MSHP Pharmascript

Volume 44, Issue No. 3

Third Quarter

Contents

Deadlines for Pharmascript Submissions

Submit articles for publication in the Fall Edition of Pharmascript by September 15, 2020

Submit articles for publication in the Winter Edition of Pharmascript by December 15, 2020

MSHP Board of Directors:

President: Sandeep Devabhakthuni

Past-President: Stacy Dalpoas

President-Elect: Molly Wascher

Secretary: Dorela Priftanji

Treasurer: David Ngo

Board Members at Large:

Michael Armahizer

Kristine Parbuoni

Brian Grover

Carla Williams

Publications Committee:

Chair: Michael Plazak

Vice-Chair: Frances Aune

Contact MSHP

mshprx@gmail.com

www.mshp.org

Remarks from the Incoming MSHP President

Sandeep Devabhakthuni, PharmD, BCCP

As I reflect on this past year, I am inspired by the actions that the healthcare profession has taken during this challenging time with the pandemic. I am impressed by how our profession has stood up to help people who need it in the state of Maryland. MSHP has also had a lot of accomplishments despite the obstacles that we faced this past year. I truly believe this was because of your support and the dedication of our leadership team.

At this time, I would like to recognize a few individuals for their service to MSHP and their hard work. To our outgoing secretary, Ashley Martinelli, thank you for your fantastic work these past few years. You always seemed to remember the knowledge and history when we needed it and provided us with thoughtful suggestions before the board made any important decisions. Agnes Ann Feemster, I have known you since residency training, and I have always admired your leadership and the impact that you have had on pharmacists and pharmacy practice in the state of Maryland. Thank you for being a leader and providing MSHP your insights, especially in patient safety and administrative activities. I also want to acknowledge our presidential officers, Emily Pherson and Stacy Dalpoas. Emily, you have been a wonderful role model through your excellent leadership and dedication to MSHP. I have the utmost respect for your commitment to our members, and I'm honored to have worked with you this past year. Stacy, I greatly appreciate the incredible energy that you have brought to MSHP this year, and you have stimulated innovative ideas such as the ambulatory care initiative. You have also weathered many unanticipated challenges this year, and you showed remarkable resilience and calm in the setting of the pandemic.

I have also worked with our Executive Director, Libby Maynard, this past year. I have learned that Libby provides more support to MSHP behind the scenes that I was not aware of before I started my role. She brings a level of experience that has helped to foster the supportive environment that is needed in our organization. Libby has also been instrumental in helping us with the pandemic and was able to identify a feasible solution for our virtual meeting quickly. This is a testament to how Libby is able to manage effectively, connect with everyone, and still provide high quality work on our behalf. I feel more confident about my upcoming term knowing that she will be a wonderful asset.

As I look to the next year, I can't help but reflect on the recent events that have occurred in the past month. The recent deaths of George Floyd, Breonna Taylor, Ahmaud Arbery, and so many other Black Americans have struck a nerve for all of us. I will never be able to understand the experiences that Black Americans have endured for so long. All I know is that it has been long overdue for our community to step up and work to remove these social injustices. As healthcare providers, we take an oath to "do no harm," and our profession is committed to improving the lives of others. Unfortunately, there are still striking disparities in healthcare due to racism and discrimination. Our organization is committed to advocating against racism, all forms of discrimination, and injustice to improve patient care. One of my key goals for next year is to explore measures that eliminate disparities in patient care and educate the pharmacy workforce. Also, I plan to build on some of the work that has already been done regarding legislation that supports pharmacist scope of practice and reimbursement, exploration of ambulatory care initiatives, and enhancement of the roles and opportunities for pharmacy technicians in our state. I would like to engage more constituents in supporting these goals. If you are interested in learning how to become involved, please contact me, the members of our board, or members of committees.

For everyone who has held leadership positions within the committees or been members of the committees, thank you for your generous support to MSHP. We greatly appreciate your efforts, and I am inspired by the collaboration that I have seen among the membership this year. The positive energy that you all bring will be valuable as we look for new ways to advance pharmacy practice in the upcoming year. For the new leaders that are being inducted today, I am excited to work with all of you, and I will challenge you to consider ideas to make MSHP stronger for next year. We have a challenging year ahead of us, but I know that it will be rewarding for all of us.

