

Pharmacists Enhancing Expedited Partner Therapy in the District of Columbia

Presenters: Prince Ene, PharmD Candidate, Class of 2021, Howard University College of Pharmacy (prince.ene@bison.howard.edu)

Isatu Bah, PharmD Candidate, Class of 2021, Howard University College of Pharmacy (isatu.bah1@bison.howard.edu)

Advisors: Allison Hill, PharmD; Tamara McCants, PharmD

Learning Objectives

Analyze the prevalence of STDs in Washington, DC

Define expedited partner therapy (EPT) and identify medications used in EPT

Interpret the EPT process

Identify barriers to EPT

Identify the pharmacist's role in the EPT process

Distinguish methods of improvement among pharmacists and of EPT implementation

Highlights

- EPT is the clinical practice of treating sex partners of patients who are diagnosed with chlamydia or gonorrhea by providing prescriptions or medications to treat the partner without the need for examination by a health care provider.
- The incidence of STDs in states with prohibitive EPT legislation grew significantly faster than in states where EPT was allowed.
- The expedited partner therapy Process consists of an infected patient visiting a physician, obtaining a prescription for themselves and their partner for their STD diagnosis, and the dispensing of the medication for the patient and their partner at the pharmacy.
- Pharmacy-level barriers to EPT include lack of awareness among pharmacists, high prescription costs for patients, and patients with limited access to pharmacies.

Questions

1. What STDs are treated under the EPT program?
 - A. Gonorrhea
 - B. Chlamydia
 - C. HIV
 - D. A&B
2. Which medication is commonly used in EPT?
 - A. Flagyl
 - B. Cefepime
 - C. Azithromycin
 - D. Ceftriaxone
3. What are the pharmacy-level barriers?
 - A. Lack of pharmacist awareness
 - B. Prescription cost
 - C. Limited access to pharmacies
 - D. All of the above

Financial disclosure: Bah and Ene declare that they do not have any current financial disclosures.

Standard of Care: A National Three-Profession Survey of Health Care State Agencies

Deeb D. Eid, PharmD (Advisor) deebeid@ferris.edu, Nicole Bailey, PharmD Candidate, Class of 2021 bailen10@ferris.edu, Matthew Hendricks, PharmD Candidate, Class of 2021 hendrm12@ferris.edu, Ferris State University College of Pharmacy

**We declare that we do not have any current financial disclosures.*

Learning Objectives

After viewing this poster, participants will be able to:

1. Recognize trends based on perceptions of surveyed state agencies on regulatory enforcement strategies of standard of care and bright-line rules.
2. Identify profession-wide trends comparing word counts and relative restrictiveness of statutes and regulations relating to state immunization laws.

Summary

Pharmacists, nurses, and physicians share a common role in administering vaccines to patients. It is important to public health that these health professions can vaccinate their patients safely and effectively, and are held to the same high standards. The Centers for Disease Control and Prevention (CDC) published that every year at least 45,000 adults in the United States die from vaccine-preventable diseases. However, the legalities that dictate the practice of this duty vary on a state-by-state basis and even more so between respected professions. The purpose of this 50-state and DC survey was to review, compile, and analyze data regarding the statutes and regulations pertaining to the administration of immunizations among three health care professions (pharmacy, nursing, and medicine). Inspired by the [Mercatus Center RegExplorer project](#), the researchers investigated language in both regulations and statutes to categorize and provide a general overview of trends and quantities of word counts among other outcomes. In addition, the project surveyed boards of pharmacy, medicine, and nursing across the country to help identify similarities and differences in regulatory enforcement strategies of “bright-line rules” (prescriptive rule-based regulations) or “standard of care” between state agencies and health care professions. The project is not aimed at being a representation of legally binding data, but rather as a tool to understand and guide discussions.

Research Overview/Takeaways

Research:

- A nine-question electronic survey was sent to a total of 170 state boards of pharmacy, medicine, and nursing within the US.
- The investigators each independently reviewed and performed data collection on 17 different states' statutes and rules following a search protocol.
- Specific language and citations were documented relating to the practice of administration of immunizations.
- A peer-review process was conducted to compare findings, settle discrepancies, and determine results.
- The results were compared to survey data.

Takeaways:

- The profession of pharmacy has an exponentially greater overall word count and number of restrictive words in state rules and statutes as compared to medicine and nursing.
- Survey respondents' perceptions were in alignment with pharmacy being reported as the highest overall word count and restrictiveness.
- According to survey data, standard of care was reported least by boards of pharmacy as the primary regulatory enforcement strategy.

