



Priority Roadmap for Policy-Ready Contraceptive Research Environmental Scan Report

Pharmacist-Prescribed Hormonal Contraception

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ABSTRACT

U.S. states are pursuing mechanisms for expanding Hormonal Contraception (HC) access and addressing barriers to and inequities in access. One such mechanism is pharmacist prescribing of HC, the focus of this environmental scan. This report presents an overview of the existing literature published on pharmacist-prescribed HC, including the perspectives of pharmacists, service users, and other stakeholders and research addressing policy; identifies research gaps; and makes recommendations for future research. The scan yielded: 11 studies on potential service users' perspectives and patients' experiences; 24 studies on pharmacists', pharmacy students', and other stakeholders' perspectives (e.g., health care providers, community members); and 13 studies on the availability and utilization of pharmacist-prescribed HC post-implementation. Researchers conducted most of the studies with pharmacists and other health care providers. Nearly all groups supported pharmacists' expanded scope of practice and recognized the extent to which pharmacist-prescribed HC could benefit patients. Many studies included information on perceived barriers and facilitators to using or providing the service. Barriers to service provision included cost and time constraints. Most studies identified the benefit of expanding access to HC for patients as a top facilitator. In studies of implementation of pharmacist-prescribed HC, availability of the service increased with time, despite pharmacists facing barriers to service provision (e.g., lack of awareness of the new scope of practice, additional training requirements, no statewide protocol established, and a lack of insurance reimbursement for service provision). Only one study assessed patients' reasons for obtaining HC directly through the pharmacy and their experiences of using the service; and only one study measured impacts of pharmacist-prescribed HC on public health outcomes, such as estimated cost savings and unintended pregnancies averted. Overall, more research is needed to understand stakeholders' diverse needs to provide or use pharmacist-prescribed HC, evaluate the quality of service provision and the degree to which this new service expands access to those experiencing the greatest barriers to contraceptive access, and determine the influence of implementation strategies on individual patient and public health outcomes.

INTRODUCTION

The Coalition to Expand Contraceptive Access (CECA) is leading a collaborative process to create a **Priority Roadmap for Policy-Ready Contraceptive Research**. Building on the existing foundation of the coalition and leveraging its unique positioning and diverse collaborative relationships, CECA will:

- Craft a long-term, national-level research and policy agenda.
- Identify the rigorous evidence needed to influence policy, leverage federal processes, and set the stage for state-level implementation.
- Position funders, researchers, and clinical organizations to strategically invest in and carry out ongoing research to inform policies.




To begin the process of identifying existing needs and innovations in the field, CECA performed a series of six targeted and strategic environmental scans¹ to survey existing evidence on key priority topics related to contraceptive access and identify where gaps remain to build a solid foundation of research. The environmental scan findings and supplementary evidence sources will serve as the basis for CECA's Research Roadmap Workgroup's efforts to understand the current body of evidence around contraceptive access, identify research needs and innovation, prioritize research gaps and promising practices, and translate evidence into national research and policy priorities and actions.

This report describes the findings of the environmental scan on **implementation and evaluation of pharmacist-prescribed Hormonal Contraception (HC)**. Despite the numerous options and mechanisms available to receive contraception, many people face barriers in access to HC. Limitations in insurance coverage, time, provider availability; inequities in care provision; and other financial challenges prevent some individuals from receiving HC.^{1,2} A newer mechanism allows pharmacists to prescribe and dispense HC directly to patients. The new strategy—pharmacist-prescribed HC—is intended to increase community access to HC with assistance and oversight by a trained health professional.

The purpose of this environmental scan was to describe the scope and breadth of research on pharmacist-prescribed HC in the U.S. since 2010, identify research gaps, and make recommendations for areas ripe for further exploration. For this environmental scan, the team sought to identify evidence to address the following key research questions:

1. For studies describing pharmacist-prescribed contraception, what are the outcomes under study?
 - a. How are these outcomes being measured?
 - b. How do these studies describe quality (using IOM 6-pronged definition)?
 - c. What, if any, comparison groups/controls are used in these studies?
2. What are implementation approaches to pharmacist-prescribed contraception?
 - a. What is the effectiveness of these approaches?
 - b. What are the lessons learned for implementing pharmacy access?
3. What are patients' experiences obtaining pharmacist-prescribed contraception?
 - a. What are patients' preferences, desires, and needs related to pharmacist-prescribed contraception?
 - b. What is known about experiences, preferences, desires, and needs by race/ethnicity, age, urbanicity, state, etc.?
4. What are providers' perspectives on pharmacist-prescribed contraception? Do perspectives differ by profession (pharmacist, physician, nurse, etc.)?
5. What are the barriers and facilitators to the provision of pharmacist-prescribed contraception?

¹ The environmental scan topics included: (1) Definitions and measures of reproductive and sexual health-related constructs; (2) Measuring health, economic and social effects of contraception; (3) Impact of major policy changes related to contraceptive access; (4) Implementation and evaluation of pharmacist-prescribed contraception; (5) Implementation and evaluation of statewide contraceptive access initiatives; and (6) Contraceptive care workforce.

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6. What is the impact of pharmacy access to contraception on contraceptive access and use (including continuation)? Pregnancy? Sexual and reproductive health equity? Other outcomes? Does the impact vary by geography (urban/rural) or other demographic factors?
 7. What questions about pharmacy access remain unanswered by the current body of literature?

METHODS

Environmental Scan Methodology

The review included seven databases: PubMed, CINAHL, PsychInfo, Web of Science, Embase, Cochrane Library, and ClinicalTrials.gov. The team used Google Scholar to search for articles not included in the other databases. The team restricted the search to publication dates from January 2010 to December 2020. Search terms spanned the broad concepts of contraception, pharmacist, and prescription (see Appendix). Studies included primary research and implementation studies, grey literature, and conference abstracts and presentations. Exclusion criteria were: publication before January 2010, focus on settings outside the U.S., non-empirical articles (e.g., commentaries), research not relevant to pharmacist-prescribed contraception, and research solely about emergency contraception.

The database searches occurred on December 14, 2020. The search yielded 937 articles; 597 titles were unique. Google Scholar helped identify four additional unique titles. From the title and abstract screening, 535 studies were excluded, leaving 62 articles. Only 39 of the 62 remaining articles in the search were full-text research articles. The team searched the references of these full-text articles and identified 21 potentially relevant references. After a title and abstract review and additional searches, we added only four articles. This environmental scan presents data from 48 titles, of which 41 were full-text research articles. Data abstracted included publication information (e.g., title, authors, year, journal), details about the study design (e.g., study purpose and type, target population(s), comparison group(s), years data were collected, sample size, primary outcomes, measurement of outcomes), a summary of the findings, and reported limitations. Most studies described participant populations in terms of (presumably cisgender) female or woman gender; however, we acknowledge that other participants with gender-diverse identities might also use and benefit from pharmacist-prescribed HC.

Evaluation

To evaluate the evidence, the team used an instrument developed by scholars interested in assessing observational studies' quality, including qualitative studies. Sirriyeh and colleagues created the 16-item Quality Assessment Tool for Studies with Diverse Designs (QATSDD).⁶ The tool assesses the extent to which the authors provide information for reviewers to determine the quality. When reviewers determine that authors failed to provide adequate detail, they receive a "0=Not at all" rating. Those who provide detail are assessed with the following options: "1=Very slightly", "2=Moderately", and "3=Complete." For quantitative and qualitative studies, the highest possible rating is 42 points. The highest possible rating for mixed methods studies is 48 points.

In some cases, the denominator was changed to reflect the number of items scored when study designs fell outside the scope of the rubric provided by Sirriyeh and colleagues. For example, several studies used insurance claims data and did not have information about recruitment, the rationale for the data collection tools, or the reliability/validity of study instruments. For ease of understanding, raw scores were converted into percentages. Due to an inability to complete the assessment for abstracts and the structure of quality improvement studies, these titles did not receive quality scores.

