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## Implementation of a Pharmacist-led Hormonal Contraceptive Prescribing Service in a Campus Community Pharmacy in Indiana, United States

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### Abstract

**Objective(s):** College-age people have the highest numbers of unintended pregnancies and pharmacies within college campuses are in a unique position to develop services to meet student needs. Our objective was to implement a pharmacist contraceptive prescribing service in a campus pharmacy, and examine the service utilization.

**Study design:** The Purdue University (Indiana, United States) pharmacy implemented a pharmacist hormonal contraception prescribing service via a collaborative drug therapy management agreement with the campus student health center. The collaborative drug therapy management agreement enables pharmacists to independently prescribe pills, patches, rings, injection, and emergency contraception to students meeting eligibility criteria. After completing a patient health screening and blood pressure check, the pharmacist discusses the eligible method(s) and prescribes up to a 12-month supply. A referral to another provider for long-acting reversible contraception or further evaluation may also be provided. We collected basic information about each encounter (e.g.; age, blood pressure, method of contraception prescribed, time).

**Results:** During the 2020–2021 academic year, 125 prescribing consultations took place with an average appointment length of 20 minutes (range, 12–65 minutes). The median patient age was 21 years (range, 18–30 years). Eligible patients (n=123, 98%) received a prescription and 119 (95%) prescriptions were written: combined oral pill (n=91, 77%), injection (n=12, 10%), patch (n=6, 5%), vaginal ring (n=5, 4%), and progestin only pill (n=5, 4%).

**Conclusion(s):** The pharmacist contraception prescribing service developed by the Purdue University Pharmacy and Student Health Center is a unique approach to meet the needs of students. Few external resources are required for implementation, and most patients were medically eligible to receive hormonal contraception.

**Implications:** Collaboration between on-campus student health centers and pharmacies can be explored as one approach to increase access to hormonal contraception for students.

### Keywords

Pharmacists; contraception; community pharmacy services; health services accessibility; student health services

## 1. Introduction

Despite recent declines, rates of unintended pregnancy in the United States remain high, with college-age people having the highest numbers. In 2011, the rate of unintended pregnancies was 45% across the spectrum of reproductive age [1,2]. However, for people aged 20–24 years, the unintended pregnancy rate was 59% [1,2]. Approximately 1 in 10 female students attending community college will have an unintended pregnancy, and 61% of students who have children while in college do not finish [3]. Similar data are not available for 4-year institutions. In 2021, an estimated 10–15% of college students reported having vaginal sex with no contraception, and an additional 12–15% reported using emergency contraception in the past 12 months, suggesting imperfect or no contraceptive use [4]. Declines in unintended pregnancy rates are primarily due to increased use of effective contraception, with further increased access to contraception identified as a Healthy People 2030 priority [2,5].

According to the American College Health Association, 89% of participating institutions provide clinical sexual health services at their student health center. Of the institutions that provide services, more than 95% prescribe oral contraceptives, but only about 50% of health centers will dispense contraception [6]. Pharmacies embedded within college campuses are in a unique position to develop services that extend beyond dispensing of medications to meet needs and concerns about contraception and family planning for students [7]. As of September 2021, 19 states and the District of Columbia (D.C.) allow pharmacists to prescribe contraception via statewide policies [8,9]. In states that do not have legislation specifically allowing pharmacists to prescribe contraception, including Indiana, pharmacists may be able to enter into a collaborative practice agreement (CPA) or collaborative drug therapy management (CDTM) protocol with a provider, allowing them to initiate medications for specified conditions following an agreed upon protocol [9]. Forty-eight states and Washington, D.C. authorize the use of CPA/CDTM [10]. The scope of CPA/CDTM varies across states but has shown benefits for improving medication-related outcomes [11].