Standard of Care: A National Three-Profession Survey of Health Care State Agencies

Deeb D. Eid, PharmD (Advisor) deebeid@ferris.edu, Nicole Bailey, PharmD Candidate, Class of 2021 bailen10@ferris.edu, Matthew Hendricks, PharmD Candidate, Class of 2021 hendrm12@ferris.edu, Ferris State University College of Pharmacy

**We declare that we do not have any current financial disclosures.*

Assessment Questions	Answer Choices
Which statement best describes bright-line rules (compared to standard of care)?	<ul style="list-style-type: none"> A. Using skills, prudence, and diligence as similar professionals or licensees of similar education, training, and experience B. Assessed on a case-by-case basis to determine malpractice case ruling, usually involving defendants in the same field C. Clearly defined, composed of mostly objective factors, leaves little or no room for varying interpretations, and draws a line between forbidden and permissible conduct
According to the research data, what was the overall general trend among the total quantity of word counts and number of restrictive words (in order from most to least) for all rules and statutes?	<ul style="list-style-type: none"> A. Medicine > Nursing > Pharmacy B. Nursing > Medicine > Pharmacy C. Pharmacy > Medicine > Nursing D. Medicine > Pharmacy > Nursing
According to research survey data, which of the following percentages of state board of pharmacy respondents indicated that standard of care was the regulatory enforcement strategy used by a majority of disciplinary cases for administration of immunizations?	<ul style="list-style-type: none"> A. 6.5% B. 16.1% C. 38.7% D. 51.6%

For additional specific information, statistics from the project, or any questions, please contact

Deeb D. Eid, PharmD (deebeid@ferris.edu)

Expanding the Pharmacist's Role in the Opioid Epidemic With Pharmacogenomics

Britnee Taylor, PharmD Candidate, Class of 2021, North Dakota State University School of Pharmacy
Sabrina Wolfe, PharmD Candidate, Class of 2021, North Dakota State University School of Pharmacy

Summary

Background

- The opioid epidemic is an ongoing problem that may be further mitigated by pharmacist intervention utilizing pharmacogenomic data.
- Pharmacogenomics is how the genetic composition of the body acts upon medications (producing various responses from person to person).
 - Classified as: ultra-rapid, extensive (normal), intermediate, or poor metabolizer.
- Recommendations made by the Clinical Pharmacogenetics Implementation Consortium (CPIC).
- For opioids, CYP450 3A4/5 and 2D6 are the enzymes responsible for phase 1 metabolism.

Codeine Metabolism

Codeine is an inactive parent drug that is converted to morphine by CYP2D6 metabolism.

- Ultra-rapid metabolizers have a rapid conversion to morphine, leading to a higher risk of overdose and respiratory depression.
- Intermediate or poor metabolizers will have reduced serum levels of morphine, leading to inadequate pain relief.

Oxycodone Metabolism

Oxycodone is an active parent drug that is converted to oxymorphone by CYP2D6 metabolism.

- Ultra-rapid metabolizers have a rapid conversion to oxymorphone, leading to a higher risk of overdose and respiratory depression.
- Intermediate or poor metabolizers will have a response from oxycodone but will not receive the full therapeutic benefit due to reduced conversion to oxymorphone.

Barriers: Number of patients with genomic testing, lack of education to providers on the tests and results, length of time to complete testing, storage and use of data in patient profiles, and codeine and tramadol are the only opioids that have CPIC guideline recommendations.

Actions to Take: Become pharmacogenomics-certified, implement medication risk management programs, advocate for preoperative medication-genome interaction screening, incorporate CYP450 testing into pain clinic contracts, and offer accessible testing in community pharmacies.

Conclusion: Pharmacists are taking charge of pharmacogenomic practice and can aid in reducing the number and strength of opioids to the appropriate level for individual patients. In turn, this will reduce the quantity of opioids present and prevent abuse, misuse, and overdose.

Learning Objectives

1. Identify which CYP enzymes are responsible for phase 1 metabolism of most opioids.
2. Describe the impact of the different CYP metabolism phenotypes.
3. Identify steps that you can take to provide effective pain management while mitigating risks.

Contact Information

Britnee Taylor: britnee.taylor@ndsu.edu

Sabrina Wolfe: sabrina.wolfe@ndsu.edu

Financial Relationships

Britnee Taylor and Sabrina Wolfe declare that they do not have any current financial disclosures.

