

# UCSF

## UC San Francisco Previously Published Works

### Title

Pharmacist furnishing of hormonal contraception in California's Central Valley

### Permalink

<https://escholarship.org/uc/item/6wv3p6dx>

### Journal

Journal of the American Pharmacists Association, 64(1)

### ISSN

1544-3191

### Authors

Azad, Aniq

Su, Joanna

Nguyen, Michelle

et al.

### Publication Date

2024

### DOI

10.1016/j.japh.2023.08.005

### Copyright Information

This work is made available under the terms of a Creative Commons Attribution License, available at <https://creativecommons.org/licenses/by/4.0/>

Peer reviewed

Contents lists available at [ScienceDirect](#)

Journal of the American Pharmacists Association

journal homepage: [www.japha.org](http://www.japha.org)

## RESEARCH

## Pharmacist furnishing of hormonal contraception in California's Central Valley

Aniqa Azad, Joanna Su, Michelle Nguyen, Marissa Ly, Isabell Wu, Darrin Tracy, Anna Song, Dorie E. Apollonio\*

## ARTICLE INFO

## Article history:

Received 11 May 2023

Accepted 11 August 2023

## ABSTRACT

**Background:** In the United States, more than 19 million people of reproductive age need access to publicly funded hormonal contraception or live in areas where it is not readily available. These include rural areas of the country, commonly known as contraception deserts. Pharmacist prescribing has been proposed to increase access, but little is known about its implementation in such areas.

**Objective:** This study quantified the extent of pharmacists' furnishing (prescribing) of hormonal contraception in California's Central Valley community pharmacies and identified barriers and facilitators to implementation.

**Methods:** The researchers conducted a cross-sectional, mixed methods, observational study by (1) contacting all community pharmacies in the 11 counties of the Central Valley to determine furnishing rates and (2) surveying and interviewing pharmacies that indicated they furnished hormonal contraception.

**Results:** Overall, 13% of pharmacies within the Central Valley reported that they furnished hormonal contraception. Pharmacists reported that barriers to furnishing included costs to patients and the pharmacy, lack of time and staff, lack of training and certifications, limited patient awareness of pharmacists' ability to furnish, pharmacists' limited confidence in furnishing, and patient use of emergency contraception as an alternative to hormonal contraception. Pharmacists reported that patients often sought hormonal contraception from pharmacists owing to ease of accessibility to a pharmacist; some other facilitators included advertising, confidentiality, low cost to patients, and referrals from other providers.

**Conclusions:** Common barriers were identified across pharmacies that furnished hormonal contraception, indicating the need for strategies that reduce these barriers to help expand patient's access to these services and to increase pharmacists' ability and confidence to prescribe.

© 2023 American Pharmacists Association®. Published by Elsevier Inc. This is an open access article under the CC BY license (<http://creativecommons.org/licenses/by/4.0/>).

Unplanned pregnancies are more common in people with lower socioeconomic status and lead to poor health during and after pregnancy, increased stress, and reduced social and

financial resources.<sup>1</sup> In the United States, more than 19 million people of reproductive age need access to publicly funded hormonal contraception or live in areas, such as rural areas of

**Disclosure:** The authors declare that they have no conflicts of interest to disclose.

**Funding:** This work was supported by the California Tobacco-Related Disease Research Program (Song, #28PC-0044), administered by the Research Grants Program Office at the University of California, Office of the President, Oakland, California, USA. The funders played no role in the conduct of the research or preparation of the manuscript.

**Ethical approval and protection of human participants:** The University of California, San Francisco, institutional review board approved the study (#21-35317) on December 3, 2022; University of California, Merced, investigators were approved under a joint institutional reliance agreement.

**Data availability:** Deidentified data supporting the conclusions of this article are available upon request from the authors.

\* **Correspondence:** Dorie E. Apollonio, PhD, MPP, Professor, Department of Clinical Pharmacy, University of California, San Francisco, 530 Parnassus Ave., Suite 366 Library, San Francisco, CA 94143. Telephone: (415) 502-1942.

E-mail address: [dorie.apollonio@ucsf.edu](mailto:dorie.apollonio@ucsf.edu) (D.E. Apollonio).

## ORCIDiS

Aniqa Azad: <http://orcid.org/0009-0001-0292-2071>Dorie E. Apollonio: <http://orcid.org/0000-0003-4694-0826>Isabell Wu: <http://orcid.org/0009-0002-8473-7909>Joanna Su: <http://orcid.org/0009-0007-6077-2618>Marissa Ly: <http://orcid.org/0009-0008-8915-2022>Anna Song: <http://orcid.org/0000-0002-1874-3326>Darrin Tracy: <http://orcid.org/0000-0002-9104-701X>

**Key Points****Background:**

- In the United States, more than 19 million people of reproductive age need access to hormonal contraception or live in areas where it is not readily available, including contraception deserts in rural areas.
- Pharmacist prescribing, or furnishing, has been proposed as a way to increase access to hormonal contraception, but little is known about its implementation in high-need areas such as the California Central Valley.

**Findings:**

- Overall, 13% of pharmacies within the Central Valley reported that they furnished hormonal contraception.
- Reported barriers included cost, limited resources, lack of training, limited awareness, pharmacists' limited confidence in furnishing, and patient use of emergency contraception as an alternative. Reported facilitators included accessibility, advertising, confidentiality, low cost to patients, and referrals from other providers.
- The identification of common barriers across pharmacies in high-need areas indicates a continuing need for strategies to expand access to contraceptive furnishing services.

the country, where hormonal contraception is not readily available, commonly known as contraception deserts.<sup>2</sup> These residents have higher rates of unplanned pregnancies, leading to consequences ranging from health complications to higher costs associated with providing health care for unplanned pregnancies.<sup>3,4</sup>

The requirement that individuals obtain a prescription for hormonal contraception is a substantial barrier for those who lack the time, finances, insurance coverage, or means of transportation to visit a provider.<sup>5</sup> In 2013, the California legislature expanded pharmacists' scope of practice by approving Senate Bill (SB) 493, which authorized them to prescribe self-administered hormonal contraception, upon completion of a training course and obtaining a certificate, with the goal of increasing access; referred to as "furnishing" in California.<sup>6</sup> A 2016–2017 study of 391 supermarket-based chain pharmacy stores in California and Oregon found that among people prescribed hormonal contraception by pharmacists, most had health insurance, had seen a primary care provider in the past year, and had used hormonal contraception in the past.<sup>7</sup> However, uptake of hormonal contraception furnishing is limited, with past California studies reporting the percentage of pharmacies furnishing as ranging from 5% to 19% between 2013 and 2021.<sup>6</sup>