Outside of urban centers, pharmacies may be more easily accessible than other practitioners and clinics that provide sexual and reproductive health services, such as contraception. In Indiana, 50 out of 92 counties have no family planning centers and, as with many

states, Indiana contains many rural areas and a sparsity of publicly funded family planning services [12]. Throughout Indiana, there are more than 80 colleges and universities [13]. College-aged people are often navigating the healthcare system independently for the first time and may have limited experience with reproductive health. Pharmacist contraceptive prescribing can also alleviate the burden on other providers. A patient can see a single provider – a pharmacist – for counseling and education, prescribing, and dispensing contraceptives. Incorporating pharmacist prescribing can reduce the stress on the healthcare system, which is especially important during times of increased healthcare utilization such as the Coronavirus 2019 (COVID19) pandemic. For college students, a single touch point at a campus pharmacy provides additional access for family planning services at a convenient location.

Given the high risk of unintended pregnancy among college-aged students, the primary objective of this research was to implement a pharmacist contraceptive prescribing service in a campus community pharmacy in Indiana and examine the service utilization.

## 2. Methods

### 2.1 Campus setting

This project was conducted at Purdue University, a public university in Indiana. Purdue had a total student enrollment exceeding 45,000 people in Fall 2020 [14]. Female students accounted for approximately 40% of enrolled students, and about half were Indiana residents, representing each of the state's 92 counties. Indiana has 62 counties that are rural or contain rural census tracts [15], and 50 do not have centers for sexual and reproductive health services [12]. Purdue University's campus includes a student health center and community pharmacy. The student health center offers comprehensive services for enrolled students, including sexual and reproductive health services. Students may face routine exam wait times exceeding four weeks, particularly at the beginning of the academic semester. The Purdue University Pharmacy is a full-service community pharmacy that offers a variety of clinical services while also offering a hands-on learning laboratory for Purdue University pharmacy students, who work side-by-side with licensed pharmacists. The pharmacy fills prescriptions for more than 8,500 unique patients annually, and dispenses more than 400 contraceptive prescriptions per month. Researchers selected this site because of the high need for family planning services based upon location, lack of access in students' home counties, and presence of a campus pharmacy which serves as a teaching site for the Purdue College of Pharmacy, allowing for rapid innovation.

### 2.2 Service description

In January 2020, the Purdue University Pharmacy and student health center leadership began exploring opportunities for collaboration. Purdue students lived on-campus and attended classes for the 2020–2021 academic year, despite the COVID-19 pandemic. Providers at the student health center anticipated a higher than usual workload in Fall of 2020 due to the ongoing pandemic, acute illnesses and reproductive health provider staff changes. The contraceptive prescribing service was approved by the student health center and Purdue University's legal team through a series of meetings. The Purdue University Pharmacy

drafted the CDTM using existing algorithms from states with permissive legislation, with the medical director of student health giving final approval as he is the overseeing provider.

In August 2020, the Purdue University Pharmacy implemented a pharmacist hormonal contraception prescribing service via a CDTM with the campus student health center (see Appendix for example). Because of the CDTM, pharmacists are allowed to independently prescribe hormonal contraception to people meeting eligibility criteria that were based on Indiana CDTM laws in place in July 2020 and overseeing medical provider decisions. Pharmacists had to be licensed to practice in Indiana and have completed a nationally recognized hormonal contraception prescribing training to be eligible to prescribe [16]. People seeking contraception had to be at least 18 years old, enrolled at Purdue University, and patients of the campus student health center with a minimum of one previous provider visit. A pharmacist hormonal prescribing encounter includes patient completion of a self-screening health questionnaire, pharmacist comparison of patient responses to the United States' Medical Eligibility Criteria for Contraceptive Use [17], blood pressure check, general reproductive health counseling, discussion of eligible contraceptive methods, and specific counseling on the selected method. Pharmacists used materials previously developed as part of the implementation of this service, including a pharmacy workflow and pharmacist script, patient-facing menu of contraceptive options, and medication counseling sheets in patient-friendly language [18].