Expanding the Pharmacist's Role in the Opioid Epidemic With Pharmacogenomics

NDSU SCHOOL OF PHARMACY

Britnee Taylor & Sabrina Wolfe, Pharm.D. Candidates 2021
North Dakota State University, Fargo, North Dakota

Public Health Problem

- More than 130 individuals die of an opioid overdose each day in the United States.¹
- Pharmacists can expand their efforts to reduce the amount of opioids prescribed by using pharmacogenomics.
- This new role can promote new ways to find the proper medication at an adequate dose for effective pain management on an individual basis.

Background

- Pharmacogenomics is how the genetic composition of the body acts upon medications (producing various responses from person to person).
- Current recommendations on drug therapies are made by the Clinical Pharmacogenetics Implementation Consortium (CPIC).
- Many pain medications, especially opioids, are metabolized by the liver.
- Personalizing pain management to the patient's genetic make up can produce better outcomes.²

Focus Enzymes

- CYP450 3A4/5 and 2D6 are responsible for most phase I metabolism of opioids.
- When they have polymorphisms, with hundreds of different combinations, it can result in altered metabolism of opioids in an individual.
- Classification: ultra-rapid, extensive (normal), intermediate, or poor metabolizer.
- Codeine, oxycodone, morphine, meperidine, tramadol, and hydrocodone may not give a patient adequate pain relief if they have altered metabolism.³

Pain Medications and Pharmacogenomics

Codeine is an inactive parent compound, so depending on how a person metabolizes it, specifically with CYP2D6, can affect their therapeutic outcome as seen in Figure 1.

Ultra-rapid: converts quickly into morphine leading to potentially toxic levels with a high concern of overdose and decreased respiratory rates.
Intermediate or poor: reduced levels of morphine leading to an inadequate effect with little pain relief.^{4,5}

Codeine Drug Metabolism with CYP2D6

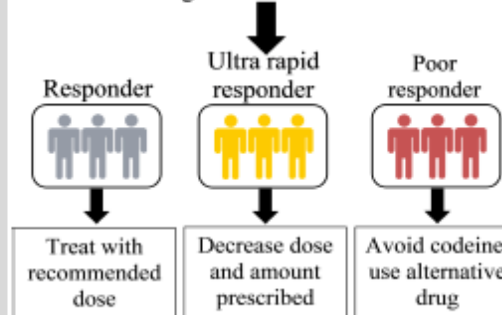


Figure 1: Role of CYP2D6 on Codeine Metabolism. Adapted from⁶

Oxycodone Drug Metabolism with CYP2D6

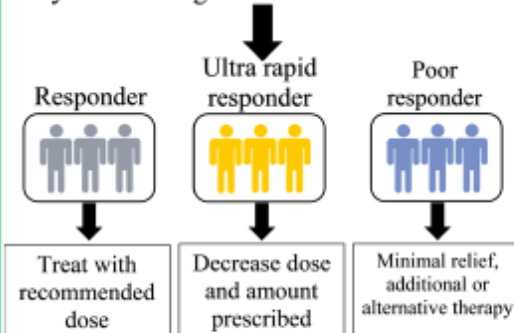


Figure 2: Role of CYP2D6 on Oxycodone Metabolism. Adapted from⁶

Oxycodone is an active parent compound and can provide some pain relief without being metabolized as seen in Figure 2. However, depending on what kind of a metabolizer a patient is will determine the amount of pain relief they receive.
Ultra-rapid: oxycodone is converted to oxymorphone quickly, causing potentially toxic levels leading to an overdose and severe respiratory depression.
Intermediate or poor: have analgesic effect but may not fully treat the pain to a therapeutic result.^{7,8}

Barriers

- Amount of patients who have had their genome tested.
- Lack of education to providers on the test and their results.
- Turn around time on genomic testing.
- Storage, access, and implementation of data into patient profiles.
- The only opioids that currently have guideline recommendations are codeine and tramadol.

What Can We Do?

- Become pharmacogenomics certified to provide education and result interpretation to providers
- Implement medication risk management programs with CPIC guidelines.⁹
- Advocate for pre-operative screening for medication-genome interactions¹⁰
- Incorporate CYP450 testing into pain clinic contracts
- Offer accessible testing in community pharmacies for genomic testing.⁹

Conclusion

With pharmacists taking charge in the new realm of pharmacogenomic pharmacy practice, the amount and strength of opioids can be reduced to the appropriate level for each individual patient. This will help reduce amount of 'left over' pain medications, preventing abuse, misuse, and overdoses, in turn helping minimize the opioid epidemic.