SUMMARY OF FINDINGS

Current State Policy Context

States have advanced pharmacist-prescribed HC through legislation or regulations that utilize statewide protocols, collaborative practice agreements, and standing orders:³

- **Statewide protocol:** This approach includes legislation or prescriptive authority to include HC in pharmacists' scope of practice. This expanded scope may include different therapeutics and HC may be included alone in these protocols or bundled with other services or medications. These mechanisms also provide regulations regarding who can receive the service, such as age restrictions, training, and education requirements, and which types of methods are included in this expanded scope of practice.
- **Collaborative practice agreement:** This approach allows pharmacists to prescribe and dispense HC through an arrangement with an authorized prescriber to offer this service. Often these authorized prescribers are physicians and other health care providers.
- **Standing orders:** This approach is a type of protocol that authorizes pharmacists to prescribe and dispense HC without an agreement with an authorized prescriber, such as physician or other clinician. Those who are able to prescribe HC under this implementation strategy must fulfill any state-mandated training requirements.

Currently, 13 states and the District of Columbia have expanded pharmacists' scope of practice to include HC prescribing—and more states are working on passing legislation.⁴ Pharmacists can prescribe HC through a statewide protocol in six states (California, Colorado, Hawaii, Maryland, New Mexico, Oregon).⁵ Three states offer the service through standing orders for contraceptives—New Hampshire, Utah, and West Virginia. Two states authorize pharmacists to prescribe and dispense HC through collaborative practice agreements—Tennessee and Washington. States vary with regards to minimum age requirements for receipt of pharmacist-prescribed HC, method availability, and insurance reimbursement (Table 1).

TABLE 1. Summary of State Policies on Pharmacist-Prescribed Hormonal Contraception

State	Available	Authorized By	Contraceptive Methods	Patient Age Restriction
California	2016	Statewide protocol	Pill, patch, ring, shot	All ages
Colorado	2017	Statewide protocol	Pill, patch	18 and older
Hawaii	2018	Statewide protocol	Pill, patch, ring, shot	All ages
Maryland	2019	Statewide protocol	Pill, patch, ring, shot	All ages
New Mexico	2018	Statewide protocol	Pill, patch, ring, shot	All ages
Oregon	2016	Statewide protocol	Pill, patch, ring, shot	All ages
Tennessee	2019	Collaborative practice agreement	Pill, patch, ring, shot	18 and older
Utah	2019	Standing order	Pill, patch, ring	18 and older
Vermont*	-	-	Pill, patch, ring	All ages
West Virginia	-	Standing order - pending	Pill, patch, ring	18 and older
Others Offering via Collaborative Practice Agreement: Washington, Idaho," Montana, Michigan				
Statewide Protocols or Standing Orders in Progress: Minnesota, New Hampshire,* Virginia, West Virginia, DC				

*Indicates state enacted a pharmacy access law but detail regarding regulation not available yet.

"State regulation in place but no protocol has been made available.

Sources: The Guttmacher Institute⁴ and The Birth Control Pharmacist⁵

Study Populations

The team categorized studies in three ways: 11 studies included potential service users' perspectives and patients' experiences (see Supplemental Table 1);⁷⁻¹⁷ 24 studies focused on pharmacists', health care providers', and other stakeholders' perspectives (see Supplemental Table 2);¹⁸⁻⁴¹ and 13 studies focused on the availability and utilization of pharmacist-prescribed HC post-implementation (see Supplemental Table 3).⁴²⁻⁵⁴ None of the included studies described the perspective of policymakers or health systems leadership/administration.

Study Designs

The search yielded a diverse range of study designs, listed in Table 2.

TABLE 2. Number of Studies by Study Design (N=48)

Study Design	Studies (n)
Cross-sectional survey	14
Qualitative studies	13
Cohort	6
Pre-post tests (student assessments)	4
Secret shopper studies	4
Elicitation and quality improvement projects	2
Mixed methods	2
Retrospective content analysis	1
Community-based study	1
Time and motion	1

Care Setting and Context

Urbanicity

Of those describing the study setting or sample, most studies took place with those primarily in or from urban environments (more than 50%).^{11-17,22,24,25,38,41,49,54,56} Study settings are listed in Table 3.

TABLE 3. Number of Studies by Urban-Rural Environment (N=48)

Urbanicity	Studies (n)
Urban environments (>50%)	15
Rural environments (>20%)	10
No data	23

Note: Top two categories not mutually exclusive; two studies were counted in each.

Geographic Region

Results from the scan showed that most studies occurred exclusively in the Western U.S (15 studies exclusively of California,^{9,12,13,15,17,21,24,33,34,38,41,43,56,58} five studies of Oregon,^{39,40,44,49,59} one of Washington,³⁷ and one of California and Oregon.⁵¹ Geographic regions of included studies are listed in Table 4.

TABLE 4. Number of Studies by Geographic Region (N=48)

Study Locations and Regions	Studies (n)
State	
California	17
Oregon	6
Illinois	2
Indiana	2
New Mexico	2
Michigan	1
North Carolina	1
Ohio	1
Pennsylvania	1
Washington	1
Washington, DC	1
Other Geographic Regions	
Multiple Regions (Midwest, Mountain, Northeast, South, West)	2
Mid-Atlantic Region (KY, WV, VA, NC, OH, TN)	1
Western U.S. (CA, CO, HI, OR)	2

Note: Not all categories are mutually exclusive; one study included California and Oregon. Data on geographic region missing for eight studies.

Pharmacy Settings

Studies described pharmacy settings in different ways. Many studies included pharmacies categorized as retail/chain (e.g., CVS, Walgreens).^{18,20,40,42,43,52} Some authors distinguished between chain community and independent community pharmacy (i.e., a community pharmacy with one or more locations),^{18,22,37,49,50} while others described the setting as community-based pharmacy,^{17,19} community-based pharmacy in a federally qualified health center,⁴⁶ or supermarket chain pharmacies.^{25,51} Other studies had more diverse study settings, such as multiple types of retail/chain pharmacies²³ and those including hospital- and clinic-based pharmacies,^{47,53} “other” pharmacies,^{35,40,53} and education or research pharmacy settings.⁵³ One study recruited participants from primary care and subspecialty clinics yet asked about their perceptions of pharmacist-prescribed HC from community pharmacies specifically.⁷ Researchers conducted several studies at pharmacy schools.^{26–28,31,33}

Comparison and Control Groups

None of the studies had control groups; however, several compared study outcomes between participant groups or settings.^{10,13,16,28,30,49,50} Gomez and colleagues^{49,50} compared availability of pharmacist-prescribed HC and projections of future prescribing between pharmacy settings (urban vs. non-urban) and type (chain vs. independent). Harris and colleagues²⁸ assessed knowledge and confidence among pharmacy students to prescribe HC and compared cohorts of students from different years. Meredith and colleagues¹³ examined young women’s perceptions of pharmacist-prescribed HC by comparing those recruited from primary care vs. pediatric clinics and those with and without chronic illnesses. When assessing providers’ opinions about prescribing contraception, Rafie and colleagues³⁰ compared physicians to other clinicians (certified nurse midwives, nurse practitioners, and registered nurses) that might provide or counsel patients about contraception. Rodriguez and colleagues¹⁶ examined women’s experiences acquiring HC through direct pharmacy access by comparing them to those who received HC from a clinic. Zuniga and colleagues¹⁰ conducted focus groups with youth from different age cohorts (ages 14-17 and 18-24 years) about their perceptions of pharmacist-prescribed HC.



Potential Service Users' Perspectives and Patients' Experiences

Among studies that included potential service users, the primary outcomes of interest or themes from the data included interest in or willingness to use the service,^{7,13,14,17} knowledge and awareness of pharmacist-prescribed HC,^{9,11} and perceived benefits and barriers to service provision.^{7-10,12,14} One study included the experiences of those who used the service.¹⁶

Willingness to Use Service and Utilization

Of the nine studies that exclusively assessed potential service users' perceptions about pharmacist-prescribed HC, most studies described them as willing to receive the service.^{7,13,14} As many as 72% of college women in one study reported they were likely to use the service.⁷ Only one of the nine studies included women older than age 29 years. This study also took place in a rural community; 43% of adult participants (who were all under age 50 years) reported an interest in the service.¹⁷ Other studies reported that women supported the service being offered^{8,12} or found the new service acceptable.¹⁵ Only one study reported potential service users' opinions regarding service pricing, in which an average \$50 fee per consultation and prescribing encounter with a pharmacist was deemed appropriate.¹⁴

Perceived Benefit


Commonly cited perceived benefits of pharmacist-prescribed HC included added convenience and increased HC access.^{8-10,14} Women ages 18-29 years living in California who completed an in-depth interview thought California's new law would directly benefit them and society.¹² While most studies reported that women were generally supportive of pharmacist-prescribed HC, two studies presented opposing views of potential service users' perceptions regarding the perceived benefit of service utilization. In a qualitative study in Indiana, women ages 20-29 years reported that getting HC from a pharmacist would be better than receiving similar services from a traditional clinician.¹⁴ In contrast, other women said they would prefer continuing care with their existing provider rather than receiving HC from a pharmacist.⁹ Reasons for preferring one's existing clinician over using pharmacy access to HC were the clinicians' knowledge of their health history and already established relationships.