Technician Corner: More than Just a Technician; Evolving Pharmacy Technician Careers

Fatima Fofana

"I'm getting tired of this job. I feel like I work so hard and don't get the recognition I should be getting. Do you know any other pharmacies that are hiring?" Ashley said to her coworker Steve.

This is the question too many technicians ask when they begin to experience career burnout. That pharmacy technician job that was once so new and exciting when you first were hired has now become tedious and stale. You feel that the money you are making does not equate to the amount of hard work you are putting in. These feelings can eventually lead to a sense of reduced accomplishment and even a loss of personal identity. The right solution would be to apply to a pharmacy different from your current one, get a new job, and hope it all works out at the new place, right? Well, not necessarily!

I once heard a quote saying that "if you don't make plans for yourself, you leave it up to others to make plans for you." To me, this means that your options will always be limited to what others have made available to you if you do not take the time to plan for yourself.

As the field of pharmacy advances, so does the scope of opportunities available to the pharmacy technicians. Technicians have the option to advance in a variety of specializations including those related to managerial or instructional roles, IV admixture, Tech-Check-Tech, compounding, medication reconciliation, and even nuclear pharmacy. Choosing a specialty often requires further education through certifications. Considering your skills and interests can help you select the path to a more satisfying and fulfilling career. If you have excellent dexterity, and enjoy cooking or baking, for example, compounding may be right for you. If you love to keep things organized and have excellent social skills, consider a leadership role. If you prefer a more clinical role, consider becoming a medication reconciliation technician.

My pharmacy technician career began when I was working as a cashier at a local Giant grocery store. Throughout my shifts I would regularly pass the pharmacy, and soon found myself curious to know how everything worked back there. I decided to take action and approached the pharmacy manager to express my interest to learn more. Two days later, I was offered a position as a pharmacy cashier.

After a few years in that role, I decided to begin exploring the different settings pharmacy had to offer. After reading about compounding, I applied to an independent pharmacy that did both traditional and compounded prescriptions. Although I was not qualified to compound, I would often shadow the technician, which gave me the opportunity to ask questions about the tools and equipment she was using.

In 2017, I finally landed a job as a compounding technician with an apothecary pharmacy. There I learned how to compound suppositories, troches, capsules, creams, and liquids. Unfortunately, business at this pharmacy started to slow during my time there. To expand my potential as a technician beyond this job, I began to look into sterile compounding. Searching for hospital jobs made me realize that the role of the pharmacy technician is becoming more advanced and that many employers were looking for candidates with at least one year of sterile compounding experience as well as the new IV Sterile Certification. In 2019, I applied to MedStar Montgomery Medical Center and began working in the inpatient pharmacy. I reached out to my supervisor to express my interest in pursuing the IV Certification and began developing a plan to earn the certification within a year.

The Certified Compounded Sterile Preparation Technician (CSPT) by the Pharmacy Technician Certification Board (PTCB) is an advanced credentialing that requires specialized training and knowledge in the area of sterile compounding. There are two pathways to obtain this certification. You must either have three years of continuous sterile compounding experience or one year of experience plus the completion of a PTCB-approved training program. Fulfilling these prerequisites will allow you to sit for the national exam.

I used my educational assistance benefits provided by MedStar to pay for my training program with the American Society of Health-System Pharmacists (ASHP). This online program contains a classroom portion as well as a practical portion. The practical part includes the technician submitting six videos (garbing, gloved fingertip test, aseptic technique in a laminar air flow workbench and biological safety cabinet, hood cleaning, and media fill test) for professional review by an ASHP education representative. These are to be completed after finishing the modules and passing the final exam. These videos demonstrate understanding and application of knowledge and competency obtained through the training program. Upon completion of this training program, I will have satisfied the one-year requirement in a sterile environment and will be eligible to sit for the national CSPT exam administered by PTCB. I will also be awarded a professional certificate by ASHP.

Obtaining certification truly does give one more opportunity in the growing pharmacy industry. It also allows you to choose the tasks that you'll be doing on an almost daily basis. The next time you decide it is time for a job change, do not ask others for who is hiring, instead ask yourself where do you want to work based on what you like to do.