Pharmacists initially offered the service on one weekday with scheduled or walk-in appointments while the pharmacy was open from 9 AM – 5 PM. Pharmacists expanded the service delivery to two weekdays after the first four months, due to increased contraception-trained pharmacist availability. Patients could schedule appointments in person at the pharmacy, by calling the pharmacy, or through the web-scheduling portal utilized by the campus student health center. A pharmacist emailed the patient a link to complete a secure online version of the self-screening health questionnaire prior to a scheduled appointment, with walk-in patients completing the questionnaire at the start of the appointment. As recommended by the US Selected Practice recommendations for Contraceptive Use, the pharmacist reviewed the responses and asked appropriate screening questions to be reasonably sure the individual is not pregnant and to identify any pertinent aspects of a patient's medical history that may make the use of estrogen or progestin containing contraception less safe [19]. The pharmacist then checked the patient's blood pressure or reviewed a blood pressure reading from the student's electronic medical record (EMR) that was measured within the past 12 months [20].

Under the CDTM protocol, pharmacists prescribed a hormonal contraceptive that is considered to be a United States' Medical Eligibility Criteria for Contraceptive Use category 1 or 2 based on the patient's health history and does not require provider insertion. A United States' Medical Eligibility Criteria for Contraceptive Use category 1 or 2 indicates that there are no restrictions for a particular method's use, or that the advantages of specific method generally outweigh any theoretical or proven risks [17]. Methods available through the CDTM included pills (combined hormonal and progestin-only), patches, rings, progestin-only injection, and emergency contraception (levonorgestrel and ulipristal acetate). The pharmacist provided a referral to another provider for long-acting reversible contraception

(LARC) or further evaluation if medically indicated. The pharmacist prescribed up to a 12-month supply after discussion of the eligible methods and selection of the preferred product. The pharmacist sent a prescription for either levonorgestrel or ulipristal acetate when emergency contraception was requested or found to be needed during a consultation. The patient chose which pharmacy to have the electronic prescription sent to, and was not restricted to the campus pharmacy. The patient's insurance or payment method dictated the amount of product initially dispensed, with a range from a 1- to 12-month supply. If the patient was interested in LARC, she/they were referred to the campus student health center or another healthcare clinic, with discussion and provision of a shorter acting method until the time a LARC appointment was made. The pharmacist did not require any additional follow-up consultations after a contraceptive method was prescribed.

Patients received detailed counseling of the prescribed method, including how to administer, what to expect, and how to handle a missed/late dose. All patients received general counseling about recommended reproductive health screenings (e.g.; sexually transmitted infection, cervical cancer screening), as well as information about LARC and emergency contraception use. The pharmacist documented the encounter within the EMR used by the campus student health center. The pharmacy charged an out-of-pocket fee of \$25 for this consultation service, as it could not be billed through patient insurance as pharmacists are not recognized as medical providers. The out-of-pocket consultation fee was set based on an estimated hourly salary for a pharmacist, while attempting to find an amount that would not be cost prohibitive for many students.

The pharmacy staff did not conduct any formal marketing of the service prior to implementation. Contraception prescribing pharmacists took several informal approaches to market the service throughout the first two months, including crafting social media posts, conducting interviews with the student newspaper, and outreaching to student organizations.

### 2.3 Data collection

We retrospectively collected data for all appointments that took place between August 1, 2020 and June 30, 2021. Researchers collected basic information about each encounter including patient age, blood pressure, presence of any United States' Medical Eligibility Criteria for Contraceptive Use category 3 or 4 conditions (e.g.; migraine with aura, diabetes with microvascular conditions, high risk for recurrent venous thromboembolism, etc.), use of interacting medications, method of contraception prescribed, whether emergency contraception was prescribed, and time to complete the appointment. The service was refined utilizing a continuous quality improvement approach based on verbal feedback received from patients and pharmacists. The Purdue University institutional review board (IRB) approved this project.

### 2.4 Data analysis

We completed descriptive statistical analyses utilizing the mean (range), median (range), and frequency (proportion) of our data. We completed all descriptive tests via Excel (Microsoft).

### 3. Results

#### 3.1 Uptake of service

Pharmacists completed a total of 125 prescribing consultations from August 2020 to June 2021. Thirteen additional appointments were cancelled, 10 (77%) due to patient ineligibility as they had not been seen previously by a campus student health center provider. Nine students did not attend or cancel their appointments. An appointment took an average of 20 minutes to complete (range, 12 to 65 minutes). The pharmacy received \$3,125 in revenue from the consultations. This revenue only captures the consultation fee and does not encompass any revenue from filling the prescription.