Concerns

Potential service users had numerous concerns about pharmacist-prescribed HC. Top concerns among potential service users were related to privacy and confidentiality,^{8,10,12,14} for example, insurance disclosures and consequent parental involvement.^{8,10,12} Although several studies cited potential service users' concerns about pharmacists' knowledge and ability to offer the service,^{7,9,13,14} especially to youth,¹⁰ two studies specifically mentioned issues with pharmacists' understanding of chronic illnesses and its role on HC prescribing.^{8,13} Other beliefs among potential service users included concerns about the service reducing the frequency of health screening administration, such as Pap tests, and youth having sex earlier.⁷

Patients' Experiences

Findings from a cross-sectional study¹⁶ of women ages 18-50 years residing in California, Colorado, Hawaii, and Oregon showed reasons for using pharmacist-prescribed HC included: not needing an appointment (25%), a prescription lapse (24.3%), the location was convenient (23.6%), did not have a regular provider (12.8%), lack of insurance coverage (11.5%), and other (2.7%). Contraceptive counseling about side effects did not differ between those who received their prescription at a clinic or a pharmacy (58% vs. 52%, $p=0.30$). All women who received a prescription from a clinic reported that they were likely to see the same provider again, compared to 95% of women who received HC from a clinic (95%



vs. 100%, $p=0.007$). Additionally, fewer women who received HC from a clinic were likely to recommend the service to a friend than those who received HC from a pharmacy (95% vs. 98%, $p=0.04$).

Quality of the Evidence

None of the studies used a theoretical framework, and many scored low in certain areas of the quality assessment due to a lack of detailed information. Quality scores from the full-text articles ranged from 48-59%. Each of the qualitative studies considered factors such as saturation and data redundancy and had more than one researcher engaged in the analytic process.^{8,9,12,14,29} None of the qualitative studies reported interrater reliability statistics; rather they relied on gaining consensus. One study was a community-based participatory study, which improved the overall design and interpretation of the findings.¹⁰ Of the four quantitative surveys, none of the authors described using validated instruments or testing instruments for statistical reliability and validity.^{7,8,16,17} Most samples were non-probability and limited the generalizability of the findings.

Pharmacists' Perspectives


Primary outcomes (or themes from the data) in studies that included pharmacists and pharmacy students included: knowledge, awareness, opinions, and interest;^{19,22,23,25,35,36,39} confidence, comfort, and readiness to offer the service;^{25-28,33-38,40} and barriers and facilitators to service provision.^{18-23,32,34-37,39,40}

Knowledge, Awareness, Opinions, and Interest

The studies assessing pharmacists' perspectives and opinions were mostly conducted before the implementation of pharmacist-prescribed HC in a given state. In several studies, most pharmacists supported pharmacist-prescribed HC;^{22,23,35} however, support was equivocal in one study (51%).²³ When asked for their opinions about specific methods, support varied. Data from interviews with pharmacists in California showed support at 90% for pharmacist-prescribed oral contraceptive pills, and 83% supported pharmacist-prescribed injectables only if they had completed the required training and had access to a protocol.³⁵ Surveyed pharmacists in Ohio showed a range of support by method type (oral contraceptives, 57%; patch, 54%; the ring, 44%; and injectables, 37%).²³

About half of the studies included information about pharmacists' knowledge, awareness, and interest related to pharmacist-prescribed HC. Knowledge and awareness were measured as knowing that there had been a change in pharmacists' scope of practice or legislation allowing pharmacists to prescribe HC^{19,20,36} or in a pre-post test regarding items about standards of practice for pharmacist-prescribed HC or determining patient eligibility.²⁵ In California, when researchers assessed awareness in 2014, soon after the legislative change to pharmacist's scope of practice, they found that 20 of 30 interview participants (66%) were not aware of the change.³⁵ Years later, between 2016 and 2017, in interviews with pharmacists in California, 31 of 36 participants (86%) were aware of the change.¹⁹

Most pharmacists expressed an interest in prescribing HC; interest ranged from 57-65% across seven studies (three quantitative, three qualitative, one mixed methods).^{20,22,35,36,38-40} In those that assessed pharmacists' interest in prescribing HC quantitatively,^{36,38-40} response options were limited to service provision in general or the short-term hormonal methods that are available in some states (pill, patch, ring, or injectable); interestingly, in New Mexico, pharmacists (who already could prescribe HC) expressed interest in prescribing and inserting the hormonal implant.²² A survey of 88 pharmacists in DC assessed interest by prescribing arrangements, with similar proportions of respondents expressing interest in collaborative practice agreements (63%) and independently prescribing HC (59%).⁴⁰ About 74% said they were likely to offer the service in a survey of 257 pharmacists in California.³⁹ In one



California study in which 30 pharmacists were interviewed, two-thirds (n=19) intended to offer the service after the state created a protocol.³⁵ Eighty-three percent of 713 surveyed pharmacists in North Carolina³⁷ and 39% of 509 surveyed pharmacists in Oregon reported being likely to prescribe HC.³⁴

Confidence, Comfort, and Readiness

Several studies reported the degree to which pharmacists felt confident (or comfortable) and ready to prescribe HC to patients.^{25,38–40} Among pharmacists working in Kroger pharmacies in the Mid-Atlantic region, confidence significantly increased after mandatory training to prepare pharmacists to prescribe HC.²⁵ Readiness also varied depending on the assessed topic. A four-item measure was used to assess readiness and was administered to 800 pharmacists from 21 states.³⁸ Results showed that pharmacists strongly or somewhat agreed to the following prompts: understanding when to refer a patient (77%), awareness of the U.S. Centers for Disease Control and Prevention Medical Eligibility Criteria (USMEC) (36%), comfort in counseling adolescents (33%), and using the USMEC (22%). Those who exhibited greater confidence in readiness to prescribe were more likely to be residency-trained pharmacists.

Barriers and Facilitators to Service Provision


As states enact changes in legislation and scope of practice for pharmacists, eliciting pharmacists' perspectives on identifying and mitigating implementation challenges is critical. Thus, most of the studies with pharmacists included findings on barriers and facilitators to implementation.^{18–23,34–37,39,40} Opinions among pharmacists from the two studies that took place post-implementation showed little difference in significant barriers and motivations to prescribing HC—reimbursement for services and other financial considerations and ensuring patients have access to services as barriers and continuing to expand their scope of practice in general as a facilitator.^{19,53}

The most common barriers cited were financial and time limitations.^{18,19,22,23,34,35,37,39,40} Specifically, pharmacists were concerned about not getting reimbursed for counseling and prescribing HC to patients and also expressed concerns about the time to provide the service given their current workload. Pharmacists and other providers were also concerned about safety issues and liability,^{19–23,34–37,39,40} training requirements,^{21,34,35} gaps in knowledge and training regarding HC,^{20,22,35,40} and a lack of patient interest.¹⁹

One of the top facilitators among pharmacists supporting pharmacist-prescribed HC and wanting to offer it was the perceived direct benefits to patients or communities.^{18,19,22,23,37} Other facilitators included pharmacist availability and community-based location^{18,19,21,23}; existing infrastructure (e.g., administrative support, private consultation spaces)^{18,21,22}; existing knowledge, skills, and training^{21,22}; perceived benefit to health system or public health outcomes (i.e., reduce unintended pregnancy)^{19,23,37}; and professional benefit to pharmacists (i.e., more responsibility through expanded scope of practice).^{19,36,37}

Pharmacy Students

As states continue to expand pharmacists' scope of practice, schools and colleges of pharmacy across the U.S. are preparing students to offer this care. The search yielded four studies that included pharmacy students. The primary outcomes of interest among student populations were readiness^{26–28} and confidence.^{26–28,33} Three studies engaged in a training exercise or activity and measured outcomes at pre- and post-activity; that study conducted a cross-sectional survey.³³ Of the two studies that assessed performance, findings showed that students performed well > 80%.^{26,27} Nearly all studies reported that students overwhelmingly felt confident in their ability to prescribe HC. Findings from two cross-sectional



surveys of students across California Schools of Pharmacy highlighted how more than 90% of the 502 students were interested in offering HC to patients³¹ and reported being moderately-extremely confident in their ability to counsel on proper HC use, in counseling about HC failures, mishaps, and barrier methods, knowing when to refer to a physician, and screening patients before ordering.³³ Despite their high levels of confidence, most students also said they wanted more education or training.

