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Mailing abortion pills does not delay care: A cohort study comparing mailed to in-person dispensing of abortion medications in the United States ^{☆,☆☆}

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Abstract

Objective: Given the substantial barriers to abortion access in the United States, many clinics now mail patients abortion medications. We examined whether dispensing the medications by mail prolonged time to medication use.

Study design: We analyzed data from no-test medication abortions with medication provided either by mail or in a clinic from 11 United States clinics from February 2020 to January 2021. We examined mean number of days from patients' first contact with the clinic to mifepristone ingestion, its two-component intervals (first contact to medication dispensing and dispensing to mifepristone ingestion), and pregnancy duration at mifepristone ingestion. We used Poisson regression to compare mean outcomes across three dispensing methods: in-person, mailed from the clinic, and mailed from a mail-order pharmacy.

Results: Among the 2600 records, patients took mifepristone on average at 49 days of gestation (95% CI, 47–51) and 7 days (95% CI, 4–10) after first contact. Mean time from first contact to

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Appendix A. Supporting information

Supplementary data associated with this article can be found in the online version at doi:10.1016/j.contraception.2023.109962.

mifepristone ingestion was 6 days when medications were dispensed in-person and 9 days when mailed ($p = 0.38$). While time from first contact to dispensing was similar across methods (6 days in-person, 5 days mailed, $p = 0.77$), more time elapsed from dispensing to mifepristone ingestion when medications were mailed (4 days from clinic, 5 days from mail-order pharmacy) versus dispensed in-person (0.3 days, $p < 0.001$). Time to mifepristone ingestion was shorter with higher pregnancy duration. Pregnancy duration at ingestion was similar across methods (48 days in-person, 50 days mailed).

Conclusions: Mailing medications did not significantly prolong time from patients' first contact with the clinic to mifepristone ingestion or increase pregnancy duration at mifepristone ingestion.

Implications: Abortion providers should offer a range of medication abortion dispensing options, prioritizing patient preference.

Keywords

Mailing; Medication abortion; Mifepristone; Pharmacy; Risk Evaluation and Mitigation Strategy (REMS); Telehealth

1. Introduction

The approval of mifepristone for medication abortion by the United States (US) Food and Drug Administration in 2000 included a requirement that the drug must be dispensed only in clinics, medical offices, or hospitals. In July 2020, a court order temporarily blocked this requirement, allowing clinicians and mail-order pharmacies to mail the medication directly to patients for the duration of the COVID-19 Public Health Emergency [1]. In 2021, the Food and Drug Administration removed the in-person mandate permanently [2]. This regulatory shift fundamentally changed abortion provision in the US. Many patients do not need an ultrasound or other in-clinic tests for eligibility assessment and can now obtain abortion care from home using telehealth, without any in-person visits to medical facilities. Several recent studies have demonstrated that this fully remote model is safe, effective, and highly satisfactory to patients [3–6].

One concern, however, is that the mailing process could delay treatment, potentially reducing the effectiveness of the medication abortion regimen. Two studies reported that, compared with patients who came to a clinic to obtain both screening ultrasounds and abortion medications, patients who were assessed by videoconference or telephone, had ultrasounds at separate facilities, and then received medications by mail, experienced longer intervals (by 5–7 days) between first contact with the abortion provider and medication use [7,8]. In one of these studies, the pregnancy duration on the day of mifepristone ingestion was also higher among patients who received pills by mail [7]. However, these studies could not determine the extent to which the observed differences were related to the mailing process, delays due to obtaining an ultrasound, or other factors.

No previous US studies have tested whether mailing medication was associated with delays in medication abortion in the context of no-test medication abortions. We sought to examine this issue using data from a large retrospective cohort study of the safety and effectiveness of medication abortion provided without pretreatment ultrasound or pelvic exam. Abortions

were provided by multiple diverse clinics in the US between February 1, 2020 and January 31, 2021, preceding and following the July 2020 decision that first allowed for abortion medications to be mailed [4]. In all months, clinics dispensed mifepristone and misoprostol in-person, by mail from the providing clinic, or using a mail-order pharmacy. The objective of the current analysis was to determine whether mailing medications resulted in increased pregnancy duration or time to mifepristone ingestion.

