, diuretics), non-warfarin oral anticoagulants, and antiretroviral medications.[5] PDC is unique in that it works to provide an overall adherence picture, taking into consideration all therapies that need to be monitored. For example, if a patient is on three hypertension medications, a "covered" day is signified by having all three medications available on that day.[4] When a patient's number of days covered is divided by the number of days in the analyzed period, a PDC value between 0 and 1 will result. A value of 1 indicates 100% adherence. If used over a year's time, patients will begin with a PDC value of 1, and as that patient misses doses, their PDC will fall. Clinical evidence supports that a PDC $\geq$ 0.8, or 80%, for most medication classes is associated with clinical benefit from therapy.[5] However, certain medication classes, such as birth control and antiretroviral medications, require a higher PDC—sometimes as high as 95%—to achieve this clinical benefit.[4] As healthcare continues to move away from a fee-for-service model to a value-based model, pharmacists need to understand their patients' level of adherence to therapies and determine ways to further increase that adherence.

Step-by-step PDC example

As previously noted, PDC can be utilized to determine a patient's adherence to multiple medications. Multiple therapies that make up a patient's disease state regimen can be combined to determine overall adherence making this benefit significant. In the following example, PDC for a patient's diabetes regimen will be determined.

Table 2 Patient Profile for PDC Example

Patient Profile		
Drug	**Fill Date**	**Days' Supply**
Glimepiride 4 mg	1/5/19	30
Metformin 1000 mg	1/2/19	30
Atorvastatin 40 mg	1/20/19	30
Lisinopril/HCTZ 50/12.5 mg	1/24/19	90
Metformin 1000 mg	1/20/19	30
Glimepiride 4 mg	2/9/19	30
Atorvastatin 40 mg	2/20/19	30
Azithromycin 250 mg	2/28/19	5
Glimepiride 4 mg	3/11/19	30
Metformin 1000 mg	3/11/19	30
Atorvastatin 40 mg	3/25/19	30
Glimepiride 4 mg	4/20/19	90
Metformin 1000 mg	4/30/19	90
Atorvastatin 40 mg	4/30/19	90
Lisinopril/HCTZ 50/12.5 mg	4/30/19	90
Glimepiride 4 mg	7/25/19	90
Metformin 1000 mg	7/25/19	90
Atorvastatin 40 mg	8/1/19	90
Glimepiride 4 mg	10/22/19	90
Mupirocin 2% ointment	10/22/19	5
Lisinopril/HCTZ 50/12.5 mg	10/22/19	90
Metformin 1000 mg	11/12/10	90
Atorvastatin 40 mg	11/12/19	90

1. Determine which therapies on the patient's profile are being used for the monitored disease state (i.e. diabetes).

Glimepiride 4 mg and metformin 1000 mg

2. Determine the number of days in the period (i.e. 2019) that the patient was NOT "covered" with all medications for the disease state. Assume the patient was covered with medication from the previous year until the first fill of 2019.

Dates without glimepiride: Feb. 4th – Feb 8th (5 days); Apr 10th – 15th (6 days); Jul 20th – 24th (5 days)

Dates without metformin: Mar 3rd - Mar 10th (8 days); Apr 10th – Apr 29th (20 days); Oct 27th – Nov 11th (16 days)

TOTAL: 60 days

3. Subtract overlapping dates from the #2 total to get the total number of days not covered.

Overlapping dates Apr 10th April 15th 6 days

60 days 6 overlapping days 54 days not covered

4. Determine number of days covered in the period (i.e. 365 days).

365 days 54 days not covered 311 days covered

5. Solve the PDC formula by plugging in values.

$$PDC = \frac{Number\ of\ Days\ in\ Period\ "covered"}{Number\ of\ Days\ in\ Period} = \frac{311\ days\ in\ 2019}{365\ days}$$

$$PDC = 0.85 = 85\%$$

The patient has a PDC of 0.85, correlating with 85% of the patient's days in 2019 being covered with therapy.

MPR

Medication Possession Ratio (MPR) is another measure used to gauge a patient's adherence to their medication.[4] To calculate, the sum of days' supply for all fills in a specified timeframe is divided by the number of days in this time period. As with PDC, this decimal value is converted to a percentage by multiplying the value by 100.

$$MPR = \left(\frac{\text{Sum of days' supply for all fills in period}}{\text{Number of days in period}}\right) \times 100\%$$

Figure 2 MPR Calculation, Pharmacy Times[5]

One of the key differences between PDC and MPR is the change in the numerator. With MPR, patients filling their prescriptions early will lead to a falsely elevated percentage.[3] MPR also takes only one medication into account at a time; if a patient's overall MPR is desired, the average of the individual MPRs is calculated.[3] This average poses a problem in that high MPRs overshadow lower MPRs, leaving the patient looking more adherent than he or she truly is to the entirety of their drug regimen. Using the medication list in Table 2, a patient's MPR for diabetes medications can be calculated and averaged to show the difference between the two measurements.