References

1. Sterile Product Preparation Certificate. American Society of Health-System Pharmacists. http://elearning.ashp.org/products/7240/sterile-product-preparation-certificate. Published April 10, 2019. Accessed August 16, 2020.
2. Certified Compounded Sterile Preparation Technician. Pharmacy Technician Certification Board. https://www.ptcb.org/credentials/certified-compounded-sterile-preparation-technician. Accessed August 16, 2020.

Pediatric Spotlight: Pediatric Laundry Detergent Pod Ingestions

Shawnee Daniel, PharmD, Kristine Parbuoni, PharmD, BCPPS, Jill Morgan, PharmD, BCPPS,

James Leonard, PharmD, DABAT

Laundry detergent pods are single-load capsules that contain concentrated liquid detergent within a water-soluble membrane that dissolves when in contact with moisture. They were introduced in the US market in 2010 and multiple manufacturers now sell laundry detergent packaged in pods. While touted as convenient, one downside of using these pods are that the capsules were historically brightly colored and mistaken by children for candy or toys, which encourages ingestion by children.[1] The American Association of Poison Control Centers reported over 12,000 laundry detergent exposures in 2018.[2]

The chemical structure of most detergents is a hydrocarbon chain linked to an ionic group, and they work by forming a micelle around grease. Detergents are alkali compounds, which can cause esophageal burns upon ingestion by rapid liquefaction necrosis with diffusion into deeper layers of tissue.[3] Clinical manifestations of a laundry detergent pod ingestion include central nervous system (CNS) depression, lactic acidosis, cough, stridor, pharyngeal and esophageal burns, swallowing difficulty, gastrointestinal (GI) irritation, vomiting, diarrhea, and renal injury. Patients can also present with respiratory distress requiring intubation and mechanical ventilation. If the detergent gets in the eye, it can cause keratitis.[3-4]

Several studies have evaluated laundry detergent pod ingestions in patients. In 2012, one of the Morbidity and Mortality Weekly Reports (MMWR) from the Centers for Disease Control highlighted laundry detergent exposures reported to the National Poison Data System. There were 1,008 laundry detergent exposures reported just within a 1-month period, 48% of which were laundry detergent pods. Children less than 6 years old were involved in 94% of these ingestions. Among children aged ≤ 5 years old, laundry detergent pods

resulted in more gastrointestinal effects, respiratory effects, and drowsiness compared to those with non-pod laundry detergent exposures.[5] Some authors hypothesize that more adverse effects could occur because the pods are more concentrated than regular liquid detergent.[4]

Multiple subsequent studies have shown similar results. One such study looked at pediatric ingestions from 2012-2013. There were 17,230 ingestions in children < 6 years old within the study period. Children < 3 years old accounted for 73.5% of cases. Serious outcomes were infrequent with 4.4% hospitalized and 7.5% with symptoms that required treatment, resulted in disability, or were life-threatening. There was 1 confirmed death.[6] A similar trend was seen in a study published a year later. These studies confirmed the findings of the 2012 MMWR that laundry detergent pods have significantly greater odds of clinical effects, hospitalization, intubation, and serious medical outcomes than regular detergent exposures.[7]

Laundry detergent exposures are managed with supportive care. Dermal exposures should be washed with water and contaminated clothing removed. Patients with inhalation exposures should be taken outside to fresh air. If no respiratory compromise is present, milk or water should be administered as soon as possible after the ingestion. However, dilution should be avoided if patients have nausea, drooling, stridor, or abdominal distention. Intravenous (IV) fluids and antiemetics should be given for persistent vomiting. Consider endoscopy to determine extent of GI injury if there is concern for a caustic injury.[3-4]