Quality of the Evidence

The average quality score for studies with pharmacists and pharmacy students was 55% (range: 38-63%). Factors associated with reduced quality included a lack of theoretical application, participant involvement in study design, use of validated instruments, low response rates, or reliability and validity testing. Additionally, studies predominantly used convenience samples, limiting the generalizability of the findings; many studies used state pharmacy boards or associations,^{22,23} students at schools of pharmacy,^{26-28,31,33} or organizations offering pharmacy services.^{25,30,32} Data collected from students at pharmacy schools had high response rates, as surveys were administered during class time; however, the other sampling techniques used might bias results, as participants might not fully represent pharmacists' perspectives in other settings. Two studies randomly contacted pharmacies in their area and sampled from those who answered the call.^{18,49} While this technique provided a random sample, the identity of those who answered the call was not verified and might differ from those who did not. Studies also provided limited rationale for study design and analytical methods.

Perspectives of Other Stakeholders


Health Care Providers

Two studies included other types of health care providers, including physicians, nurses, midwives, and physician assistants.^{30,32} From 2008-2009, Rafie and colleagues interviewed 20 providers across academic and community health systems in California.³² When asked about three different options to expand HC (prescription-only, pharmacy access, and behind-the-counter or over-the-counter), about a third of interview participants supported pharmacist prescribing and another third supported over-the-counter access. Like the benefits pharmacists have cited, providers perceived patients would have greater access to HC. About half of participants perceived their provider role would improve with pharmacists' expanded scope of practice because they would have more time for other care visits beyond contraceptive and abortion care.

Regarding concerns, providers thought some pharmacists might refuse to prescribe HC due to religious or personal objections.³² In 2009, Rafie and colleagues³⁰ also administered a quantitative survey to elicit health care providers' opinions about pharmacist-prescribed HC. Survey results showed that 74% of providers supported pharmacist-prescribed HC for oral contraceptive pills, patch, ring, and 67% supported pharmacists' prescribing injectables. Physicians in this sample of health care providers were more supportive of pharmacist-prescribed HC than other providers, such as midwives and nurse practitioners. However, 75% of the entire sample agreed that pharmacists would need intensive training on reproductive health and HC to offer the service. Regardless, providers further demonstrated their support of pharmacists' expanded scope of practice by reporting that they were very or somewhat interested (66%) in signing a collaborative practice agreement with a pharmacist to provide HC.

Stakeholder Groups

Two studies elicited feedback from stakeholder groups to improve tools pharmacists could use while offering the service.^{29,41} One group included a panel of experts recruited from the following disciplines: adolescent and reproductive health, pharmacy, and public health;²⁹ and the other study included the



same groups along with youth from the community.⁴¹ As comments and feedback were collected and compiled in aggregate, these data are presented as group feedback. The group of stakeholders that included experts (adolescent medicine, obstetricians and gynecologists, women’s health providers, pharmacists, and public health experts) provided feedback on a toolkit and recommended modifications to materials that were attentive to workflow changes in pharmacy settings and responsive to evolving care provision practices based on new evidence.²⁹ To refine the toolkit, researchers conducted pilot testing with youth.⁴¹ Later iterations included the following: youth-friendly lay terms, suggestions from a pediatric neurologist regarding documenting headaches and aura, potential contraindications for HC use among youth with health issues not addressed in the US MEC, and ways pharmacists could address discrepancies in youth’s self-report and that of their physician.⁴¹ Other suggestions from the iterations of feedback included that pharmacists offer youth pharmacist-prescribed HC in a non-judgmental manner and include accurate information while creating a youth-friendly environment.

Additionally, one study conducted a retrospective content analysis of comments to news articles from online users’ perspectives about pharmacist-prescribed HC. These individuals’ demographic could not be identified and might include providers, pharmacists, community members, among others. Overall, comments described the same barriers and facilitators pharmacists and other health care providers cited: gaps in insurance coverage, competing priorities for pharmacists, and a perceived lack of knowledge or training among pharmacists to offer the service.²⁴

None of the included studies described the perspective of policymakers or health systems leadership/administration on pharmacist-prescribed HC. Pharmacists and healthcare providers were often used as proxies in the identified studies to address concerns regarding health systems. Although policymaker perspectives are not represented in the evidence, several studies concluded that reimbursement needs to be a key feature of any successful implementation effort.^{16,21-22,31,39}


Availability and Utilization

Among studies that assessed availability and utilization, the primary outcomes included: availability of service,^{43,45,49,52,53} expectations for future service availability,⁵⁰ service utilization,^{42,44,46,48,51,53,54} timing of service provision,⁴⁷ and health outcomes related post-implementation of pharmacist-prescribed HC.⁵⁴

Oregon

Six studies were conducted in Oregon post-implementation in 2016.^{42,46-48,53,54} The first study administered a 6- and 12-month post-implementation survey in June and December 2016, respectively.⁵³ In June 2016, 19% of zip codes had access to pharmacist-prescribed HC and increased to 63% six months later. Of the 121 pharmacists included in the six-month assessment, 51% had been prescribing HC for less than three months. Among 62 pharmacists who participated in both surveys, there was no significant difference in their perceptions and attitudes between the two time points.⁵³ Rodriguez and colleagues also reported on service logistics, finding that it took on average 26 minutes to screen, counsel, and prescribe HC.⁵³ In this study, pharmacists billed insurance for 42% of visits.

Several studies used Medicaid claims data to measure availability and utilization.^{42,46,48,54} Gibbs and colleagues⁴⁸ conducted a retrospective cohort study with Medicaid claims data to compare utilization of pharmacist-prescribed HC between years 2015-2016 (pre-implementation) and 2016-2017 (post-implementation). No significant difference in prescriptions for the pill or patch was detected pre-implementation to post-implementation; however, claims for pharmacist-prescribed HC increased from 0.3% in 2016 to 0.6% in 2017. Next, Anderson and colleagues used Medicaid claims data to measure utilization from January 1, 2016 – December 31, 2017.⁴² Of the 3614 patients who received HC during




this time, 162 pharmacists ordered the prescription for 367 patients. Most of the claims were placed at chain pharmacies (94%) in urban environments (71%) in Oregon.⁴² Similarly, Rodriguez and colleagues⁵⁴ used Medicaid-claims data during the same period to estimate utilization and the number of unintended pregnancies avoided and associated cost savings. Results showed that 248 pharmacists furnished 1,313 HC prescriptions for 367 women. The authors estimate that the service helped to avert 51 unintended pregnancies, consequently saving \$1.6 million. Walsh and colleagues⁴⁶ also conducted a prospective cohort study at a pharmacy located within a federally qualified health center. Existing patients ages 18-50 years old were contacted and informed of the availability of pharmacist-prescribed HC at the FQHC. Over four months, 23 patients accessed the service. Of those who used the service, 78% received HC from the pharmacist; 16 women received pills, and one woman the patch. Six women had to be referred to their provider because the pharmacist could not furnish HC until their pregnancy status was determined; and one participant was referred because they desired a method beyond the pharmacist's current scope of practice. Lastly, Frost and colleagues⁴⁷ conducted a time and motion study in the Tri-County area of Portland, Oregon. Unlike the findings from Rodriguez and colleagues where providers were asked about prescribing all the allowed methods (as of ,⁵⁴ pharmacists were able to furnish HC on average in less than 20 minutes (estimated range 15-20 minutes); however, HC methods were limited to oral contraceptive pills only, while the other study did not restrict encounter types by method.