MPR Step-by-step example

1. Determine the number of days' supply for all fills in a period.

Metformin: 360 days

Glimepiride: 360 days

2. Solve for MPR by plugging in the numerator for individual medications.

$$MPR_{metformin} = \frac{Sum\ of\ days'\ supplied\ in\ period\ covered}{Number\ of\ Days\ in\ Period} = \frac{360\ days\ in\ 2019}{365\ days}$$

$$MPR_{metformin} = 0.986 = 98.6\%$$

$$MPR_{glimepiride} = \frac{Sum\ of\ days'\ supplied\ in\ period\ covered}{Number\ of\ Days\ in\ Period} = \frac{360\ days\ in\ 2019}{365\ days}$$

$$MPR_{glimepiride} = 0.986 = 98.6\%$$

3. Average the MPRs from the desired disease state medications to attain a disease state MPR.

$$MPR_{total} = \frac{Sum\ of\ MPRs}{Total\ number\ of\ MPRs\ reviewed} = \frac{98.6\% + 98.6\%}{2}$$

$$MPR_{total} = 98.6\%$$

As noted, the patient's MPR is elevated due to early fills, making the patient appear more adherent to their diabetes regimen. The patient's PDC provides a more accurate depiction of adherence, as it quantifies the amount of time a patient had both therapies needed for diabetes treatment.

Patient counseling to promote adherence

While quantifying a patient's medication adherence through the measures described can be beneficial, the true value lies in improving these measurements by pharmacists and their interactions with patients. APhA recommends utilizing a combination of strategies to get patients on board with the importance of their therapies and taking medications in the appropriate manner.[6] Some of the tactics that can be implemented with all patients, especially those that have lower levels of adherence, are described below.

Motivational interviewing

Motivational interviewing is "directive, patient-centered counseling designed to motivate patients for change by helping them recognize and resolve the discrepancy between their behavior, personal goals, and values".[7] This practice centers on educating patients about the significance of their therapy while empowering them to make changes to improve their health outcomes. The National Institute of Diabetes and Digestive and Kidney Diseases provides principles and the "spirit" of motivational interviewing outlined in the following table.

Table 3 Guidance for Motivational Interviewing, National Institutes of Health[7]

Principles of Motivational Interviewing	Sprit of Motivational Interviewing
Resist the righting reflex Understand your patient's motivation Listen to your patient Empower your patient	Collaboration versus expertise: take steps to partner with your patient versus trying to be an expert over them Evocation: have the patient elicit why they want to change and what drives their behaviors Autonomy: give respect to the patient while honoring their decisions

Promoting patient understanding

For patients to be motivated to take their medication, they must first understand their disease. Provide the patient an appropriate background about their disease and what the medicine is doing to help alleviate symptoms of the disease or prevent disease state complications. Patient counseling should reinforce the prescribed regimen; teaching patients how to appropriately take their therapy, what to do if doses are missed, and what common side effects to expect.[6] The teach-back method can then be used to determine the patient's level of knowledge regarding what the medication is used for, how to properly take the medicine, and any additional therapy-specific details.[6]

Addressing barriers

A variety of barriers may stand in the way of patients taking their medicines in the prescribed manner. Some of these barriers can be alleviated through counseling.[6] For example, if patients do not understand the importance of their therapy or how to properly take one of their medicines, the pharmacist can provide education. Other times, proper adherence may be due to complex dosing schedules or lifestyles that make it difficult for patients to remember to take their medications.[6] These issues can be addressed through counseling about reminder systems, such as setting alarms or organizing therapies into pill boxes to help patients adhere to taking their medications at the appropriate time or enrolling patients into a medication synchronization program prompting patients to refill medications at the appropriate time. However, some barriers go beyond a conversation. Patients with lower health literacy can benefit from pharmacists providing visual aids and color-coated adherence tools to assist with ensuring they are able to properly take their medications. In some cases, patients face a cost burden with their drug regimen, leading to poor outcomes.[6] If patients are struggling to pay for their medications, pharmacists can work to provide education on insurance coverage, patient assistance programs, and alternative therapies that may be more cost-effective to better help patients control their disease states.

Conclusion

Patient adherence to their medicines promotes improved healthcare outcomes. PDC and other adherence measurements discussed in this article provide a starting point for assessing patient adherence that can then be used to focus on improving poor habits and assisting patients to take their medications properly. Regardless of a patient's current level of adherence, pharmacists can provide counseling on the importance of medications for treatment and prevention, how to begin properly taking medicines, and ways to incorporate the best therapy practices into their new lifestyles.

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CONTINUING EDUCATION

Continuing education quiz #001-023-020-002 for 1.0 clock hours. CE credits are valid through 2021.