Existing research has identified multiple barriers to the implementation of furnishing hormonal contraception, including perceived lack of time, training, and staff.<sup>8</sup> California community pharmacists report perceived benefits to

expanding their scope of practice to furnish hormonal contraception, including increasing health care access and reducing the cost of care. However, concerns exist that pharmacist-prescribed hormonal contraception might increase legal liability.<sup>9</sup> Paperwork required to get reimbursement for furnishing and enroll as a billable provider in California can often be a challenge for community pharmacists given that there is a lack of additional resources to support this work.<sup>10</sup> Furthermore, public awareness of furnishing is low even if providers enroll.<sup>9</sup> In June 2022, the United States Supreme Court overturned *Roe v. Wade*, thus making abortion no longer a federal right in the United States.<sup>11</sup> This decision increased health risks for people living in areas that offer fewer health services, such as the Central Valley in California.<sup>12</sup> In these areas, having access to hormonal contraception through pharmacies, which are more accessible, becomes increasingly crucial.

In California, one of the largest health professional shortage areas is the largely rural Central Valley,<sup>13</sup> an area comprising 11 counties with a population of 4 million people. Little is known about furnishing practices in these high-need communities. Past research conducted in one county in the Central Valley found that only 31% of people were aware of pharmacist's ability to furnish hormonal contraception.<sup>14</sup> Although past research reflects the high need for this service in this area, we were unable to identify research evaluating the extent to which hormonal contraception furnishing has been implemented in the community or identifying barriers to access that may be specific to the region.<sup>6</sup> This study addressed this gap in research by assessing the extent of pharmacists' furnishing of hormonal contraception in California's Central Valley community pharmacies and identifying barriers and facilitators to implementation.

**Methods**

We conducted a cross-sectional, observational study of community pharmacies in the 11 counties in California's Central Valley and Sierra Foothills to identify pharmacies that furnish hormonal contraception and determine the extent of pharmacists' furnishing of hormonal contraception. Our mixed methods survey analyzed the extent of, barriers to, and facilitators of furnishing hormonal contraception. The University of California, San Francisco (UCSF), institutional review board approved the study (#21-35317) on December 3, 2022; University of California, Merced (UCM), investigators were approved under a joint institutional reliance agreement.

*Population and sampling*

We identified pharmacies in the Central Valley and Sierra Foothills, a largely rural agricultural area, using the California Department of Consumer Affairs Board of Pharmacy database of active licenses for the 11 counties included in the region: Calaveras, Fresno, Kern, Kings, Madera, Mariposa, Merced, San Joaquin, Stanislaus, Tulare, and Tuolumne.

Our inclusion criterion in the first step of data collection was defined as Central Valley and Sierra Foothill community pharmacies with active licenses. We excluded pharmacies with patient populations for which access to hormonal contraception was not relevant (these were pharmacies that

identified as veterinary, compounding, nuclear, pediatric, and long-term care/eldercare). After identifying the Central Valley and Sierra Foothill pharmacies that furnished hormonal contraception, we proceeded to the second step of data collection: visiting these pharmacies in person to collect additional information about furnishing practices and barriers and facilitators to furnishing.

### Data collection

Data collection proceeded in 2 steps: first, we assessed furnishing rates by contacting all pharmacies in the 11 counties; second, we interviewed a subset of pharmacists working at stores who had indicated they furnished hormonal contraception. For community pharmacies that did furnish hormonal contraception, we asked whether the pharmacists would be willing to participate in our study and requested them to identify facilitators and barriers to implementation, information critical to expanding furnishing in this high-need community via a Qualtrics survey and an in-person or telephone interview. Data were collected by 5 authors (A.A., M.L., M.N., J.S., I.W.), who are all PharmD students enrolled at UCSF School of Pharmacy, and a team of 1 graduate and 10 undergraduate students from UCM.

### Measures

For initial data collection to determine the rate of pharmacist furnishing, the researchers telephoned all 581 pharmacies identified in the Central Valley and Sierra Foothills between February 15 and March 24, 2023. Using a screener used in previous research,<sup>15,16</sup> researchers called each pharmacy and asked: "I heard that you can get birth control pills from a pharmacy without a prescription from your doctor. Can I do that at your pharmacy?" Up to 3 attempts were made to contact each pharmacy. Of the 581 pharmacies called, 5 were identified as additional exclusions; thus, 576 pharmacies were successfully contacted.

For the second step of data collection, the researchers mapped out pharmacies that reported furnishing of hormonal contraception. The research team visited each of these pharmacies in person from April 10 to 13, 2023, in teams of 2 investigators per site. Pharmacists at these locations who consented to participate were surveyed and interviewed on-site. Any pharmacy that was not able to be reached in person (i.e., owing to time or pharmacist request) was later contacted via telephone, e-mail, or both to complete the interview and survey. Interviews were recorded with permission and ranged from 1 to 11 minutes. Participants were provided a \$10 incentive as an e-gift card for participation.

Online surveys were conducted through Qualtrics using mobile phones and consisted of a series of closed-ended questions describing the pharmacist and pharmacy (see [Supplement 1](#)). Pharmacist measures included identifying each pharmacist's role at the pharmacy, years of employment, completion of residency, and training in providing hormonal contraception. Pharmacy measures included ownership (consistent with previous research, we classified pharmacies as chains if they had 4 or more locations)<sup>17</sup>, the number of employees, the number of prescriptions filled daily (total and hormonal contraception only), the number of hormonal

contraception products furnished, and the cost of furnishing to the pharmacy and to the patient. Some participants were e-mailed the survey based on individual preference owing to various circumstances (i.e., time, staffing issues).

Participants were also asked to answer open-ended questions during a recorded interview to assess the process of furnishing, whether patients seek out hormonal contraception on their own accord or whether they are referred, whether furnishing is actively advertised to patients, barriers and facilitators to furnishing, and training and education for staff (see [Supplement 2](#)). Some participants were interviewed via telephone and e-mail based on individual preference owing to circumstances such as time and staffing issues. All participants were asked whether they consented to being interviewed; the recorded interviews were transcribed for analysis. The interviewers also took notes during and after the interview.