California

Three studies were conducted exclusively in California, all using a secret shopper method to assess pharmacist-prescribed HC availability.^{43,49,50,52} Batra and colleagues⁴³ conducted their study from December 1, 2016-April 2017, with a random sample of 457 pharmacies across California; Gomez and colleagues⁴⁹ utilized a random sample of 1008 pharmacies across California from February – April 2017; and Qato⁵² gathered responses from a representative sample of 1482 pharmacies in LA County, California in June-November 2017. In early 2017, of the 457 randomly sampled retail pharmacies, 78% had a pharmacist available to discuss HC, and only 5% had pharmacists prescribing HC.⁴³ Also, in only five (5) of the 22 sites could patients be prescribed the pill, patch, ring, and shot.⁴³ In another study that included a representative sample of pharmacies in California, findings showed that 11% of sites offered pharmacist-prescribed HC, and 68% of those sites charged a fee for the service.⁴⁹ In mid-late 2017, 10% of pharmacies in LA County offered pharmacist-prescribed HC. Although California did not have age restrictions related to pharmacist-prescribed HC, 74% of pharmacies said a patient would have to bring a form of identification for age verification before they could receive HC.⁵² Service availability was greater in lower-income communities and areas with high teenage pregnancy rates; however, service was limited in racial and ethnic minority-dense areas.⁵²

Multi-state Studies

Four studies took place post-implementation in more than one state.^{16,44,45,51} Lu and colleagues⁵¹ prospectively examined the utilization of pharmacist-prescribed HC among a chain of supermarket pharmacies in Oregon and California. Of the 676 patients that accessed the service, 93% received HC. In another study of women ages 18-50 years presenting to community pharmacies in four states (California, Colorado, Hawaii, Oregon), 35% of women had a pharmacist furnish the prescription⁴⁴ , and women who received the service were slightly more satisfied than those who received HC from a clinic.¹⁶ Findings also indicated that more pharmacists than health care providers wrote prescriptions for more than three months of coverage, with pharmacists three times more likely to prescribe a 6-month supply.⁴⁴ Data from a survey of service availability in rural areas of Oregon and New Mexico showed that 42% of sites were offering pharmacist-prescribed HC (46% in Oregon and 19% in New Mexico).⁴⁵ There were no significant differences in method availability by location, including no differences in urban vs. rural environments. Although studies were conducted across multiple states, researchers did not assess



differences in outcomes by state, instead by care facility (pharmacy vs. clinic)^{16,44,45} or rural vs. urban environment.⁵¹

Quality of the Evidence

The average quality score for studies on the availability and utilization of pharmacist-prescribed HC was 56% (range: 49-64%). Factors associated with reduced quality included little to no participant involvement in the study design, limited consideration for sample size needed for analysis, and limited rationale for study design and analytic methods.


Impacts of Pharmacist-Prescribed Hormonal Contraception

There is a paucity of literature regarding the impacts of pharmacist-prescribed HC. Among the few studies of impact, Rodriguez and colleagues⁵⁴ estimated the number of pregnancies averted and cost savings it yielded. Using Medicaid claims data, aggregate state-level data on the number of women at risk of unintended pregnancies, and the probability of HC use, failure rates, and other data were taken from the available literature. The researchers modeled multiple scenarios and estimated that the program saved the state Medicaid program \$1.6 million and that 51 people avoided an unintended pregnancy. Additionally, in another study, women who were existing patients at a Federally Qualified Health Center (FQHC) and were not currently using HC were offered the new service.

To date, there also has been limited data on impacts based on patients' geography or other characteristics. When assessing service availability in California, researchers found no difference in the rural-urban environment.^{49,50} Those not currently offering the service were asked about future service provision—more locations in urban than non-urban environments said they would likely offer service in the future (35% vs. 22%).⁵⁰ Data on service availability in Oregon and New Mexico showed no difference in the general availability of pharmacist-prescribed HC by rural-urban locations. In contrast, a study conducted in LA County, California, showed different outcomes by geographic locations—areas with more minorities residing and those with higher increases had fewer options to access pharmacist-prescribed HC than those with lower incomes and living in other areas. Additionally, geographic areas with higher teen birth rates also coincided with fewer restrictions to obtain the service; fewer site-imposed age restrictions.

States Prescribing Practices

Rodriguez and colleagues⁴⁴ provided vital information on different states (California, Hawaii, Oregon, Colorado) prescribing practices, including the duration of index prescriptions between January 30 and November 1, 2019. There were statistically significant differences: Oregon pharmacists were three times more likely to prescribe a six-month or more HC supply compared to other providers and other states. The authors admit that the study was not powered enough to detect differences in state implementation features and patient service utilization. Around the time this study was conducted, Hawaii had the most liberal and comprehensive existing policy, which allowed pharmacists to prescribe five HC methods (pill, patch, ring, injectables, and Long-Acting Reversible Contraception (LARC; intrauterine devices and implants)) for up to 12 months of coverage to patients of any age and reimbursement for pharmacists.⁵⁵ Despite these conditions, of the eight people from Hawaii included in the study, no one received a prescription for more than six months from either a clinician or pharmacist. California, which had the similar conditions as Hawaii other than provider reimbursement, had 4 of 71 patients (6%) receive a script for more than six months (prescriber unknown). Although Oregon only allowed pharmacists to prescribe oral and patch HCs, the demand for the service and the ability to



reimburse might increase the likelihood pharmacists offer the service, potentially increasing patients' access to HC without a doctor visit and more extended HC coverage.

RESEARCH GAPS AND IMPLICATIONS

Lessons Learned

Overall, the literature suggests that potential service users, particularly youth, perceived that pharmacist-prescribed HC would directly benefit them. Most pharmacists and pharmacy students supported and were interested in offering the service, and physicians and other clinicians supported pharmacists' expanded scope of practice.

While many study participants supported pharmacist-prescribed HC, they perceived barriers for pharmacists who might offer the service, which could lengthen the time to service provision or delay uptake among users. The top barriers to pharmacist HC prescribing were time and financial constraints. States proposing and implementing policies should include reimbursement mechanisms as early as possible, as this particular limitation seemed to be associated with a lag in operations to offer the service once pharmacists' scope of practice expanded. Pharmacists and pharmacy students desired more education and training despite feeling quite confident in their ability to prescribe HC—additional training and practice tools are needed to augment their existing expertise. Noted facilitators were often tied to pharmacists and other providers perceiving how greatly the new service would benefit patients. Pharmacists' and other providers' desire to care for patients and reduce HC access barriers are crucial elements that supporters can leverage to increase stakeholder buy-in and support sustainability efforts. One study of pharmacists currently prescribing HC showed that pharmacists were interested in hormonal implant insertions,⁵³ a method that pharmacists in Hawaii can already prescribe and many other states might add eventually. Data post-implementation showed increasing availability of pharmacist-prescribed HC soon after the legislative change. Early impacts included dozens of averted unintended pregnancies and cost-savings. Only one study included data on the experiences of those who received the service—users were satisfied with the service. Outcomes only differed in that those receiving HC from a clinic were slightly less satisfied than pharmacy users.

Gaps in the Literature

Significant gaps in the literature remain as states expand and amend legislation to allow pharmacists to prescribe HC. While there were a fair number of studies collecting data from potential service users, pharmacists, and other providers pre-implementation, there were few that included their perspectives and experiences after implementation. Therefore, data on actual experiences rather than anticipated experiences are crucial. Data are limited regarding potential service users' perspectives and needs pre-implementation, and this should be addressed as more states expand pharmacists' scope of practice. Additionally, certain groups were missing from the literature, particularly historically marginalized groups, such as people of color, people identifying as LGBTQ+, and those residing in the central and eastern U.S. There was a paucity of literature about patients' perspectives and willingness to use the service, particularly those who would identify as people of color, residents of rural communities, and people over the age of 29 years. No research considered the quality of care provided by pharmacists. No research considered the perspectives of policymakers or leaders/administrators within healthcare systems regarding pharmacy-prescribed HC. Significantly more research is needed on the impacts of service provision on public health outcomes and which implementation features influence successful implementation and these outcomes. Lastly, more data is also needed to understand barriers and facilitators of service provision at the organization-level.

Future Research

Future research should assess the degree to which patients are satisfied with the service and their prescribed method and the degree to which the care provided via pharmacists is patient centered. Many identified studies focused on adolescents; however, more information is needed about how adults perceive this service and their interest or intention to use it. Patient-centered measures, such as the Interpersonal Quality of Family Planning Care,⁵⁶ could be used to assess pharmacist-prescribed HC. No studies address the six dimensions of health care quality as defined by the Institute of Medicine:⁵⁷ safety, effectiveness, patient-centeredness, timeliness, efficiency, and equity. Future research questions could address these dimensions; suggestions on potential questions to address can be found in Table 6.