It can be difficult to determine when endoscopy is needed. Presence of physical injury (oral swelling and lesions) do not predict risk of esophageal injury by signs and symptoms and lack of signs does not rule out esophageal injury. A landmark study by Crain and colleagues showed that in patients with alkali ingestions, children with no symptoms or with only vomiting or drooling did not have severe injuries. About half of the children with both vomiting and drooling and both with stridor alone had esophageal injuries. Strictures developed in 4% of these children, all of whom would have been correctly evaluated endoscopically with the use of a decision rule based on the presenting symptoms.[8] Therefore, asymptomatic patients are usually just observed for 6 hours. If the patient has vomiting, drooling, or refusal to take food, then the patient is kept NPO overnight and trialed with clear liquids and then food. If this is not tolerated, an endoscopy is performed. If the patient had vomiting and drooling or stridor alone then an endoscopy is initially recommended. The results from the endoscopy are reported based on the Zargar Classification system.[9] Patients with grade 0, 1, or 2A classifications typically have no further sequelae, whereas those with grade 2B or above are more likely to develop sequelae. Therefore, patients with grade 0, 1, or 2A injury are just kept NPO and trialed with clear liquids with progression to food as tolerated. Grade 3A, 3B, or 4 injuries may require surgical intervention. However, pharmacotherapy can be employed in the management of Grade 2B injuries.[10]

Pharmacotherapy includes gastric acid suppression, antibiotics, and corticosteroids. Gastric acid suppression is often initiated to allow faster mucosal healing and to prevent stress ulcers. Antibiotics help to prevent

infections that commonly happen when corticosteroids are used as monotherapy. Corticosteroids are used after endoscopy since they reduce the formation of granulation tissue and the proliferation of fibrotic tissue, thus reducing the extent of stenosis. However, if there is too much wound softening, perforation can occur. Therefore, there has been significant controversy over their use. Landmark trials showed steroids administered intravenously made little-to-no difference in the development of strictures and those with third degree burns have a greater proportion of patients developing strictures.[11-12] Therefore, it was accepted that steroids are not utilized in injuries greater than 2B since there is no benefit. However, its use in 2B injuries was still controversial. Usta and colleagues conducted a study in which they randomly assigned children with grade 2B esophageal injuries to 3 days of methylprednisolone or placebo, plus one week of ceftriaxone and ranitidine. When analyzed either visually with endoscopy or functionally by means of barium swallow, a significant benefit was reported in the methylprednisolone group. No complications were noted. Therefore, this study suggests that patients with grade 2B injuries who have a high risk of progression to stricture and a low risk of perforation are most likely to benefit from and least likely to be harmed by the wound-softening effects of steroid therapy.[10] More research is needed, and this treatment course is still not widely accepted in the US, but European gastrointestinal societies have supported this in their guidelines.

Other therapies can also be employed after endoscopy. Sucralfate may be useful because it provides a physical barrier between the corrosive substance and the gastroesophageal mucosa and has been shown to decrease the frequency of stricture formation in patients with advanced corrosive esophagitis when used in combination with steroids, gastric acid suppression, and antibiotics.[13-14] Mitomycin C minimizes the clinical effects of strictures by making them more amenable to mechanical dilation. It induces fibroblast apoptosis, thus reducing scarring. The beneficial effects of mitomycin C have been shown in children with long strictures that were refractory to standard approaches. However, it is unknown if mitomycin C increases the long-term risk of malignant transformation.[10,15-16]

In summary, laundry pod ingestions can be dangerous and even deadly, but death and serious manifestations are not frequent with only 1-2 deaths occurring each year. Fortunately, these ingestions are managed mostly with supportive care. Endoscopy may be necessary to assess the extent of damage to determine if additional interventions are needed.

References

1. Bonney AG, Mazor S, and Goldman RD. Laundry detergent capsules and pediatric poisoning. Can Fam Physician. 2013;59(12):1295-1296.
2. Gummin DD, Mowry JB, Spyker DA, et al. 2018 Annual Report of the American Association of Poison Control Centers' National Poison Data System (NPDS): 36th Annual Report. Clinical Toxicology. 2019;57(12):1220-1413.
3. Micromedex Solutions. Truven Health Analytics, Inc. Ann Arbor, MI.
4. https://canadiem.org/tide-pod-challenge-managing-caustic-laundry-pod-ingestion/
5. MMWR Morb Mortal Wkly Rep. 2012;61(41):825-829.
6. Valdez AL, Casavant MJ, Spiller HA, et al. Pediatric exposure to laundry detergent pods. Pediatrics. 2014;134:1-9.
7. Davis MG, Casavant MJ, Spiller HA, et al. Pediatric exposures to laundry and dishwasher detergents in the United States: 2013-2014. Pediatrics. 2016;137(5):e20154529.