The primary outcome we sought to measure in the first step of data collection (telephoning pharmacies to ask whether they furnished) was the extent to which Central Valley and Sierra Foothill pharmacies furnished hormonal contraception and characteristics of pharmacies. The outcomes for the second step of data collection (surveys and interviews) were to assess the development and implementation of a furnishing program, barriers and facilitators to implementation and furnishing, and any areas of improvement of the overall furnishing process from beginning to end.

In pharmacies that displayed advertising about their furnishing services, the research team took photos of these materials.

### Analytical strategy

For the first part of our study, we calculated quantitative statistics using Stata (StataCorp LLC, College Station, TX), including the share of pharmacies that furnished hormonal contraception and their ownership. We used survey data to calculate the frequency of providing hormonal contraception and other pharmacy-specific measures, including the number of employees and prescriptions filled daily. We used interview data that were either transcribed or e-mailed to us directly to identify major themes through Atlas.ti (ATLAS.ti GmbH, Berlin, Germany). Qualitative analysis was conducted by applying coded words and phrases to quotes from interviews to identify repeated mentions of barriers and facilitators to furnishing, consumer behaviors such as whether people sought out hormonal contraception or were referred, or volunteered information. The codes used to identify major themes included topics such as (1) barriers, (2) facilitators, (3) advantages, (4) disadvantages, (5) furnishing process, (6) areas of improvement, and (7) other miscellaneous/novel characteristics.

### Results

We identified a total of 611 pharmacies in the Central Valley and Sierra Foothills. Of these, 35 were excluded because they served a population for which hormonal contraception was not relevant (i.e., veterinary, compounding, nuclear, pediatric, and long-term care/eldercare). The remaining 576 pharmacies were called in the first step of our data collection; 88 (15.2%) identified that they furnish hormonal contraception to the region's population and 488 (84.8%) identified that they did

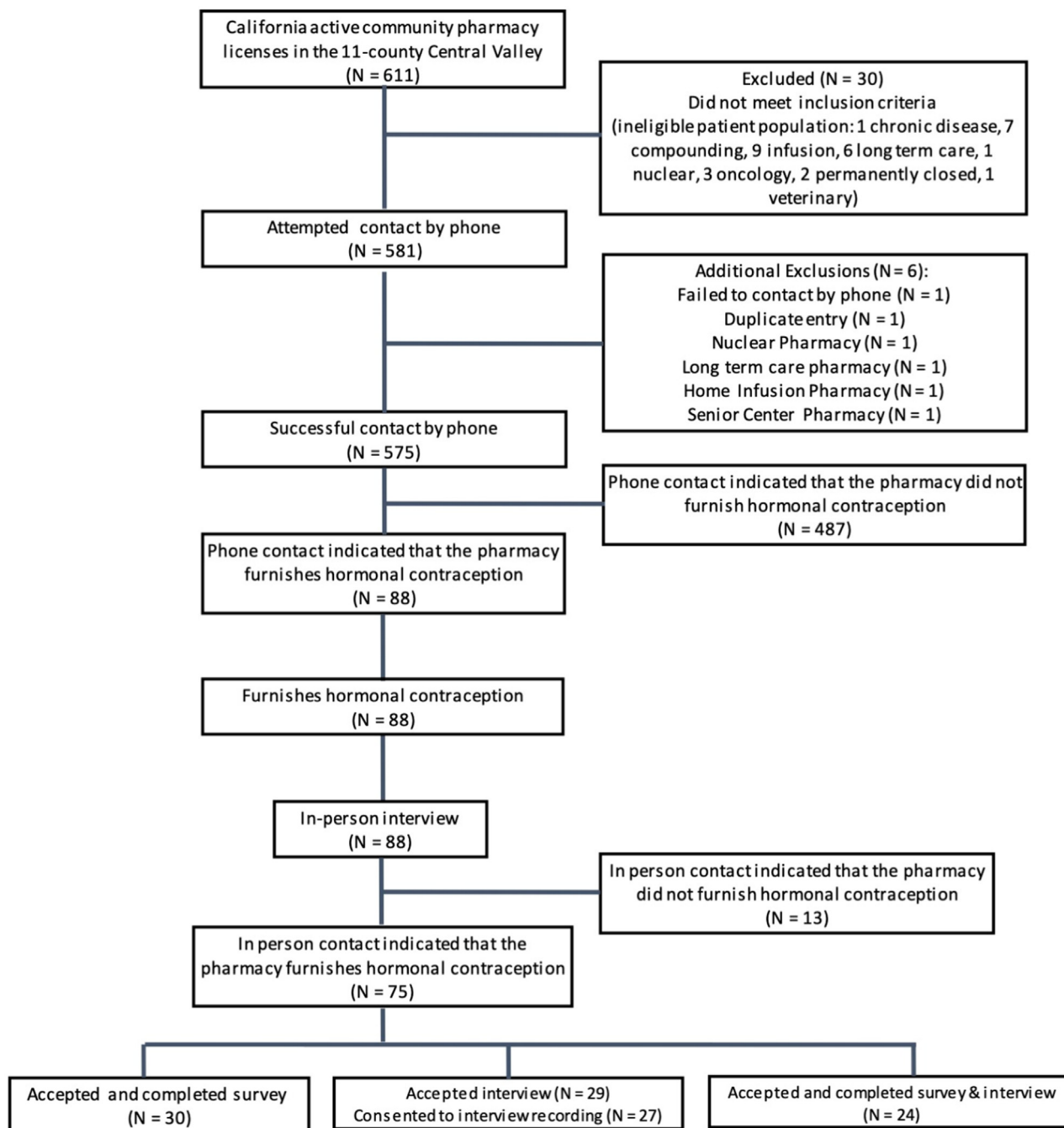


Figure 1. Flow diagram of data collection. Source: data collected by the authors.