References

1. CDC/NCSIS, National Vital Statistics System, Mortality. CDC WONDER, Atlanta, GA: US Department of Health and Human Services, CDC; 2018 [cited 16 Sept 2019]. Available from <https://wonder.cdc.gov>
2. Kaye AD, Garcia AI, Hill GM, Jaha GM, Croser KD, Croser AI, Kalkbrenner A, Cornett EM, Urman RD. Update on the pharmacogenomics of pain management. *Pharmacogenomics Pers Med*. 2019 Jul 3;12:125-43. doi: 10.2147/PGPM.S179152. PMID: 31308726; PMCID: PMC6613192.
3. Orsano Obeng A, Hamedeh I, Smith M. Review of opioid pharmacogenetics and considerations for pain management. *Pharmacotherapy*. 2017 Sep;37(9):1105-21. doi:10.1002/ptar.1965.
4. Raano G, Kott JA. Fundamental considerations for genetically-guided pain management with opioids based on CYP2D6 and OPRM1 polymorphisms. *Pain Physician*. 2018 Nov;21(8):2611-21.
5. Degenroth C, Allaghi M, Napolioni V, D'Agostini S, Signorini S, Murti A, van Schaik RJS. CYP2D6 genotype can help to predict effectiveness and safety during opioid treatment for chronic low back pain: results from a retrospective study in an Italian cohort. *Pharmacogenomics Pers Med*. 2018 Oct 24;11:179-91. doi: 10.2147/PGPM.S181134. PMID: 30425549; PMCID: PMC6265525.
6. Ko TM, Wong CS, Wu JY, Chen YT. Pharmacogenomics for personalized pain medicine. *Acta Anaesthesiol Taiwan*. 2016 Mar;54(1):24-30. doi: 10.1016/j.aat.2016.02.001.
7. Litman GS, Dely D, Litman AD, Stefanovik D, Rivett BC. Personalized oxycodone dosing: using pharmacogenetic testing and clinical pharmacokinetics to reduce toxicity risk and increase effectiveness. *Pain Medicine*. 2014;15(5):791-806. doi:10.1111/pain.12380.
8. Dalyan R, Meoili M, Venkateshramanian R, Chidambaram V, Kano N, Clay S, Moore DE, Mavi J, Glover CD, Sznajk P, Vinks A, Sathyanarayanan S. CYP2D6 pharmacogenetic and oxycodone pharmacokinetic association study in pediatric surgical patients. *Pharmacogenomics*. 2017 Mar;18(4):337-48. doi: 10.2217/pgp-2016-0183. [Epub 2017 Feb 17]. PMID: 28244808; PMCID: PMC5555259.
9. Fennell SP, Croso AJ, Michaelis NM, O'Connor SK, Chatter EW, Viera AJ, Parizi JL, McLeod III R, Rooderfer MW. Implementation of a pharmacogenomics service in a community pharmacy. *J Am Pharm Assoc*. 2014 Mar-Apr;54(2):172-80. doi: 10.1331/JAHPA.2014.13033.
10. Reynolds V, Cassey H, McKee J, Rainstein V, Mazyk A. The role of pharmacists in the opioid epidemic: an examination of pharmacist focused initiatives across the United States and North Carolina. *N C Med J*. 2017 May-Jun;78(3):202-5. doi: 10.18043/ncmj.78.3.202.

Title: Expanding the Role of Pharmacy Technicians: Why Not North Dakota?

Presenters

- Dillon Perryman, PharmD Candidate, Class of 2021, North Dakota State University School of Pharmacy, Fargo, ND
Email: dillon.c.perryman@ndsu.edu
- Mark Stage, Jr, PharmD Candidate, Class of 2021, North Dakota State University School of Pharmacy, Fargo, ND
Email: mark.stage@ndsu.edu

Advisor

- Mark A. Strand, PhD, MS, CPH
Professor of Pharmacy Practice, Master of Public Health Program, North Dakota State University, Fargo, ND
Email: mark.strand@ndsu.edu

Financial Disclosure

Neither presenter nor any immediate family member has a current affiliation or financial arrangement with any potential sponsor and/or organization(s) that may have a direct interest in the subject matter presented within the past 12 months.