AN OVERVIEW OF USP 800 AND ITS IMPACT ON MULTIPLE PRACTICE SETTINGS

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1. USP 800 requires facilities that compound hazardous drugs (HDs) to have a containment secondary engineering control (C-SEC) with all of the following specifications except:
   a. Externally vented
   b. Have appropriate air exchange
   c. Have a negative pressure between 0.2 and 0.4 inches of water column relative to all adjacent areas
   d. Physically separated from the other prep areas

2. How often must personnel be reevaluated on competency and retrained on HD safety?
   a. Every 3 months
   b. Every 6 months
   c. Every 12 months
   d. Every 24 months

3. Which of the following is appropriate eyewear to be worn when compounding HDs?
   a. Eyeglasses
   b. Goggles
   c. Safety glasses
   d. No glasses needed

4. How often should gloves be changed when compounding hazardous drugs?
   a. Every 1-2 hours
   b. Between every compound
   c. Every 3-4 hours
   d. Every 30 minutes

5. Which of the following best reflects a C-SEC?
   a. The room that holds a C-PEC
   b. A ventilating device
   c. A chemotherapy specific ventilating device
   d. A closed system drug transfer device

6. How often must the standard operating procedures (SOPs) be reviewed?
   a. Every 12 months
   b. Every 24 months
   c. Every 5 years
   d. Whenever a change is needed

7. How often should the surface of a C-PEC be decontaminated?
   a. Weekly
   b. Monthly
   c. Only at the beginning of the day
   d. Between compounding different HDs

8. Which of the following statements about personal protective equipment (PPE) in relation to USP<800> is NOT correct:
   a. Chemotherapy gloves should be worn when handling all HDs and must be powder free gloves
   b. Gowns must be changed every 2-3 hours and gloves every 30 minutes when handling HDs
   c. One pair of shoe covers must be worn before entering C-SEC to compound HDs and removed before exiting the C-SEC
   d. Face shields in combination with goggles and surgical N95 respirator provides the greatest protection

9. How often must gowns be changed and fresh gowns be donned?
   a. Every 2-3 hours
   b. Every 4-6 hours
   c. Every 7-8 hours
   d. Only one gown is needed per day

10. Upon receipt of hazardous drugs, where should they be unpacked?
   a. On the counter in the pharmacy
   b. On the C-PEC
   c. In a room with neutral or negative pressure
   d. None of the above

CONTINUING EDUCATION

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TRACKING PATIENT ADHERENCE

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Examination questions

1. Which of the following best describes medication adherence?
    a. The extent to which a patient's behavior corresponds with agreed-upon recommendations from a healthcare provider
    b. The extent to which a patient passively follows the advice of their provider
    c. The administration of a pharmacologic or therapeutic agent
    d. The duration of time from initiation to discontinuation of therapy
2. What does the abbreviation PDC stand for?
    a. Prescription Days Completed
    b. Proportion of Days Covered
    c. Prescription Drugs Completed
    d. Proportion of Drugs Covered
3. Which of the following is a possible PDC value?
    a. -0.25
    b. 0.5
    c. 1.25
    d. 5
4. Which of the following medications would require a higher PDC than 80% to achieve clinical benefit?
    a. Metformin
    b. Abacavir
    c. Losartan/HCTZ
    d. Rosuvastatin
5. With MPR, having patients filling their prescriptions _____ will have a falsely _____ percentage.
    a. Early; increased
    b. Early; decreased
    c. Late; increased
    d. Late; decreased
6. What is a benefit of using a patient's refill record in a retail setting as a means to measure adherence?
    a. The refill record provides information on whether or not the patient is taking the therapy at the appropriate time of day.
    b. The refill record always possesses the ability to tie back to a patient's electronic health record.
    c. The refill record accounts for early refills when determining patient adherence.
    d. Utilizing the patient's refill record is a simplistic way to determine a patient's adherence.
7. Which of the following entities recognizes PDC as the most appropriate measure of medication adherence?
    a. Institutes of Medicine (IOM)
    b. Patient Safety Organization (PSO)
    c. Institute for Healthcare Improvement (IHI)
    d. Pharmacy Quality Alliance (PQA)
8. Which term is used to describe directive, patient-centered counseling designed to motivate patients for change by helping them recognize and resolve the discrepancy between their behavior, personal goals, and values?
    a. Patient counseling
    b. Medication adherence
    c. Motivational interviewing
    d. Medication possession ratio
9. Which of the following situations may serve as a barrier that hinders a patient from adhering to their medication regimen?
    a. Lack of knowledge that the medication is important
    b. Inability to fit a medication regimen into current lifestyle
    c. A financial situation that inhibits a patient from being able to pay for their medicine each month.
    d. All of the above
10. Which formula below is used to determine PDC?
    a. $\text{PDC} = \textit{Number of medication fills in period} + \frac{\textit{Average days' supply}}{\textit{Number of days in period}}$
    b. $\text{PDC} = \frac{\textit{Sum of days' supply for all fills in a period}}{\textit{Number of Days in Period}} \times 100$
    c. $\text{PDC} = \textit{Last fill date} - \textit{first fill date} + \textit{last fill days' supply}$
    d. $\text{PDC} = \frac{\textit{Number of Days in Period "covered"}}{\textit{Number of Days in Period}} \times 100$

Mississippi Pharmacists Association
341 Edgewood Terrace Dr. • Jackson, MS 39206
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