not (see Figure 1). Upon visiting these 88 pharmacies for in-person interviews, 13 pharmacies indicated that they did not or no longer furnish hormonal contraception. After completing interviews, we had confirmed that 75 pharmacies (13%) contacted in the Central Valley and Sierra Foothills furnish hormonal contraception. There are approximately 4 million residents in the 11-county region. The 8 counties constituting the San Joaquin Valley (Fresno, Kern, Kings, Madera, Merced, San Joaquin, Stanislaus, Tulare) had a total

population of approximately 3.8 million, whereas the eastern counties of the Sierras (Calaveras, Mariposa, Tuolumne) serve a much smaller population of approximately 120,000 (see Table 1). Counties with smaller populations had fewer pharmacies that furnish hormonal contraception, although there was at least one furnishing pharmacy in each of the 11 counties we assessed. All pharmacies that furnished hormonal contraception were classified as community pharmacies; of the 56 pharmacies (9.7%) that classified as health-system or

**Table 1**

Central Valley counties, population, number of pharmacies, and hormonal contraception furnishing rates by county (source: U.S. Census, California Board of Pharmacy, and data collected by the authors)

County	Population served (based on 2021 Census data)	No. pharmacies called	No. pharmacies called that furnish hormonal contraception (%)
Calaveras	46,221	6	1 (16.7)
Fresno	1,014,000	139	19 (13.7)
Kern	917,673	138	18 (13.0)
Kings	153,443	19	3 (15.8)
Madera	159,410	20	3 (15.0)
Mariposa	17,417	2	1 (50.0)
Merced	286,461	33	3 (9.1)
San Joaquin	789,410	79	9 (11.4)
Stanislaus	552,999	69	10 (14.5)
Tulare	473,117	60	7 (11.7)
Tuolumne	55,810	11	1 (9.1)
Total	4,465,961	576	75 (13.0)

college/university pharmacies, none furnished hormonal contraception (see Table 2). Furnishing rates also varied substantially by ownership; for example, more than half of chain pharmacies (i.e., CVS, Costco, Vons) furnished hormonal contraception, whereas only 13% of independent pharmacies furnished.

Of the pharmacies that participated, 29 pharmacists at furnishing pharmacies consented to interviews and 30 pharmacists consented to the survey (24 consented to both the interview and the survey, with participation from each of the 11 counties) to help identify barriers and facilitators to furnishing hormonal contraception. Participants indicated that the pharmacies they were employed at filled 350-9000 prescriptions weekly, depending on the pharmacy location and type. On average, these pharmacies filled approximately 2700 prescriptions per week and 124 of those were prescriptions for hormonal contraceptives from a doctor. When asked how many times a year hormonal contraception was furnished by a pharmacist, 24 of the 30 pharmacies responded with a count; 9 (37.5%) reported never furnishing although they were able to, 14 (58.3%) reported furnishing 20 or fewer prescriptions per year, and 1 (4.2%) reported furnishing one every day. Pharmacy staffing varied across location, averaging 3 pharmacists and 6 pharmacy technicians. As shown in Table 3, 19 participants (63.3%) identified primarily as pharmacists, 9 (30%) identified as pharmacy managers, 1 (3.3%) identified as a regional manager, and 1 (3.3%) identified as a pharmacy owner (see Table 3). The time that the participants held their position ranged from 6 months to 30 years, and 1 (3.3%) had completed a residency in ambulatory care pharmacy.

In the interviews, when asked about the process of furnishing hormonal contraception, 24 participants (82.7%) mentioned using a questionnaire for screening and 18 (62.1%) reported conducting a blood pressure reading. In addition, 11 participants (37.9%) stated that they specifically considered additional measures such as temperature readings and asking about previous hormonal contraception use. Most pharmacists spoke about how the process began; 21 participants (72.4%) reported that the patient usually initiated the request for hormonal contraception and only 1 (3.4%) reported that they recommended furnishing hormonal contraception to the patient. Eleven participants (37.9%) stated that patients usually came in for refills and only 3 (10.3%) reported that it was the first time a patient was using hormonal contraception. One

pharmacist stated it was “[v]ery rare” for the pharmacist to initiate the furnishing process (respondent 13).

### Barriers

We were specifically interested in the barriers and facilitators to pharmacists furnishing hormonal contraception. Pharmacists reported cost to patient and pharmacy, time and staffing, patient knowledge of pharmacists’ capability to furnish, and training for pharmacies as the most common barriers to furnishing hormonal contraception in their pharmacies (see Table 4). In 18 interviews (62.1%), cost to patient and pharmacy as well as time and staffing were reported as barriers. As one participant stated, cost to patient and pharmacy was an issue because insurance did not cover the consultation fee; “[pharmacists] are not recognized as providers to the insurance company” (respondent 8). Although 7 participants (24.1%) stated that the overall furnishing process was structured and streamlined, time and staffing were still mentioned in 18 interviews (62.1%) because pharmacists were covering for multiple positions and shifts and had no additional time to “...counsel patients, take their temperature, [and] check their blood pressure,” which are necessary screenings involved in furnishing hormonal contraception (respondent 28).

Other barriers to furnishing included patients’ lack of knowledge (48.3%) and pharmacist certification and training (24.1%). With regard to patients’ lack of knowledge, 14 participants noted that many patients did not know that certified pharmacists are able to screen and furnish patients hormonal contraception even though it was advertised. One noted, “We’ve been able to furnish birth control for four years now I think, give or take. But the public just doesn’t know. Even the big chains” (respondent 18). With regard to training and certification, 7 participants noted that one of the major barriers was that “not all the pharmacists are certified” (respondent 11). A lack of certification was attributed to costs and time associated with training to furnish hormonal contraception. Other examples of barriers to furnishing hormonal contraception are listed in Table 4.