Learning Objectives

1. **Discuss** the perceptions (both positive and negative) of pharmacists and pharmacy technicians.
2. **Evaluate** the procedures and results of Idaho's implementation of such changes.
3. **Determine** the feasibility of implementing such changes into North Dakota and eventually across the country.

Main Points

- North Dakota is a rural state with 60% to 94% shortage scores in six health care professional areas.
- With a high proportion of the state being medically underserved, North Dakota's vaccination rates are well below the CDC's national goals for 2020.
- A few states, Idaho being the first, have implemented a certification program for pharmacy technicians to be able to administer immunizations.
- Idaho's certificate program consisted of:
 1. 2-hour online self-study
 2. Score of 70% or higher on self-study test
 3. 4-hour live training
- To date, more than **500 Idaho technicians** are certified and have administered more than **25,000 immunizations** with **0** reported adverse events or errors.
- With a large part of North Dakota being medically underserved, utilizing pharmacy technicians to administer immunizations will improve vaccination rates across the state.
- The North Dakota State Board of Pharmacy should consider implementing trainings like those provided by Washington State University to Idaho's pharmacy technicians.

Self-Assessment Questions

1. What was the goal flu vaccination rate for the CDC Healthy People 2020 initiative?
 - A. 50%
 - B. 60%
 - C. 70%
 - D. 80%

2. What score needs to be achieved on the 2-hour self-study quiz?
 - A. 70% or higher
 - B. 75% or higher
 - C. 80% or higher
 - D. 90% or higher

Background

- The Center for Disease Control and Prevention's (CDC) Healthy People 2020 national target for influenza vaccination is set at 70%. The United States is currently at 45.6%, which is due, in part, to limited access.¹
- North Dakota's current influenza vaccination rates are similar to the national average, as shown in **Figure 1**, which leaves much room for improvement. With the majority of North Dakota being medically underserved, as shown in **Figure 2**, improving access to vaccines is the first step in resolving this issue.

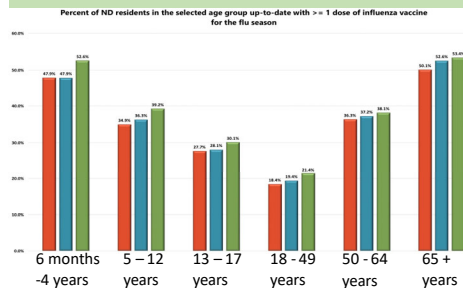


Figure 1: Current influenza vaccination rates in North Dakota (Used with permission.²)

- Pharmacists are losing crucial time that could be devoted to patients. Approximately 21%-41% of pharmacist tasks could be completed by an advanced practice pharmacy technician meeting minimal qualifications.³

North Dakota Medically Underserved Areas/Populations (MUA/MUPs)

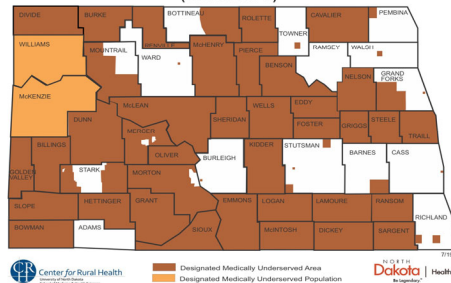


Figure 2. Areas and populations of North Dakota that are medically underserved (Used with permission.⁴)

Why Not?

- A systematic review of pharmacist involvement in the immunization process showed a significant improvement in the number of individuals immunized (RR 2.96, 95% CI 1.02-8.59). The two most important factors contributing to these results were found to be **convenience** and **accessibility** of pharmacists.⁵
- Pharmacists in Idaho felt that technicians were successfully trained to administer immunizations. Pharmacists agreed that including technicians in immunizations **empowered** them and **improved overall morale**.⁶
- At the moment, 18.9% of technicians surveyed report being involved regularly in preparing immunizations, but 47.1% of the technicians would be unwilling to give an immunization. This may be misleading because the technicians in question have had no training relating to immunizations.⁷
- Training and certifying technicians will improve patient access to immunizations and mitigate the time burden on pharmacists thereby improving patient care overall.