The median age of patients was 21 years (range, 18 to 30 years). Of the 125 consultations, 123 (98%) were eligible to receive contraception, and 119 (95%) prescriptions were written (see Figure 1). One person (1%) was ineligible due to a blood pressure 140/90 mmHg and another because pregnancy could not be ruled out (1%). Three people (2%) reported a history of migraine with aura, considered a United States' Medical Eligibility Criteria for Contraceptive Use category 3 or 4 - one received a prescription for a progestin-only product, one was referred to another provider, and one needed additional time to make a decision. Two additional people (2%) did not receive a prescription as they needed more time to make a decision. Four people (3%) requested and were provided a prescription for emergency contraception.

The methods prescribed were the combined oral contraceptive pill (n=91, 77%), the injection (n=12, 10%), the patch (n=6, 5%), the vaginal ring (n=5, 4%), and the progestin only pill (n=5, 4%). Two people (2%) were on an interacting medication (lamotrigine and divalproex sodium) and the progestin only pill was prescribed in both instances. Figures 2 and 3 illustrate the number of appointments and types of hormonal contraception prescribed. The highest number of prescriptions was written in September (n=18, 15%), October (n=24, 20%), and February (n=18, 15%).

#### 3.2 Quality improvement

Several quality improvement changes were implemented throughout the first two months. During the second week of appointments, pharmacy technicians self-identified ways to promote the service by including printed information with each contraception refill that was dispensed. Campus student health center information technology staff updated the web-scheduling platform during week three to more appropriately identify eligible patients prior to scheduling. Within four weeks of service initiation, all boxes of levonorgestrel emergency contraception dispensed from the pharmacy and campus pharmacy vending machines had stickers with information about the prescribing service.

### 4. Discussion

#### 4.1 Significance

Our findings describe the implementation and utilization of pharmacist hormonal contraceptive prescribing within a campus pharmacy in Indiana using a CDTM.



Collaborative drug therapy management protocols are supported in 48 states and the District of Columbia, and are commonly used for conditions such as pharmacist management of insulin in people with diabetes [9–11]. A CDTM provides an innovative approach to expanding contraceptive access, particularly in areas of the country with high contraceptive need and low contraceptive availability. Our CDTM was launched on a college campus, a site with high levels of contraceptive need, in a rural state with low levels of contraceptive availability. Any pharmacy setting that is able to utilize this approach for patient care could consider development of a hormonal contraception prescribing CDTM, but its use is particularly compelling with a population of college-age youth who have low levels of contraindications. College campuses also provide natural collaborations with provider groups at student health centers. On a campus, the reach of the student health service for provision of highly effective contraceptives in convenient and readily accessible ways can be extended through pharmacist contraceptive prescribing. Pharmacist training is publicly available from a recognized program, and can easily be used to ensure that pharmacists are comfortable providing this service. Our research team has previously created patient counseling materials and an example CDTM that are free for use ([www.pharmacyaccessforms.org](http://www.pharmacyaccessforms.org)).

We have provided results focused on the number of pharmacist-written hormonal contraception prescriptions, as this is an objective measure of service utilization. However, it is important to acknowledge that the potential benefit of this service goes beyond the number of prescriptions written. Many of the students utilizing the pharmacist consultation service may have received limited sexual and reproductive health education prior to their consultation. Pharmacists can provide a valuable role in educating patients about the various contraceptive methods, recommending appropriate preventive health screenings, and reviewing considerations for the appropriate use of emergency contraception. This service augments already existing systems to provide care and diversity access points for students.

## 4.2 Service considerations

We feel that there are additional aspects of the service to highlight given the lack of campus-based pharmacist contraception prescribing services that have been described in the literature. Fewer than 10 no-show appointments occurred throughout the entire academic year of service delivery, which demonstrates a strong desire of students to access contraception in a way that is convenient for them. Due to the restrictions of the CDTM, a small number of appointments had to be cancelled due to patient ineligibility as they had not been previously seen by a provider at the campus student health center. No formal marketing of the service was conducted prior to implementation, with information about availability spreading through contact with student organizations, inclusion of information with each contraception medication dispensed at the pharmacy, and an article published in the student newspaper. The marketing of any new service should be a focus to ensure adequate uptake for sustainability.