8. Crain EF, Gershel JC, Mezey AP. Caustic ingestions: symptoms as predictors of esophageal injury. Am J Dis Child. 1984;138:863-865.
9. Zargar SA, Kochhar R, Mehta S, Mehta SK. The role of fiberoptic endoscopy in the management of corrosive ingestion and modified endoscopic classification of burns. Gastrointest Endosc. 1991;37:165–169. [PubMed] [Google Scholar]
10. Usta M, Erkan T, Cokugras FC, et al. High doses of methylprednisolone in the management of caustic esophageal burns. Pediatrics. 2014;133:E1518-E1524.
11. Pedclová D, Navrátil T. Do corticosteroids prevent oesophageal stricture after corrosive ingestion?.Toxicol Rev. 2005;24(2):125-129.
12. Fulton JA, Hoffman RS. Steroids in second degree caustic burns of the esophagus: a systematic pooled analysis of fifty years of human data: 1956-2006. Clinical Toxicology. 2007;45(4):402-408.
13. Gümürdülü Y, Karakoç E, Kara B, et al. The efficacy of sucralfate in corrosive esophagitis: a randomized, prospective study. Turk J Gastroenterol. 2010;21(1): 7-11.
14. De Lusong MA, Timbol AB, Tuazon DJ. Management of esophageal caustic injury. World J Gastrointest Pharmacol Ther. 2017;8(2):90–98.
15. Ghobrial CM, Eskander AE. Prospective study of the effect of topical application of Mitomycin C in refractory pediatric caustic esophageal strictures. Surg Endosc. 2018;32:4932-4938.
16. El-Asmar KM. Topical Mitomycin C application for esophageal stricture: safe, precise, and novel endoscopic technique. J Pediatr Surg. 2013;48: 1621-1627.

Medication Safety: Ensuring Safety in a Field Hospital Pharmacy during COVID-19

Brittany Ball, PharmD; Glorimar Rivera, PharmD, BCPS; Joseph Dicubellis, RPH, MPH; Marisol De Leon, PharmD, MBA; Barbara Brannan, PharmD

The healthcare workforce is facing a historic and unprecedented time. Given the rapidly evolving situation of COVID-19, it was expected that the state of Maryland would see a surge in the number of confirmed positive cases and patients under investigation. In anticipation of the needs and as an effort to increase hospital bed capacity statewide, the State of Maryland converted the Baltimore Convention Center into a field hospital with the functionality to service up to 250 COVID-19 positive patients requiring lower levels of care prior to discharge.

The University of Maryland Medical System (UMMS) and the Johns Hopkins Hospital (JHH) partnered with the State of Maryland and the Federal Emergency Management Agency (FEMA) to collaboratively operate the Baltimore Convention Center Field Hospital (BCCFH). The implementation of the BCCFH inpatient pharmacy was led by the University of Maryland Medical Center (UMMC), flagship hospital of the UMMS. The setup of the field hospital was different from any health care treatment setting we had previously experienced. Considering the limited and basic resources available, our top priority was safety. We ensured that the pharmacy met state regulations and worked with the Maryland Board of Pharmacy and the Office of Controlled Substances Administration to obtain a pharmacy permit and a registration to dispense controlled substances. We also worked with UMMS legal counsel to finalize a written agreement between UMMC Pharmacy Department and the BCCFH to enable controlled substances to be handled under the direction of the UMMC Pharmacy Department and under UMMC's Drug Enforcement Administration (DEA) registration as

per the DEA's Hospital/Clinic Registration Exemption allowed during the COVID-19 pandemic. Before we started to admit patients, healthcare professionals from different disciplines met daily to practice different scenarios and workflows to ensure we had all resources needed prior to officially opening our facility. With just three weeks of planning and setup, what originally was a food court during concerts and events, was transformed into an inpatient pharmacy. The onsite pharmacy, located inside the "hot zone" or patient care area, is accessible to all clinicians and provides services 24 hours, 7 days a week.