2. Methods

The retrospective parent study collected data from 3779 abortions provided by 14 clinics for predefined time periods between February 2020 and January 2021 [4]. Within the original sample, 425 abortions were provided through the TelAbortion study, a prospective trial [9,10]. Trained clinic staff abstracted data from medical records for medication abortions provided without pretreatment ultrasound. Abstracted data included patient characteristics, abortion medication dispensing method, service dates, and medication administration timing. Abortion medications were provided in-person, by mail from the clinic, or using a mail-order pharmacy. The abortion medication dispensing method was determined by clinic protocol, or patient choice at clinics that offered multiple dispensing methods. Between February and June of 2020, nearly all patients in the sample other than the TelAbortion study obtained medications in-person. After a regulatory change in July 2020, clinics were able to dispense medications by mail outside of the TelAbortion study, either mailed directly from the clinic or from a mail-order pharmacy.

For this secondary analysis, we excluded data from three clinics where the first contact date was known to have been documented as the treatment date, as this would underestimate the intervals of interest. We also excluded abortions in which dates were not credible (e.g., mifepristone ingestion preceded first contact date), pregnancy duration was unknown, the patient took neither mifepristone nor misoprostol, the medications were dispensed in-person to someone other than the patient, or the dates of both mifepristone and misoprostol ingestion were unknown. The study was approved by the Allendale and University of California, San Francisco Institutional Review Boards.

2.1. Measures

The primary exposure was the medication dispensing method: in-person at the clinic, mailed from the clinic, or mailed from a pharmacy. Abortions with medications provided in-person included those with intake visits conducted in-person, without screening ultrasound or pelvic exam, and those with intake visits conducted via telehealth with medications picked up in-person. As a secondary exposure of interest, we examined pregnancy duration on the day of the first contact with the clinic.

The primary outcome was the number of days from the patient's first contact with the clinic to mifepristone ingestion. The date of first contact was defined as the date the patient scheduled the appointment via phone call or online, or otherwise the earliest date in the patient record regarding that abortion. If the date of mifepristone ingestion was missing, we conservatively substituted the date the patient used misoprostol, if available, in lieu of the date the patient used mifepristone, to avoid underestimating the intervals under study.

We also assessed two components of this interval: days from first contact to medication dispensing and days from medication dispensing to mifepristone ingestion. The date of medication dispensing was defined as the date the medications were dispensed in-person, the package was mailed to patients, or a prescription was sent to a mail-order pharmacy.

For cases where abortion medications were mailed, we sought to estimate the days between mailing and delivery (the mailing interval) and the days between delivery and mifepristone ingestion. If the date of medication delivery was available, we recorded the days from medication dispensing to delivery as the mailing interval. For cases where the delivery date was not available, we used the mean mailing interval calculated among the cases with known delivery intervals as a proxy, separately for the mailed from clinic and mail-order pharmacy groups. The remainder of the interval from dispensing to mifepristone ingestion was recorded as the time from medication delivery to ingestion.

The secondary outcome was pregnancy duration on the date of mifepristone ingestion. We calculated this variable as the difference between the first date of the patient's last menstrual period and the date of mifepristone ingestion.

2.2. Statistical methods

We first described patient and abortion characteristics, overall and examined differences by medication dispensing group using Student's t-tests, chi-squared tests, and Fisher's exact tests. We compared the characteristics of cases that were missing mifepristone and misoprostol ingestion dates to those where mifepristone or misoprostol dates were known using chi-squared tests.

We used marginal estimates of results from multivariable Poisson regression models to estimate the adjusted number of days from first contact to mifepristone ingestion and to assess differences in the overall interval by medication dispensing method. Multivariable models controlled for patient age at abortion intake, race/ethnicity, pregnancy duration at first contact with the clinic, urban or rural residence, whether the patient paid out of pocket for the abortion, and TelAbortion Study participation. Next, we followed the same procedures to examine whether the two component intervals—first contact to dispensing and dispensing to ingestion—differed by medication dispensing method. Among the mailed cases, we also estimated the share of the dispensing to ingestion interval that was 1) from dispensing to delivery and 2) from delivery to ingestion.

We used Poisson models to estimate pregnancy duration on the day of mifepristone ingestion, overall and compared this interval by medication dispensing method, adjusting for patient age at abortion intake, race/ethnicity, urban or rural residence, whether the patient paid out of pocket for the abortion, and TelAbortion Study participation. In this model, we did not adjust for pregnancy duration at first contact because the outcome was a different measure of pregnancy duration.