No additional staff needed to be hired to maintain service delivery, however scheduling of pharmacy staff to support the service should be aligned with the semester calendar when the on-campus population is largest. The number of scheduled appointments seemed to be

highest immediately upon beginning the semester and prior to extended breaks, which also aligns with the longest wait times for appointments at the student health center.

While not a primary goal of this service, the pharmacy received an additional income of \$3,125 from the consultation fee. Additional pharmacy income could exceed \$15,000 if the service was offered one day each week, with 12 appointments per day. In the United States, pharmacists are not currently recognized as providers who are able to be reimbursed for cognitive services through a patient's medical benefits. Until such legislation is passed, pharmacists are limited in the payment models that are able to support implementation of innovative services. Our service has opted to include an out-of-pocket fee to support the time the pharmacist spends in clinical consultations. In the future, if pharmacists are able to bill and be reimbursed for clinical consultations, this out-of-pocket fee could be replaced with the patient's usual co-pay for medical services. It is important to note that this revenue does not include any prescription fees and additional income to the pharmacy could be realized due to increased prescription volume.

### 4.3 Limitations

This research is limited by the restrictions of the service itself. The CDTM only applied to enrolled Purdue University students that had been seen previously by a provider at the campus student health center. While this limits the applicability to other students, it lays the groundwork for CPA/CDTMs to be created at other higher-educational institutions or community pharmacies that serve these student populations. Additionally, we limited our data analysis to pharmacy level-data and did not include patient-centered aspects of the experience accessing contraception at the pharmacy, such as satisfaction with and continuation of prescribed method. Furthermore, our data did not prospectively capture fill rates, fill locations, and utilization of contraception after prescriptions were provided. Lastly, our data do not include any patients who purchased levonorgestrel emergency contraception over-the-counter from the pharmacy directly, without a pharmacist appointment.

### 4.4 Future plans

Beginning in August 2021, students of any age became eligible for pharmacist hormonal contraception prescribing as long as they are actively enrolled at Purdue University. Additionally, there is no longer a requirement that they must be seen at the campus student health center prior to seeking pharmacist prescribing. These modifications were possible due to changes in Indiana CDTM legislation. Lastly, to be more inclusive of available prescription products, the CDTM was modified to include the ability to prescribe the lactic acid, citric acid, and potassium bitartrate vaginal gel (Phexxi). Students who desire contraception now have an expanded eligibility and available options through the pharmacist prescribing service.

Research in-progress includes an evaluation of patient satisfaction with the pharmacist contraception prescribing service through qualitative interviews and analysis of prescription fill data, continuation of prescribed method, satisfaction with method, and receipt of preventive healthcare.



## 5. Conclusion

The prescribing service developed by the Purdue University Pharmacy and the Purdue University Student Health Center is a unique approach to meet the needs of young people. Few external resources are required to implement this service, and most patients were eligible to receive hormonal contraception from the pharmacist. Other colleges and universities with on-campus pharmacies should explore opportunities to develop similar services to increase access to contraception for students.

## Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

## Funding:

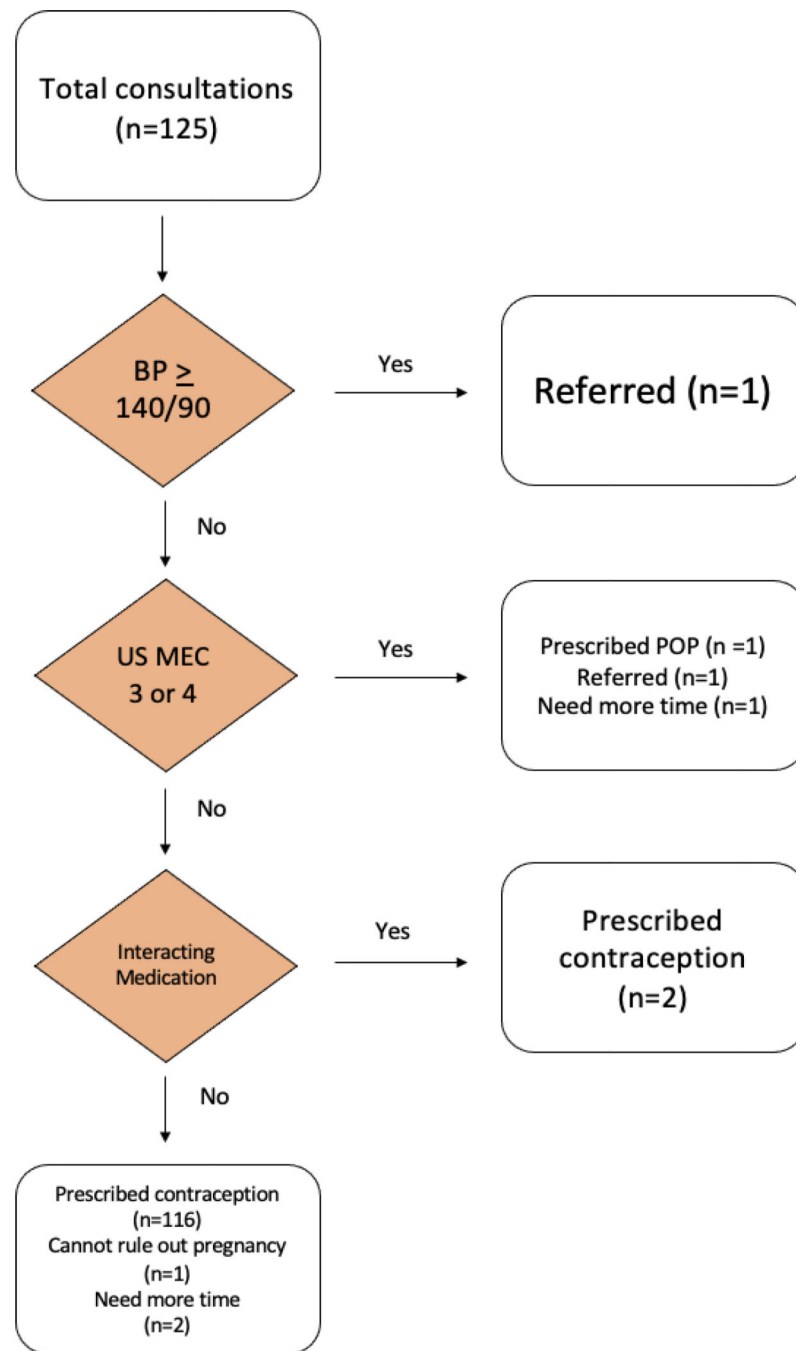
This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