How Idaho Did It

- Washington State University is the site responsible for training the Idaho pharmacy technicians.⁸
- Each technician was required to go through a 2-hour online self-study. Technicians learned the proper technique when drawing up and administering a vaccine; commonly used vaccines and routes of administration; storage requirements; safety measures to avoid needle sticks; and proper needle selection, as seen in **Figure 3**.⁸
- A quiz must be passed with a 70% or higher on the self-study material.
- Following completion of the quiz, each technician underwent a 4-hour live training. During this live training, they demonstrated successful technique of IM and SUB-Q injections, successful distraction techniques, universal precautions to blood-borne pathogens, and management of adverse reactions of varying severity.
- Proficiency shown in both the live demonstration and the quiz resulted in an **immunization certificate**.

Results

Question	Participants who answered correctly, n (%)
1. Which combination of vaccine, site, and route is correct?	28 (96.6)
2. Which of the following are proper techniques when preparing a vaccine?	28 (96.6)
3. Which needle length would be best to use for a female patient who is small (less than 130 lb) receiving an influenza (flu) shot?	24 (82.2)
4. When should you give someone who receives a vaccine the vaccine information statement (VIS)?	29 (100)
5. Where can you find up-to-date comprehensive information about common vaccines and diseases they prevent?	25 (86.2)
6. How often should the temperatures on the fridge and freezer be checked?	29 (100)
7. Where should you deposit used syringes and needles for disposal?	29 (100)
8. If a patient experiences anaphylaxis (serious allergy) after receiving a vaccination, what is the first line recommendation for the patient?	22 (75.9)
9. What is the best position for the patient to be in when administering a vaccine?	29 (100)
10. Which combination of vaccine, site, and route is correct?	20 (70)

Figure 3. Topics covered in the Idaho Pharmacy Technician Immunization Certification course. (Used with permission⁷)

- The 25 trained technicians administered 953 immunizations with 0 reported adverse effects from December 14, 2016 to May 31, 2017.⁷
- More than 500 technicians have now completed the immunization certificate program.⁸
- In 2018, Rhode Island joined the movement to allow technicians to give vaccinations.⁹
- Lieutenant Commander Doctor Greg Sarchet now oversees several pharmacy technicians giving immunizations at the Whiteriver Indian Hospital in Whiteriver, Arizona.⁹

Recommendations

- With a large part of North Dakota being medically underserved, utilizing our pharmacy technicians to administer immunizations will improve our vaccination rates.
- We propose that North Dakota implement trainings similar to those provided at Washington State University to certify our technicians to give immunizations.

References

- Mckeirnan KC, Frazier KR, Nguyen M, Maclean LG. Training pharmacy technicians to administer immunizations. *Journal of the American Pharmacists Association*. 2018;Mar;58(2):174-4. <https://www.ndhealth.gov/immunize/>
- Immunization Program. ND Department of Health; [cited 2019Oct7]. Available from: <https://www.ndhealth.gov/immunize/>
- Sasser J. The First Pharmacy Technicians to Give Immunizations: How Idaho Did It [Internet]. Learning Leading An NHA allied health industry blog. 2019 [cited 2019Sep13]. Available from: <https://info.nhanow.com/learning-leading-blog/the-first-pharmacy-technicians-to-give-immunizations-how-idaho-did-it>
- Center for Rural Health. University of North Dakota; [cited 2019Oct11]. Available from: <https://ruralhealth.edu>
- Isernor J, Edwards N, Ala T, Slayter K, Macdougall D, Monell S, et al. Impact of pharmacists as immunizers on vaccination rates: A systematic review and meta-analysis. *Vaccine*. 2016;Nov;34(47):5708-23.
- Bertsch TG, Mckeirnan KC, Frazier K, Vanvoorthuis L, Shin S, Le K. Supervising pharmacists' opinions about pharmacy technicians as immunizers. *Journal of the American Pharmacists Association*. 2019;59(4):527-32.
- Adams A, Desselte S, Mckeirnan K. Pharmacy Technician-Administered Vaccines: On Perceptions and Practice Reality. *Pharmacy*. 2018;6(4):124
- Washington State University [Internet]. Pharmacy and Pharmaceutical Sciences | Washington State University. [cited 2019Sep13]. Available from: <https://pharmacy.wsu.edu/pharmacy-technician-immunization-training/>
- Mckeirnan KC. An Update on Technicians as Immunizers [Internet]. *Pharmacy Times*. 2019 [cited 2019Oct18]. Available from: <https://www.pharmacytimes.com/publications/supplements/2019/march2019/an-update-on-technicians-as-immunizers>