TABLE 6. Addressing the Six Dimensions of Health Care Quality in Pharmacist-Prescribed HC

Dimension	Question(s) to Address
Safety	<ul style="list-style-type: none"> • How well do protocols help pharmacists avoid prescribing methods to those who have contraindications for HC? • Do pharmacists have the tools to refer patients for various services (LARC, STDs, cancer screenings, pregnancy options—pregnancy care and abortion)? • What is the rate of various contraindications among people attempting to access pharmacist-prescribed contraception? • Does the self-screening questionnaire adequately identify and rule out contraindications among various patient populations?
Effectiveness	<ul style="list-style-type: none"> • To what degree is pharmacist-prescribed HC available to those who would likely benefit from the service? • Are legislative bills and statewide protocols consistent with evidence-based guidelines or imposing additional restrictions on practice and access? • With what degree of fidelity are protocols implemented in a variety of community pharmacy settings? • How are pharmacist prescribing practices supporting patient contraceptive use (i.e., continuation, method of choice, EC co-prescribing, re-assessing contraindications with new medications, etc.)? • Are potential contraceptive users aware that pharmacist-prescribed contraception is an option and what are the most effective means to build awareness?
Patient-centeredness	<ul style="list-style-type: none"> • How satisfied are patients with the service? • To what degree do patients report their pharmacist respected their needs and preferences related to HC? • How is a confidential space achieved in various community pharmacy settings? • How can pharmacists [be trained to] provide care without influence by their implicit biases or personal beliefs/values?
Timeliness	<ul style="list-style-type: none"> • Does pharmacist-prescribed HC result in fewer delays to obtaining a method(s) and in less waiting time to access a contraceptive care encounter? • Are patients provided more timely refills and delivery services with pharmacist prescribed contraception? • What resources do pharmacists use to provide referrals?

Dimension	Question(s) to Address
Efficiency	<ul style="list-style-type: none"> • To what degree does pharmacist-prescribed HC reduce the burden on health systems to offer HC to patients? • Are pharmacy school curricula and/or continuing education opportunities adequate for all community pharmacists to provide this service as a standard of care upon graduation and/or protocol availability in their state?
Equity	<ul style="list-style-type: none"> • To what degree does pharmacist-prescribed HC meet the needs of those historically and currently underserved by traditional prescribing practices? • To what degree does it increase access for those who are underserved by traditional prescribing practices? • How is the service responsive to the needs of diverse groups of potential service users (e.g., youth and young adults, LGBTQ+ people)? • Are different patient populations served by pharmacist-prescribed contraception where there is payment for pharmacist services by health plans versus absence of payment?

Data regarding pharmacists’ interest in or willingness to prescribe other methods, such as the hormonal implant, are limited;^{22,53} this should be further explored in the literature. In studies that were conducted post-implementation, pharmacists were unaware of the change in their scope of practice, which subsequently can reduce individuals’ opportunities to access the service. Therefore, work is needed to devise effective strategies for informing pharmacists and providers of the new service and expanding privileges and HC access. Further, much of the research focuses on oral contraceptive pills; while the most popular method prescribed by pharmacists, a number of states enable pharmacists to prescribe other methods, and there might be opportunities to also include LARC methods in the future.

Further research is needed to understand the multi-level models used to implement and advance pharmacist-prescribed HC through legislation or regulation, such as statewide protocols, collaborative practice agreements, and standing orders. Studies identified in this scan did not effectively address the rationale for applying a specific implementation model within a state, whether one implementation model demonstrates more positive outcomes than others, or barriers and facilitators to implementing these implementation models successfully. Future research around the implementation of multi-level models for pharmacy-prescribed HC should assess outcomes related to contraceptive access and use (including continuation), pregnancy, and sexual and reproductive health within and across states, as well as describe best practices and lessons learned for implementation, to address this gap in the literature.

Studies should conduct and present reliability and validity statistics on their measures and use validated instruments. Additionally, studies would significantly benefit from using community-based methodologies and theoretical and implementation frameworks, such as the Consolidated Framework for Implementation Research (CFIR).⁵⁸ Scholars should continue examining the impacts of implementation mechanisms and features (e.g., age restrictions, reimbursement, types of methods, prescription duration), patient-centered and public health (e.g., access, use, including continuation and switching, pregnancy, cost-savings) outcomes. Lastly, scholars should also consider the impacts of COVID-19 on pharmacy access to HC and its implementation.



CONCLUSION

This environmental scan uncovered literature on an emerging policy and research area—pharmacist-prescribed HC. Most of the literature was conducted from pharmacists’ or providers’ perspectives, yet nearly all groups, including potential service users, supported pharmacists’ expanded scope of practice and recognized the benefit to patients. Data showed that service availability increased with time, and only one study measured impacts of pharmacist-prescribed HC, which included estimated cost-savings and unintended pregnancies averted. Another study assessed patients’ reasons for obtaining HC directly through the pharmacy and their experiences with these encounters. Overall, more work is needed to understand the quality of care, barriers and facilitators to and impact of policy changes, stakeholders’ diverse needs to providing or using pharmacist-prescribed HC, and the influence of implementation mechanisms on patient and public health outcomes.

Key Takeaways from the Environmental Scan

- Pharmacists, potential service users, and other health care providers are supportive of pharmacist-prescribed HC.
- Pharmacists, potential service users, and other health care providers perceive limited time and a lack of reimbursement as some of the greatest barriers to service provision.
- One of the most significant motivators for pharmacists to prescribe (or continue prescribing) HC is to help people access methods and address public health issues in their community.
- Remaining gaps include eliciting the perspectives of diverse populations regarding interest in, need for, and experiences with pharmacist-prescribed HC; investigating the quality of pharmacist-prescribed HC, overall and for groups who historically are provided lower quality care; measuring impacts on public health outcomes; and identifying and assessing strategies that facilitate successful implementation and impact outcomes.


APPENDIX: SEARCH TERMS

Concepts	Search Terms
Contraception	Contracept* Contraceptive care Contraceptive services Birth control Birth control method Birth control device Family planning Family planning method Family planning care Hormonal contraception Contraception, barrier Contraception, immunologic Ovulation inhibition Male contraception Family planning services
Pharmacist	Pharmacist* Clinical pharmacist Community pharmacist Retail pharmacist Pharmacy Community pharmacies Clinical pharmacy service
Prescription	Prescrib* Prescript* Drug prescription Prescribing, drug Medication




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SUPPLEMENTAL TABLES

Supplemental Table 1. Pharmacist-Prescribed Hormonal Contraception (HC): Potential Service Users' Perspectives and Patients' Experiences (n=11)

First Author, Year	Sample	Study Design	Setting and Context	Outcomes and Themes	Key Findings
Full-Length Articles					
Meredith, 2019	14 women ages 20-29 years	Qualitative interviews	Indiana, central	Barriers and facilitators	Participants perceived the benefits of service over standard HC care. Concerns included privacy and confidentiality, pharmacists' knowledge and skills; wanted non-judgmental and factual information; willing to pay average of \$50 for pharmacy encounter.
Meredith, 2020	60 women ages 14-21 years	Qualitative interviews	Indiana, primary care and pediatric clinics	Interest	56% were interested in pharmacist prescribing; 59% of those without chronic illnesses vs 53% of those with illness were interested.
O'Connell, 2020	859 female college students	Cross-sectional survey	Michigan, recruited from primary and subspecialty clinics	Willingness, barriers and facilitators	Most reported willingness to get HC from a pharmacist. Concerns included: worried about not getting regular Pap smears (80%), being prescribed the wrong HC (44%), using HC incorrectly (25%), pharmacists' knowledge (9%) and skills (13%), and belief that teens would have sex earlier (24%).
Rodriguez, 2020	426 women ages 18-50 years	Cross-sectional survey	California, Colorado, Oregon, and New Mexico	Reasons for using service, service experience	Participants' reasons for using pharmacist-prescribed HC were: no appointment was needed (25%), lapse in prescription (24.3%), convenient location (23.6%), did not have a regular provider (12.8%), uninsured (11.5%), and other (2.7%). Counseling between those who received prescription at a clinic vs. a pharmacy did not differ regarding side effects