During the interviews, participants noted other issues. Eleven participants (37.9%) noted that although pharmacists were directly helping the community by being able to furnish hormonal contraception, not having a patient’s full medical

**Table 2**  
Central Valley pharmacy furnishing rates of hormonal contraception by ownership (source: data collected by the authors)

Ownership	No. pharmacies called	No. pharmacies called that furnish hormonal contraception (%)
<b>Community pharmacy</b>		
Costco	14	9 (64.3)
Vons	7	4 (57.1)
CVS	102	37 (36.3)
Sav-On	5	1 (20.0)
Independent	160	21 (13.1)
Safeway	9	1 (11.1)
Walgreens	72	1 (1.4)
Rite Aid	76	1 (1.3)
Raleys	7	0 (0)
Walmart	49	0 (0)
Express	4	0 (0)
PharMedQuest	4	0 (0)
Boies GKN BJRX	6	0 (0)
Medicine Shoppe	5	0 (0)
Health system	53	0 (0)
College/university	3	0 (0)
<b>Total</b>	<b>576</b>	<b>75 (13.0)</b>

history made it difficult to properly choose the correct type. For example, one participant noted that “if a patient has polycystic ovary syndrome (PCOS)...[i]f they’re at risk for stroke... or [l]et’s say they’re a smoker and they’re over 35,”

**Table 3**  
Central Valley pharmacy and pharmacy staff characteristics (source: survey data collected by the authors)

Type of pharmacy	
No. independent pharmacies (%)	10 (33.3)
No. community pharmacies (%)	20 (66.6)
<b>Role at pharmacy</b>	
Pharmacist (%)	19 (63.3)
Owner (%)	1 (3.3)
Pharmacy manager (%)	9 (30.0)
Regional manager (%)	1 (3.3)
<b>No. employees</b>	
Average total employees per pharmacy	8
<b>Years worked in current position (y)</b>	
Minimum	0.5
Maximum	30
<b>Completed residency?</b>	
Yes (%)	1 (3.3)
No (%)	29 (96.7)
<b>Completed training to furnish HC?</b>	
Yes (%)	26 (86.7)
No (%)	4 (13.3)
<b>Can furnish HC at this store?</b>	
Yes (%)	30 (100)
No (%)	0 (0)
<b>Can fill prescription for medication abortion at this store?</b>	
Yes (%)	8 (26.7)
No (%)	22 (73.3)
<b>No. prescriptions (weekly)</b>	
Average # received	2496
Average # of those that are HC (%)	116 (4.6)
<b>No. HC products furnished by a pharmacist (yearly)</b>	
Minimum	0
Maximum	350
<b>Cost (dollars)</b>	
Average cost to the pharmacy to furnish HC	28
Average cost of HC furnished by pharmacist to the patient	32

Abbreviations used: C, chain pharmacy; I, independent pharmacy; n/a, not available (answer was not provided by respondent); HC, hormonal contraception.

the pharmacist would need to know because that would restrict them from using certain hormonal contraceptives (respondent 12). Furthermore, 5 participants (17.2%) thought that using multiple providers, risking lack of follow-up, pharmacists would not be able to monitor the patient for “any special concerns or side effects” (respondent 10).

### Facilitators

Participants were also probed about facilitators to pharmacists furnishing hormonal contraception. The most common responses were accessibility to a pharmacist (82.8%), advertisements (44.8%), cost to patient (17.2%), and confidentiality (10.3%) (see Table 4). With respect to accessibility, many participants stated that the population in the Central Valley often did not have access to physicians who would allow them to get a prescription. One participant stated, “It’s easy to walk into a pharmacy and hard to get an appointment with the doctor’s office. For some people, they’re not comfortable in getting their annual exams, so getting it at the pharmacy is a better option for that. I would mainly just say access is the biggest pro” (respondent 2). Similarly, because many people in the Central Valley rely on Medi-Cal or low-income programs to pay for their prescriptions, the low cost of the consultation fee to get hormonal contraception from a pharmacist was cheaper than visiting a doctor’s office. Some participants noted that “it might be cheaper for patients with private insurances too, since you have a flat rate for it” (respondent 27).

One of the biggest facilitators to pharmacists furnishing hormonal contraception that 13 participants (44.8%) identified was advertising. Given that one of the most common barriers identified was lack of public knowledge, advertisements let patients know that getting hormonal contraception from a pharmacist was an option. One participant stated that “sometimes [the patient] see[s] the ad or the commercial on our TV in store and they mention something, or they ask about it” (respondent 10) (see Supplement 3).

Furthermore, 3 participants (10.3%) indicated that certain patients, such as teens and young adults, “don’t feel comfortable with having their family know that they’re on [hormonal

**Table 4**

Factors identified as barriers and facilitators to furnishing hormonal contraception by Central Valley pharmacists (source: interview data collected by the authors)