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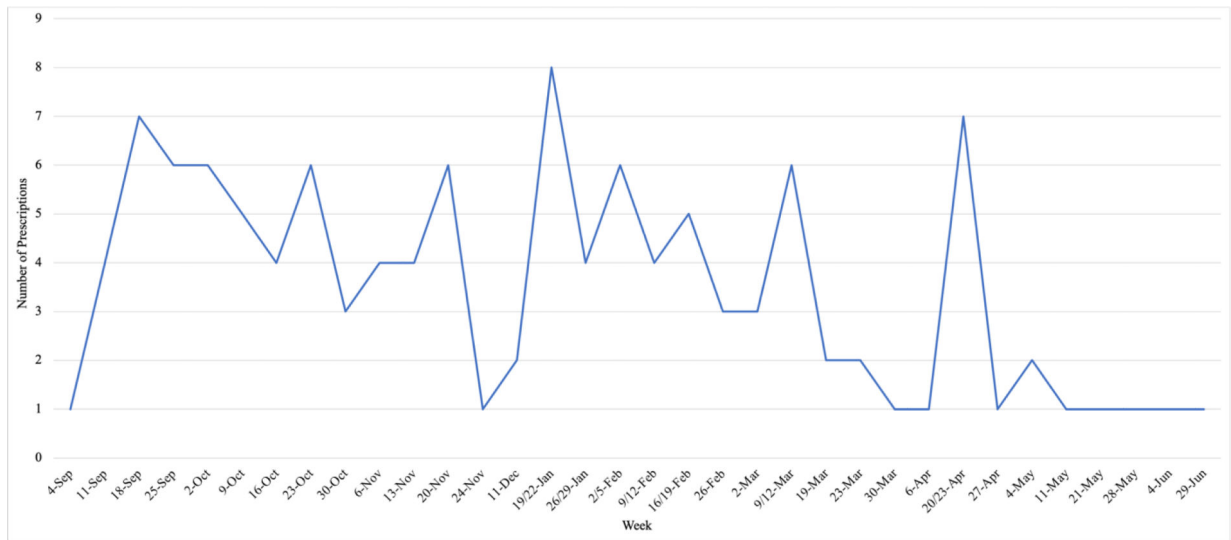
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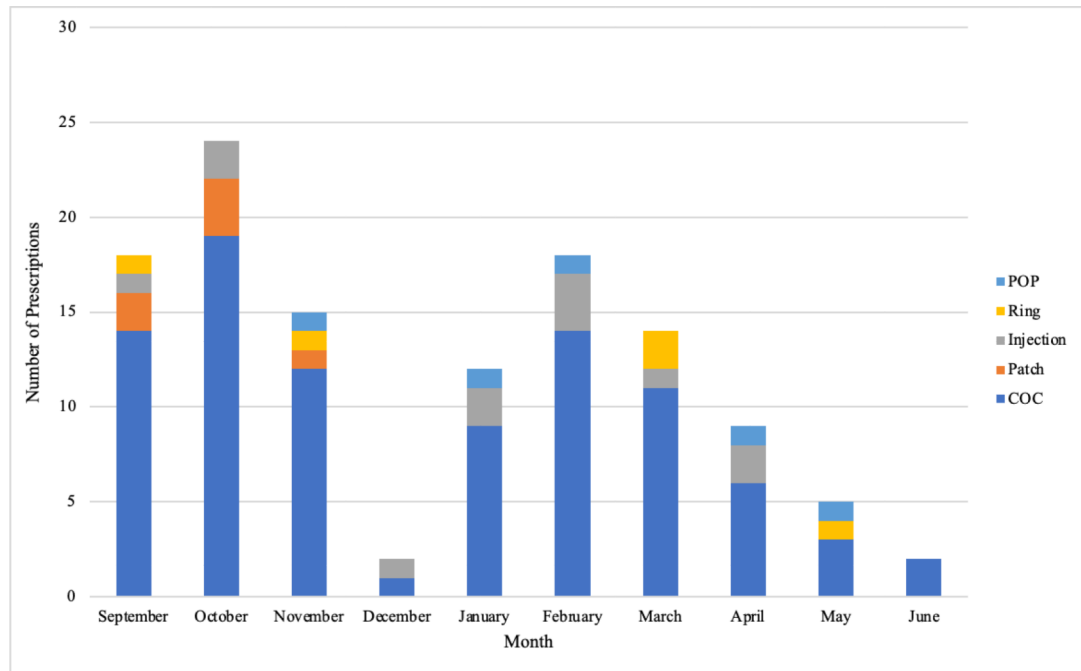
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**Figure 1.**  
Outcome of pharmacist hormonal contraception prescribing appointments at the Purdue University Pharmacy (n=125, August 2020 – June 2021)  
BP = Blood pressure; POP = progestin only pill; US MEC = United States Medical Eligibility Criteria for Contraceptive Use



**Figure 2.**  
 Number of prescriptions written at the Purdue University Pharmacy, by week (n=119,  
 September 2020 – June 2021)  
 Sep = September; Oct = October; Nov = November; Dec = December; Jan = January; Feb =  
 February; Mar = March; Apr = April



**Figure 3.**

Contraceptive methods prescribed at the Purdue University Pharmacy, by month (n=119, September 2020 – June 2021)

COC = combined oral contraceptive; POP = progestin only pill