First Author, Year	Sample	Study Design	Setting and Context	Outcomes and Themes	Key Findings
					(58% vs. 52%, p=0.30). Service satisfaction was high.
Walker, 2020	97 adult women under age 50 years	Cross-sectional survey	California, rural farming community	Interest	43% interested in pharmacist-prescribed HC; those with history of EC use and too embarrassed to buy condoms were more likely to be interested.
Wilkinson, 2019	30 adolescent females	Qualitative interviews	California	Awareness, acceptability, barriers and facilitators	Nearly all participants were supportive of new law allowing pharmacist-prescribed HC; perceived increased access and convenience. Concerns included: parental involvement, confidentiality, insurance disclosures.
Zuniga, 2019	4 focus groups with youth 14-24 years	Community-based participatory research, focus groups	District of Columbia, public library and community center	Barriers and facilitators	Viewed pharmacies as convenient locations but expressed concerns about privacy, affordability, and pharmacist approachability. Participants added privacy and confidentiality protections, including clear information about insurance disclosures to parents. Wanted youth-friendly, non-judgmental space and training for pharmacists on HC counseling for young women.
Abstracts					
Gomez, 2020	Community members, pharmacists, and key stakeholders	Community-based research project (mixed methods)	California, rural central valley	Awareness and knowledge; barriers and facilitators	Participants expressed greater comfort with discussing HC with a clinician in a traditional setting than with pharmacists.
Meredith, 2019	302 females ages 14-21 years	Qualitative interviews	California, general and subspecialty clinics	Acceptability	45% said "yes" to 1 of 2 questions about pharmacy access acceptability; those who said yes were significantly older and did not use condoms during last sex.

First Author, Year	Sample	Study Design	Setting and Context	Outcomes and Themes	Key Findings
Miller, 2016	30 female participants ages 18-19 years	Qualitative interviews	California	Support for new law; barriers and facilitators	97% supportive of new pharmacy access in CA law; law would lead to personal and societal benefits. Concerns included: Confidentiality and insurance billing.
Wilkinson, 2019	53 females ages 14-21 years	Quantitative survey	Recruited from primary care and subspecialty clinics	Barriers and facilitators	Participants thought pharmacy access would be convenient and discreet. Concerns included: pharmacists' knowledge and understanding of chronic illness. Preferred clinical provider over pharmacist.

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Supplemental Table 2. Pharmacist-Prescribed Hormonal Contraception (HC): Pharmacists' and Other Stakeholders' Perspectives (n=24)

First Author, Year	Sample	Study Design	Setting and Context	Outcomes and Themes	Key Findings
Full-length Articles					
Chen, 2020	12 pharmacists	Qualitative interviews	San Francisco, California	Barriers and facilitators	Facilitators included: administrative support, advertising and pharmacist engagement, community demographics. Barriers included: slow adoption, time constraints, fees, privacy concerns.
Gomez, 2020	36 pharmacists	Qualitative interviews	California, independent community pharmacies	Awareness, barriers and facilitators	86% had heard of California Senate Bill 493 (expanded pharmacists' scope of practice); 8 prescribed HC at time of interview; 11 expected their pharmacy would offer it in the future; 4 completed the required training and were not yet prescribing. Barriers included: limited resources, financial incentives, and perceived customer interest and liability. Incentives included: expanding SOP, patient access to care, and health system impact.
Harris, 2020	243 pharmacy students	Pre-post test	Pennsylvania, pharmacy school	Readiness, confidence	Mean score on readiness test was 84% for both class cohorts. The majority of students agreed or strongly agreed to all 9-items measuring confidence to prescribe HC.
Herman, 2020	21 rural-serving pharmacists	Qualitative interviews	New Mexico, rural pharmacies, board of pharmacy	Interests, barriers and facilitators	Generally positive about prescriptive authority; Barriers included: more training needed, billing and reimbursement limitations, liability. Facilitators - existing private areas to counsel patients, confident in knowledge and training, greater access to certain patient populations. Most mentioned \$30-60 was an appropriate fee (range: \$0-200). 12 expressed interest in pharmacist-prescribed/inserted implants.
Hilverding, 2017	138 licensed and practicing pharmacists	Cross-sectional survey	Ohio, state pharmacy board	Attitudes, barriers and facilitators	57% and 54% indicated oral/patch HC should be pharmacist-initiated; less support for ring (44%) and injectables (37%). Perceived benefits included: increased access 62%, convenience for patients 59%, decrease unintended pregnancy 46%. 68% wanted to

First Author, Year	Sample	Study Design	Setting and Context	Outcomes and Themes	Key Findings
					learn more about HC and suggested areas for training.
Irwin, 2019	303 comments to online posts	Retrospective content analysis	Online news outlets and posts about pharmacy access HC	Perceptions, barriers and facilitators	Overall benefit: service supports patients. Concerns included: implementation logistics, pharmacists' knowledge and skills, insurance coverage for service, and workflow demands.
Lio, 2018	78 pharmacists	Pre-post test	Mid-Atlantic division of Kroger pharmacies (Kentucky, West Virginia, Virginia, Tennessee, North Carolina, Ohio)	Knowledge, comfort	The training was successful in significantly increasing pharmacist knowledge and comfort with HC prescribing following training; liability was the greatest barrier to offering the service (32%).
Lynch, 2018	11 pharmacy students	Pre-post test	Illinois, pharmacy school	Readiness, confidence	Students scored high on all three simulated activities; Post-class activity, 6/9 students agreed/strongly agreed to feeling "more confident in my ability to prescribe HC" and 8/9 agreed/strongly agreed that "I could confidently prescribe contraception products if pharmacists in this state had legislation allowing it."
Lynch, 2020	216 pharmacy students	Pre-post test	Two pharmacy schools	Readiness, confidence	Performance on class activity was 86%; significant change in confidence pre/post-activity; 53% said they needed more practice to feel prepared.
Meredith, 2019	9 pharmacists and youth providers	Delphi method	N/A	Improve youth-friendly tools for	Iterations of review resulted in the following findings: needed additional attention to workflow, make tool visually appealing and information accurate and digestible medically accurate information. Materials

First Author, Year	Sample	Study Design	Setting and Context	Outcomes and Themes	Key Findings
				pharmacists prescribing HC	should have universal use and incorporate new evidence-based practices.
Rafie, 2011	Pharmacy students	Cross-sectional survey	California, California Schools of Pharmacy	Interest, barriers and facilitators	Of the 502 students who completed the survey, 96% were interested in providing HC, 53% interested in providing service to minors and adults, 41% adults, or 6% minors only. Students perceived patients would increase patient access to HC (94%). Barriers included: time, limited privacy and patient information, reimbursement.
Rafie, 2012	20 reproductive health providers	Qualitative interviews	California, providers at universities and Planned Parenthood	Perceptions, barriers and facilitators	80% said that prescription-only access to HC was too restrictive; 33% felt pharmacy access was most appropriate and 28% favored OTC. Perceived benefits included: greater patient access to HC through pharmacy access. 50% believed their provider role would improve if pharmacists prescribed HC; Concerns included: pharmacists' refusal of care.
Rafie, 2014	502 pharmacy students	Cross-sectional survey	California, California Schools of Pharmacy	Perceptions, confidence	94% reported being moderately- extremely confident in their ability to counsel on proper HC use; 95% moderately-extremely confident in counseling about HC failures, mishaps, and barrier methods; 94% knowing when to refer to a physician; 91% in screening patients prior to ordering; while 65% said they were adequately educated to furnish HC, > 70% wanted more education.
Rafie, 2016	482 health care providers	Cross-sectional survey	N/A, reproductive health and adolescent health professional organizations	Perceptions, barriers and facilitators	74% supported pharmacist-initiated access to OCPs, patch, ring. 67% of physicians supported pharmacist-initiated depot. More physicians than midlevel providers endorsed statements about the benefits of pharmacist-prescribed HC. Most (75%) said pharmacists would need intensive training on HC and other reproductive health issues to offer service; 66%