Pharmacy professionals with various backgrounds and levels of experience were recruited to service the BCCFH inpatient pharmacy. Formal competency and training modules were developed to provide standardized training to equip staff for the execution of all job requirements. The onboarding process required all pharmacy personnel to complete a two-day orientation program. This program consisted of both onsite and virtual training sessions to review pharmacy policies, procedures, interdisciplinary workflows, and education on the electronic health record. To minimize contamination and exposure risks, proper donning and doffing procedures of personal protective equipment were extensively emphasized during the orientation program. All pharmacy personnel were required to complete a fit test to obtain their N95 respirator and complete onsite training at BCCFH to practice all the steps required for donning and doffing procedures. The donning and doffing rooms had assigned personnel observing employee placement and removal of personal protective equipment to ensure it was done correctly.

In addition to the general orientation module and training sessions, the completion of a medication safety module was required. This module highlighted key components of safety such as: handling high alert medications, reporting medication errors, identifying look-alike sound-alike drugs, reviewing the five rights of administration, understanding proper insulin storage and preparation technique. Pharmacy personnel were provided access to the UMMS error reporting system to document and report safety events and near misses.

The BCCFH inpatient pharmacy utilized a hybrid medication distribution model consisting of patient-supplied medications as a primary means of drug supply and a conservative inpatient formulary for the provision of medications at the field hospital. Knowing that pharmacists play a vital role in the medication reconciliation process, a workflow was established to ensure all patient-supplied medications were reviewed by a pharmacist upon patient arrival to the field hospital. Pharmacists and nurses collaboratively identified which medications were controlled substances versus non-controlled substances, as well as which medications required storage in the refrigerator. Pharmacists also collaborated with providers to review the after visit summary and ensure all the orders were properly entered into the electronic medical record. When patients were ready for discharge, pharmacists assisted in reviewing all patient-supplied medications and identifying if any medications needed to be reordered in the outpatient pharmacy to ensure patients left our facility with the supply needed to continue their medication therapy at home. Pharmacists also reviewed the electronic medical record daily to assess appropriateness of therapy and provide recommendations on therapy

modification and dose adjustments to the providers during interdisciplinary rounds. Our pharmacy personnel have played a valuable role in educating clinicians from other disciplines regarding safe use of medications.

Due to the nature of the facility and potential risks, pharmacy workstations were adequately spaced to mitigate any potential for exposure for the staff and to comply with social distancing requirements. The inpatient pharmacy formulary included a limited selection of essential medications and incorporated a single drug from each drug class. Secured storage of medications was another important aspect to consider within the design of the pharmacy. Standard floor-stock medications were located at each nursing station and a centralized inventory was stored in the pharmacy. The pharmacy inventory was stored in alphabetical order and sound-alike look-alike drugs were segregated to minimize potential for medication selection errors. Locked carts served as the main mechanism for secure medication storage as the facility was not equipped for automated dispensing cabinets. To limit the access to controlled substances, each controlled substance was stored in lockboxes within the locked carts providing additional security and minimizing the potential for diversion. The supplies of all patients' medications were stored in patient-specific bins within the locked cart. Medications requiring refrigeration were kept in the inpatient pharmacy refrigerator in designated bins of assorted colors to differentiate supplies. To ensure the maintenance of adequate temperature ranges, the refrigerator's temperature was continuously tracked electronically by the same software utilized by UMMC.

Maintaining a chain of custody of controlled substances was essential from a regulatory and compliance aspect. Different controlled substance forms were created to verify accurate inventory levels of controlled substances at the nursing station and pharmacy. Emphasis was placed on compliance with controlled substance workflows despite lack of automation. Several weeks after admitting our first patient, representatives from the Centers for Medicare and Medicaid Services arrived to inspect the BCCFH to ensure that we were compliant with regulatory and safety standards. Inspectors took two days to survey all services and spaces, including the pharmacy. Their visit went well, and we were found to be in compliance.

Given the expedited construction of the BCCFH inpatient pharmacy, policies and procedures were developed to ensure the safety of pharmacy frontline workers and patients served. Pharmacists and pharmacy technicians have a vital role as frontline health workers promoting optimal medication therapy management and the safe use of medications during these challenging times.