Barrier identified and no. pharmacies reporting the barrier (%)	Example quotes
Cost to patient and pharmacy, 18 (62.1)	<p>"The majority of patients, in my experience, when they come in and find out that they're gonna have to pay for an office visit and for the copay... that sometimes is a deterrent to some patients." (respondent 1)</p> <p>"... we're not able to furnish for anybody that's using Medi-Cal, which is a huge patient population. For those patients, everything's going to be out-of-pocket, which then brings in the cost barrier. Right now, we can either only do cash pay or to commercial insurance, and then there is the \$50 or \$39 consultation fee. And so, the insurances just don't pick that up because we're not recognized as providers to the insurance company. Those are kind of barriers there." (respondent 2)</p> <p>"So, anybody that used the service had to pay out of cash, so especially in this area that eliminated a big portion of our population. We're like 65-70% Medi-Cal here, so it's hard for them to pay out of pocket for that stuff." (respondent 13)</p> <p>"Medi-Cal right now doesn't allow us to bill pharmacists furnished medications where other providers do, so it's up in the air." (respondent 18)</p> <p>"The disadvantage unfortunately is that it's not accepted and covered by all insurances and they still have to pay a consultation fee. So, the birth control, since I'm writing a prescription, would be covered, but the consultation fee associated with it is not covered by any insurances and that is \$39 that they would have to pay out of pocket." (respondent 29)</p>
Time and staffing, 18 (62.1)	<p>"Timing, because it never fails that we tend to get patients walking in at busy times." (respondent 2)</p> <p>"...it's not having enough hands on deck. And not having the time to be able to do it, too, is a huge factor." (respondent 3)</p> <p>"Time is always there because we have to accommodate in our routine time. So, time is always a barrier for the pharmacist." (respondent 20)</p> <p>"The barriers will be time. We, pharmacists we are doing so much with little time, so especially if you work in community pharmacy. I used to work at the hospitals, super easy. But over here you are dealing with so many, you are required to do so much in a very short time. So, it's very hard time to actually go counsel the patient, take their temperature, check their blood pressure. It takes about five minutes of your time, which pretty much you don't have. So that is what I would say is a limiting factor to us doing the clinical work pretty much." (respondent 28)</p>
Patient knowledge of pharmacist's ability to furnish, 14 (48.3)	<p>"The biggest barrier that there is, is that I don't think that people realize that pharmacists can prescribe birth control. And because they don't realize that or because, well, I'm already going to see the doctor once a year anyway. I might as well get them to prescribe it." (respondent 12)</p> <p>"Generally speaking, the biggest barrier is knowledge that we can do it. We've been able to furnish birth control for four years now I think, give or take. But the public just doesn't know. Even the big chains." (respondent 18)</p>
Certification/training, 7 (24.1)	<p>"Barriers? Probably, well you have to go through a course and get a certificate, not all the pharmacists are certified." (respondent 11)</p> <p>"We have some just one online module that we look into how to prescribe it basically. And then the questionnaire, not much training. It's whatever we learn in pharmacy school." (respondent 6)</p>
Facilitator identified and no. pharmacies that reported the facilitator (%)	Example quotes
Accessibility, 24 (82.8)	<p>"It's easy to walk into a pharmacy and hard to get an appointment with the doctor's office. For some people they're not comfortable in getting their annual exams, so getting it at the pharmacy is a better option for that. I would mainly just say access is the biggest pro." (respondent 2)</p> <p>"... the advantage is having easy access to the oral contraceptive. And whether it's medication itself or the discussion, it's usually easier and it could be more frequent with the pharmacy staff." (respondent 10)</p> <p>"The advantage is though, that the pharmacy's also very accessible, where it's easy for them to go, it's hard to get into a doctor." (respondent 11)</p> <p>"I would say the advantage is just easy access to contraceptives. I know in some areas where there's low income or if it's not as convenient for the patients, the pharmacy can be more accessible to the patients to get it. And then I know in some situations it might be, I guess, more private for them to get it, versus having them go with their parents to kind of talk to the doctor about it." (respondent 17)</p> <p>"Ease for patient access. Like patients can get it within 30, 40 minutes rather than just having to have an appointment with the doctor and get prescriptions prescribed to them, so it's faster and more convenient." (respondent 27)</p>
Advertisements, 13 (44.8)	<p>"We do have some informational signs in the front and every once in a while, we put up one that says, 'Contraceptives,' so that they know that they can get it here." (respondent 7)</p> <p>"Sometimes they see the ad or the commercial on our TV in store and they mention something or they ask about it, and sometimes they see the announcement or the service that we provide online on social media or on our website." (respondent 10)</p>
Cost to patient, 5 (17.2)	<p>"It's a lot of people who don't want to go to the doctor and pay for that doctor's visit. That's like the biggest one that I find the cost of not being, have to pay that doctor's visit and just come here and get it." (respondent 8)</p> <p>"It might be cheaper for patients with private insurances too, since you have a flat rate for it." (respondent 27)</p>
Confidentiality, 3 (10.3)	<p>"Then also it's like they don't feel comfortable with having their family know that they're on it and they can still get it over here." (respondent 8)</p> <p>"And then I know in some situations it might be, I guess, more private for them to get it, versus having them go with their parents to kind of talk to the doctor about it." (respondent 17)</p>
Current political climate, 1 (3.4)	<p>"I'm just going to say the Supreme Court and everything, the Roe vs. Wade. There need to be some give women choice very much, so it's really important." (respondent 28)</p>



contraception] and [know] they can still get it over here” (respondent 8). Confidentiality and trust in pharmacists facilitated furnishing; other facilitators to furnishing are listed in Table 4.

## Discussion

In 2013, the California legislature expanded pharmacists’ scope of practice by approving SB 493, authorizing them to prescribe self-administered hormonal contraception.<sup>6</sup> In the Central Valley, there is a high need for this service given that many residents lack access to health care. Of the 576 pharmacies with active licenses in the Central Valley that served the general community, only 75 (13%) furnished hormonal contraception. Previous research has also found that furnishing rates of hormonal contraception are low; although we identified no previous research on furnishing rates of hormonal contraception in the Central Valley or the Sierra Foothills, this rate remains lower than rates in previous studies of urban areas, such as San Francisco in 2020 (19%), and barriers identified in those urban regions were similar to those in the Central Valley.<sup>6</sup> In addition, there are differences based on ownership; Costco, Vons, and CVS pharmacies were far more likely to furnish than Walgreens, Rite Aid, and Walmart pharmacies.

Common reported barriers to pharmacist furnishing of hormonal contraception included lack of time, lack of pharmacist certification, and lack of awareness. In our initial calls to pharmacies, some pharmacy staff were also unaware of the law allowing pharmacies to furnish, which further complicates matters if someone were seeking hormonal contraception at the pharmacy. Given that pharmacies are more easily accessible owing to multiple locations and longer hours of operation than most doctors’ offices, overcoming some of these identified barriers would help the community in the Central Valley by improving adherence of contraceptive use; this would ultimately reduce the risk of unplanned pregnancies and tackle other health conditions that people may use hormonal contraception for (i.e., polycystic ovary syndrome).<sup>18,19</sup> One study conducted in California found that 74% of respondents visit a pharmacist for contraception because it is faster than finding a doctor’s appointment, so tackling barriers by finding ways to equip pharmacists with the resources to find time to seek certification would only further benefit the Central Valley community by eliminating steps such as scheduling an appointment, getting a prescription from a doctor, and other logistical factors.<sup>20</sup> Other benefits to eliminating barriers are related to cost given that many people in the Central Valley community lack access to health care insurance. Two years after Oregon allowed pharmacists to furnish hormonal contraception, the state saved \$1.6 million; therefore, the costs saved by pharmacists furnishing hormonal contraception outweigh the costs associated with making hormonal contraception accessible through another avenue.<sup>21</sup> Overall, pharmacists demonstrate value when furnishing as they help reduce risks of unwanted pregnancies, increase adherence to contraception regimens, and minimize costs.<sup>22</sup>

Some participants were able to identify areas of improvement that could overcome barriers that prevented pharmacists from furnishing hormonal contraception. One participant noted that “just having protocol in place so it’s consistent” would make the process smoother and less time consuming (respondent 10). Given that pharmacists often lack the time to acquire

the proper training to obtain certification and lack systems to aid with medical billing and paperwork for reimbursement, pharmacies should implement a process to ensure there is administrative time to complete all the requirements to obtain certification and process paperwork for reimbursement through Medi-Cal (California’s Medicaid program). With pharmacist duties expanding, pharmacies may also benefit from hiring additional resources so that pharmacists are able to attend to people who would like to obtain hormonal contraception from their local pharmacist. In addition, chain community pharmacies can increase public awareness by actively advertising that hormonal contraception can be prescribed by a pharmacist and is available at their local pharmacy.