First Author, Year	Sample	Study Design	Setting and Context	Outcomes and Themes	Key Findings
					were very/somewhat interested in signing a collaborative protocol with a pharmacist to provide HC.
Rafie, 2019	30 community pharmacists	Qualitative interviews	California	Awareness, interest, perceptions, barriers and facilitators	66% not aware of recent expanded SOP. 90% supported pharmacist prescribing for pills; 83% for depot, all with adequate training and protocols in place. 64% intended to participate once protocol became available. Barriers - knowledge gaps, burden of additional training needed, religious/personal objections, challenges with insurance coverage and logistical issues, safety concerns for minors and liability.
Rafie, 2019 (2)	823 community pharmacists	Cross-sectional survey	U.S., Midwest, Mountain, Northeast, South, West	Interest, barriers and facilitators	While 56% said they could not prescribe HC in their current practice, 65% were interested in prescribing HC; top motivation was enjoying patient contact (94%); Concerns included: safety, costs, liability and time constraints.
Rodriguez, 2016	509 practicing pharmacists	Cross-sectional survey	Oregon, Board of Pharmacy	Intentions, barriers and facilitators	If training and reimbursement were offered, > 50% would be interested in HC prescribing; only 39.1% planned to actually prescribe HC when the legislation took effect. Barriers included: staff shortages, liability, and need for additional. Pharmacists practicing in urban locations (odds ratio 1.73, 95% CI 1.11-2.70) were significantly more likely to be planning to participate.
Seamon, 2020	713 licensed and practicing pharmacists	Cross-sectional survey	North Carolina, Board of Pharmacy database	Willingness barriers and facilitators	Overall, 83% of pharmacists were likely to prescribe HC; no differences by geographic settings. Barriers - added responsibility and liability (69.8%) and time constraints (67.2%). Non-community pharmacists were significantly more likely to agree that prescribing HC contraception allows pharmacists to practice at a higher level, that increased access to HC

First Author, Year	Sample	Study Design	Setting and Context	Outcomes and Themes	Key Findings
					is an important public health issue, and that rural areas would benefit from pharmacist-prescribed HC.
Stone, 2020	800 pharmacists	Cross-sectional survey	U.S., 21 states in the Midwest, Mountain, Northeast, South, West regions	Perceptions of training, readiness	58% felt they received adequate training to prescribe HC. Prescribing any medications within the last 5 years or completion of residency training were significantly associated with feeling adequately trained. Only 36% were aware of the CDC MEC. Residency-trained pharmacists were statistically more likely to have used the CDC MEC and feel comfortable prescribing for adolescents. Most participants desired more training about switching products (80%) and patient specific product selection (72%).
Vu, 2019	257 pharmacists in community pharmacies	Cross-sectional survey	California, members of California Pharmacists Association	Interest, intentions, comfort, barriers and facilitators	73% said they would likely offer service; and 42% were also interested in administering injectables. Most felt comfortable counseling patients on HC (94%), including LARC methods (82%) and identifying drug interactions 97%. Barriers – time constraints (74%), lack of reimbursement 64%, and liability 62%.
Wollum, 2020	88 pharmacists	Mixed methods – focus group and survey	District of Columbia, community and outpatient pharmacies	Interest, comfort, barriers and facilitators	59% interested in prescribing HC as independents and 63% through collaborative practice agreements. 96% of survey respondents felt comfortable doing blood pressure checks and 93% counseling patients. 25% reported a private consultation space. Barriers included: workload, liability issues, compensation, training needs.
Abstracts					
Meagher, 2019	Panel of experts from adolescent, OB-GYN, pharmacy, and public health; 60 females 14-21 years	Delphi method and piloting tool	N/A	Feedback from experts and youths' perceptions of newly	After developing a toolkit with a panel of experts, researchers used a continuous quality improvement model to refine the tool with a sample of youth who provided real-time feedback. Later iterations included youth-friendly lay terms, suggestions from a pediatric neurologist regarding documenting headaches and

First Author, Year	Sample	Study Design	Setting and Context	Outcomes and Themes	Key Findings
				developed guide	aura, identifying potential contraindications for HC use among youth with health issues not addressed in the US MEC.
Richards, 2015	30 community pharmacists	Qualitative interviews	California	Awareness; interest; barriers and facilitators	30% were aware of new law; 90% perceived it would expand patient access; 63% were interested. Barriers included: safety, knowledge gaps.
Sible, 2018	21 pharmacists	Qualitative interviews	New Mexico, rural areas, board of pharmacy list and state pharmacists; association Meeting	Barriers and facilitators	Top barriers: training, liability, reimbursement. Top facilitators: privacy, existing acknowledge, skill, training, pharmacist availability without appointment.

Supplemental Table 3. Availability and Utilization of Pharmacist-Prescribed Hormonal Contraception (HC) (n=13)

First Author, Year	Sample	Study Design	Setting and Context	Outcomes and Themes	Key Findings
Anderson, 2019	3614 Medicaid-enrolled women	Retrospective cohort study	Oregon, claims data	Utilization	Out of 3614 patients from January 2016-December 2017, 162 pharmacists prescribed HC for 367 patients. Most claims were from retail chains (94%) and in urban locations (71%).
Batra, 2018	457 pharmacies	Secret shopper with standardized script	California, retail pharmacies	Availability	78% of sites had a pharmacist available to discuss HC; 5.1% provided service; only 5 sites offered all 4 HC methods (pill, patch, ring, injection).
Frost, 2019	13 community pharmacies	Time and motion	Tri-county Portland, Oregon metropolitan area	Time to prescribe HC	On average, pharmacists took 15-20 minutes to provide comprehensive prescribing and referral services for oral HC.
Gibbs, 2020	436,258 Medicaid-enrolled women	Retrospective cohort study from 2016-2017	Oregon, Medicaid claims data	Utilization	No significant effect for pill, patch scripts post-policy implementation compared to pre-implementation (claims increased from 0.3% in 2016 to 0.6% in 2017).
Gomez, 2017	1008 pharmacies	Secret shopper with interview survey	California	Availability	Service was available at 11.1% of pharmacies and there was no significant difference by urbanity and pharmacy type; 68% charged a fee for services.
Gomez, 2018	870 pharmacies	Secret shopper with interview survey	California	Perceived future availability	Of staff at pharmacies, 34% said they would offer service in the future; 12% said they would not; 25% said they might and 29% did not know. Independent sites were more likely to expect service would be offered in future (35.7%) compared to other sites. More urban than non-urban site would offer service (35% vs. 22.2%).

First Author, Year	Sample	Study Design	Setting and Context	Outcomes and Themes	Key Findings
Lu, 2019	676 patients attending pharmacy	Prospective cohort, August 13, 2016-February 28, 2017	Oregon and California supermarket chain pharmacies	Utilization; demographics of patient population	93% of people who accessed service received HC; Mean age 27 years (range 13-55), 35% of patients were ages 18-24%, 74% insured, 57% had a primary provider, 89% had a primary care visit <1 year ago, 91% used HC before.
Qato, 2020	1482 pharmacies	Secret shopper	Los Angeles County, California	Availability	10% offered service; 74% required age verification; Fewer sites in minority and higher income communities offered service than in other areas; however, places with high rates of uninsured had access to service more than areas with lower rates. Sites in areas with high teen birth rates were least likely to impose age restrictions.
Rodriguez, 2018	121 pharmacists at time 1, 62 at time 2	Pre-post survey	Oregon, pharmacists who completed mandatory training	Availability, utilization	6-months post-implementation, 19% of zip codes had a pharmacist available to prescribe HC and 51% had been doing so for less than 3 months. 88% reported feeling comfortable counseling and prescribing all covered methods. Service took about 26 minutes and 42% were billed to insurance. At 12 months, the service was available in 63% of the zip codes.
Rodriguez, 2019	Medicaid-enrolled women	Retrospective cohort, January 2016-December 2017	Oregon, patient claims data	Utilization and unintended pregnancies averted	248 pharmacists wrote 1,313 prescription for 367 women. 51 unintended pregnancies averted, saving \$1.6 million.
Rodriguez, 2020	410 women ages 18-50 years at community pharmacies	Prospective cohort, January 30-November 1, 2019	California, Colorado, Hawaii, Oregon	Utilization, months of HC dispensed	More women received a prescription from a provider than pharmacist (65% vs. 35%). Most received scripts for < 3 months of coverage (85% providers vs. 69% pharmacists). Pharmacists > 3x likely to prescribe 6-month HC supply or greater than providers.

First Author, Year	Sample	Study Design	Setting and Context	Outcomes and Themes	Key Findings
Rodriguez, 2020	300 pharmacies	Cross-sectional survey	Oregon and New Mexico, rural areas	Availability	42% of pharmacies provided HC (46% OR and 19% NM); Similar proportions of rural/urban pharmacies offering service and no difference in method availability by location.
Walsh, 2019	23 reproductive-aged women 18-50 years	Prospective cohort, quantitative survey	Oregon, patients at a federally qualified health center	Utilization	78% received HC from pharmacist; 94% or 16 women received oral HC and 6% patch; 6 women referred to primary provider because pregnancy could not be ruled out, and 1 requested a method that could not be provided.

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