Recently, the Food and Drug Administration approved the progesterone-only Opill (norgestrel) as the first hormonal contraceptive to be available over the counter (OTC).<sup>23</sup> This decision may encourage more people to seek hormonal contraception from pharmacies, especially in areas such as the Central Valley. If more people rely on pharmacies as their primary source of access to hormonal contraception, pharmacists will be expected to provide guidance and may direct people toward other hormonal contraception options that might be more suitable, which could provide additional opportunities to furnish. The cost of OTC hormonal contraception is still unknown and may be a barrier to people who do not have health insurance and limited financial resources. As a result, there is likely to be continuing need for pharmacists to furnish hormonal contraception.

Strengths of this study include a unique dataset with detail on an understudied health professional shortage area. Limitations of this study include generalizability, lack of interview participation from furnishing pharmacies, and inability to contact all furnishing pharmacies. Our analysis only considered counties within the Central Valley and Sierra Foothills, which may limit extrapolation outside this region. One interview was also conducted by e-mail, which limited our ability to probe for clarification and additional details regarding the interview.

## Conclusion

California pharmacists have been authorized to prescribe self-administered hormonal contraception, but despite this expanded scope of practice and high levels of community need, only 13% of pharmacies in the Central Valley and Sierra Foothills furnish. Our findings suggest that improving barriers to furnishing of hormonal contraception through increased pharmacy staffing, public awareness, and reducing costs could expand access for patients and increase pharmacists’ ability to prescribe. In addition, incorporating more comprehensive trainings on furnishing hormonal contraception after pharmacy school could increase pharmacists’ ability, confidence, and willingness to prescribe. Overall, interventions to improve barriers to furnishing are needed to support pharmacists in their role as furnishing providers, especially in this largely rural, health professional shortage area.

## Acknowledgments

The authors acknowledge Shriya Ambre, Justin Naidu, Jocabed Soto, Estefani Alvarado, Lara Al-Jaser, Jennifer Cruz, Japjeet Uppal, Karina Vazquez, Mary Garcia, Zulema Avalos, Hargun Sethi, and Natalie Beylin for assisting in the data collection process.

## References

- Goossens J, Van Den Branden Y, Van der Sluys L, et al. The prevalence of unplanned pregnancy ending in birth, associated factors, and health outcomes. *Hum Reprod*. 2016;31(12):2821–2833.
- Contraceptive deserts. Power to Decide. Available at: <https://powertodecide.org/what-we-do/access/contraceptive-deserts>. Accessed October 19, 2022.
- Huynh L, McCoy M, Law A, et al. Systematic literature review of the costs of pregnancy in the US. *Pharmacoeconomics*. 2013;31(11):1005–1030.
- Hollenbach SJ, Thornburg LL, Glantz JC, Hill E. Associations between historically redlined districts and racial disparities in current obstetric outcomes. *JAMA Netw Open*. 2021;4(9):e2126707.
- Zuniga C, Grossman D, Harrell S, Blanchard K, Grindlay K. Breaking down barriers to birth control access: an assessment of online platforms prescribing birth control in the USA. *J Telemed Telecare*. 2020;26(6):322–331.
- Chen L, Lim J, Jeong A, Apollonio DE. Implementation of hormonal contraceptive furnishing in San Francisco Community pharmacies. *J Am Pharm Assoc (2003)*. 2020;60(6):963–968.e2.
- Lu S, Rafie S, Hamper J, Strauss R, Kroon L. Characterizing pharmacist-prescribed hormonal contraception services and users in California and Oregon pharmacies. *Contraception*. 2019;99(4):239–243.
- Petrosyan J, Tchalikian T, O'Connor A, Avakeretyan J, Dykhne M. Assessment of the implementation of pharmacists' prescriptive authority to furnish hormonal contraceptives, naloxone, and nicotine replacement therapy in California. *J Contemp Pharm Pract*. 2021;68(1):16–20.
- Gomez AM, McCullough C, Fadda R, et al. Facilitators and barriers to implementing pharmacist-prescribed hormonal contraception in California independent pharmacies. *Women Health*. 2020;60(3):249–259.
- Chim C, Sharma P. Pharmacists prescribing hormonal contraceptives: a status update. *US Pharm*. 2021;46(9):45–49.
- Doherty C, Kiley J, Asheer N, et al. Majority of Public Disapproves of Supreme Court's Decision to Overturn Roe v. wade. Pew Research Center. Available at: <https://www.pewresearch.org/politics/2022/07/06/majority-of-public-disapproves-of-supreme-courts-decision-to-overturn-roe-v-wade/>. Accessed April 6, 2023.
- Batra P, Rafie S, Zhang Z, et al. An evaluation of the implementation of pharmacist-prescribed hormonal contraceptives in California. *Obstet Gynecol*. 2018;131(5):850–855.
- Health professional shortage areas in California. CalHHS. Available at: <https://data.chhs.ca.gov/dataset/health-professional-shortage-areas-in-california>. Accessed April 25, 2023.
- Gomez AM, Rafie S, Garner-Ford E, et al. Community perspectives on pharmacist-prescribed hormonal contraception in rural California. *Contraception*. 2022;114:10–17.
- Puzantian T, Gasper JJ. Provision of naloxone without a prescription by California pharmacists 2 years after legislation implementation. *JAMA Netw Open*. 2018;320(18):1933–1934.
- Puzantian T, Gasper JJ, Ramirez C. Pharmacist furnishing of naloxone in California: a follow-up analysis. *J Am Pharm Assoc*. 2021;61(5):e108–e112.
- Borja-Hart NL, Leachman BG. Drug information resources used by chain community pharmacists in Tennessee. *J Pharm Technol*. 2016;32(5):185–190.
- Mitchell M, Stauffenberg C, Vernon V, Mospan CM, Shipman AJ, Rafie S. Opposition to pharmacist contraception services: evidence for rebuttal. *Pharmacy (Basel)*. 2020;8(4):176.
- Killion MM. Improving access to hormonal contraception methods. *MCN Am J Matern Child Nurs*. 2020;45(2):124.
- Rafie S, Wollum A, Grindlay K. Patient experiences with pharmacist prescribed hormonal contraception in California independent and chain pharmacies. *J. Am. Pharm. Assoc. (2003)*. 2022;62(1):378–386.
- Rodriguez MI, Hersh A, Anderson LB, Hartung DM, Edelman AB. Association of pharmacist prescription of hormonal contraception with unintended pregnancies and Medicaid costs. *Obstet Gynecol*. 2019;133(6):1238–1246.
- Gardner JS, Downing DF, Blough D, Miller L, Le S, Shotorbani S. Pharmacist prescribing of hormonal contraceptives: results of the direct access study. *J. Am. Pharm. Assoc. (2003)*. 2008;48(2):212–226.
- Henneberg C. Opinion: the FDA approved the first over-the-counter birth control pill. Here's why I'm underwhelmed. LA Times. Available at: <https://www.latimes.com/opinion/story/2023-07-19/fda-over-the-counter-birth-control-opill-contraception-abortion-dobbs>. Accessed August 30, 2023.

**Aniqa Azad, BA**, PharmD Student, School of Pharmacy, University of California, San Francisco, San Francisco, CA

**Joanna Su, BS**, PharmD Student, School of Pharmacy, University of California, San Francisco, San Francisco, CA

**Michelle Nguyen, BS**, PharmD Student, School of Pharmacy, University of California, San Francisco, San Francisco, CA

**Marissa Ly, BS**, PharmD Student, School of Pharmacy, University of California, San Francisco, San Francisco, CA

**Isabell Wu, BS**, PharmD Student, School of Pharmacy, University of California, San Francisco, San Francisco, CA

**Darrin Tracy, PharmD**, Instructor, School of Social Sciences, Humanities, and Arts, University of California, Merced, Merced, CA

**Anna Song, PhD**, Professor, School of Social Sciences, Humanities, and Arts, University of California, Merced, Merced, CA

**Dorie E. Apollonio, PhD, MPP**, Professor, School of Pharmacy, University of California, San Francisco, San Francisco, CA

**Supplement 1****Qualtrics survey questions**

- Name (first and last)
- Email Address
- Do you consent to be interviewed and recorded? Y/N
- Pharmacy Name
- Pharmacy Address (Street, City, State, Zip Code)
- What is your role at this pharmacy?
- How many pharmacists and pharmacy technicians are employed here?
- How long have you worked in your current position?
- Have you completed a residency? Y/N
- If yes, what type?
- Have you completed any training to furnish (prescribe) hormonal contraception? Y/N
- Can you furnish (prescribe) hormonal contraception at this pharmacy? Y/N
- Can you furnish (prescribe) medication abortion at this pharmacy? Y/N
- On average, how many prescriptions does the pharmacy receive on a daily basis?
- How many of those prescriptions are for hormonal contraception?
- How many hormonal contraception products were furnished (prescribed by a pharmacist)?
- How much does it cost the pharmacy to furnish hormonal contraception?
- How much does hormonal contraception prescribed by a pharmacist cost for patients?

Pharmacist furnishing of hormonal contraception in California's Central Valley

**Supplement 2**

Interview guide

**Background of Participant and Pharmacy:**

- Does this pharmacy furnish oral contraceptives?
- What is your role in the hormonal contraception furnishing process?

**Program Development and Implementation:**

- Why was a hormonal contraception furnishing program/process implemented at this pharmacy?

- What were the main factors, such as legal, financial, and logistical factors, that were considered in designing this model?
- What do you believe are aspects of this pharmacy's contraception furnishing model that is different from other pharmacies?

**Hormonal Contraception Furnishing Process:**

- If so, can you describe the process of furnishing hormonal contraception at this pharmacy, starting from when the patient arrives requesting for hormonal contraception?
- How does the pharmacy identify which patients to recommend hormonal contraception to?
- Does the patient seek out hormonal contraception or do you recommend it to the patient?
- What do you believe are the advantages and disadvantages of this hormonal contraception furnishing model?

**Pharmacy Operation Logistics:**

- How does the pharmacy provide hormonal contraception consultation and education to both staff and patients?
- On average, how many hormonal contraception do you furnish per week?

**Barriers:**

- What do you believe are current barriers for furnishing hormonal contraception at this pharmacy?
- What types of barriers, if any, did COVID-19 introduce while furnishing hormonal contraception?
- Does the pharmacy or corporation actively communicate or advertise to patients that they can receive hormonal contraceptives without a doctor's prescription?
- Does having emergency contraception available over the counter detract from the opportunity to furnish hormonal contraception?

**Recommendation and Future Direction:**

- What are some areas of improvement for implementation of hormonal contraception furnishing models?
- What recommendations do you have for pharmacies attempting to design their own hormonal contraception furnishing model?

**Get birth control prescribed here\***

**Obtén una receta para control de la natalidad aquí\***

**No appointment or doctor's visit needed for your initial consultation.**

No necesitas cita previa ni una visita al médico para tu consulta inicial.

**Visit the consultation window to speak with a pharmacist.**

**Scan the QR code to learn more.**

Visita la ventana de consulta para hablar con un farmacéutico.

Escanea el código QR para obtener más información.

\*Prescriptions available only for hormonal birth control contraception. Some patients may not be eligible based on current or past health conditions or may need to consult with their primary care physician or other health care provider to obtain a prescription for birth control. Medicaid, Medicare and other government program beneficiaries not eligible. Patients must be 18 years or older. Once a year \$39 screening fee applies. See pharmacist for details. Does not replace routine visit with your primary care physician. Other restrictions and limitations apply.

\* Se emiten recetas solo para métodos anticonceptivos hormonales. Es posible que algunas pacientes no puedan obtener este beneficio debido a alguna afección presente o pasada, o que deban consultar a su médico de cuidado primario u otro proveedor del cuidado de la salud para que les receten anticonceptivos. No cumplen con los requisitos para obtener recetas las beneficiarias de Medicare, Medicaid y otros programas del gobierno. Las pacientes deben tener 18 años de edad o más. Una vez al año, se debe pagar una tarifa de evaluación de \$39. Consulte al farmacéutico para obtener más información. Esto no reemplaza la visita de rutina a su médico de cuidado primario. Sujeto a otras restricciones y limitaciones.

W253257RX22\_ERP\_HBC\_RMK\_4a  
Remove: 8/31/2022

Supplementary Figure 2.