To assess whether our findings were influenced by the inclusion of participants in the TelAbortion study, in which clinics had staff time dedicated to mailing medications from clinics, we conducted sensitivity analyses replicating all models excluding all TelAbortion

participants. Finally, we tested whether the proportion of abortions where mifepristone was taken over 70 days of pregnancy duration differed by dispensing method using chi-squared tests.

All analyses used abortion as the unit of analysis. Standard error calculations accounted for clustering among abortions provided from the same clinic for all models. We used Stata version 17.0 (College Station, TX) for all analyses.

3. Results

The original study included 3779 abortions. We excluded 178 abortions provided by clinics that reported the intake date as the first contact date, abortions with dates that were not credible, abortions with medications dispensed in-person to someone other than the patient, and those with unknown pregnancy durations. Next, we excluded 1001 abortions because the dates of medication administration were unknown. Patients missing the date of mifepristone and misoprostol administration were first in contact with the clinic at slightly higher gestational ages (44 days among those for whom administration information was missing vs. 41 days), more likely to be white (50% vs. 42%) or to live in a rural area (21% vs. 14%), and less likely to be TelAbortion participants (5% vs. 14%). Those with missing mifepristone and misoprostol administration dates were slightly less likely to have picked up medication in-person (67% vs. 69%). After applying all exclusion criteria, we included 2600 abortions (69%) provided to 2594 patients between February 2020 and January 2021.

Table 1 describes the characteristics of the patients included in our sample. Most (69%) abortion medications in our sample were provided in-person to patients, whereas 20% were mailed to patients, and 11% from a mail-order pharmacy. All patient characteristics differed across dispensing methods. Each clinic contributed between 9 and 882 included abortions, and clinics varied in how many dispensing methods they offered (Appendix Table 1).

In adjusted analyses, the average interval between first contact and mifepristone ingestion was 6.9 days (Table 2). Patients who obtained medications in-person (6.0 days) had shorter intervals than those who received them by mail from the clinic (8.7 days) or from a mail-order pharmacy (9.0 days, $p = 0.38$).

We examined two components of the first contact to mifepristone ingestion interval (Table 3, Fig. 1). The average time from first contact to medication dispensing was 5 days and was similar across dispensing methods. However, the interval from dispensing to mifepristone ingestion differed significantly between the three methods. Time from medication dispensing to mifepristone ingestion was the shortest when the pills were dispensed in-person (< 1 day), 4 days when pills were mailed from the clinic, and 5 days when they were mailed from a pharmacy.

The date that the mailed medications were delivered to the patient was available for 374 of 514 cases (73%) in which medications were mailed from the clinic (all 374 provided through the TelAbortion study), and only 39 of 292 cases (13%) mailed from a pharmacy (all 39 provided from a single clinic). The interval from dispensing to delivery in these 413 cases for which the delivery date was available was on average 2 days in both the mailed

from clinic and mail-order pharmacy cases and ranged from 0 – 10 days; 72% were 2 days or fewer, 15% were 3–4 days, and 13% were 5–10 days. After assigning the mean mailing intervals for the remaining 393 cases without known delivery dates, we estimated that the mailing interval was similar between mailing methods; however, patients who received medications from a mail-order pharmacy (2.3 days) had a slightly longer delay between receiving and taking the medications than those who were mailed medications from clinics (2.1 days).

Time from first contact with the clinic to mifepristone ingestion was shorter with higher pregnancy duration at first contact, from 7.4 days for those with pregnancy durations less than 6 weeks to 3.4 days for those with pregnancy durations 9 weeks or more (Fig. 2). The time from first contact to medication dispensing was shorter with increasing pregnancy duration at first contact (Table 3). The interval from medication dispensing to mifepristone ingestion was longer for abortions with pregnancy durations 6 to < 8 weeks compared with those < 6 weeks, and shorter for those > 9 weeks compared with abortions with pregnancy durations 6 to < 8 weeks.

The average pregnancy duration at mifepristone ingestion was 48.7 days and was nearly identical across the dispensing method groups (Table 2). Older patients, those residing in urban areas, and patients who identified as Hispanic/Latinx versus white patients took medications at significantly lower pregnancy durations. The proportion of patients whose pregnancy durations were higher than 70 days on the date of mifepristone ingestion was similar among medication dispensing methods (2.8% for in-person, 1.6% for mailed from the clinic, and 2.4% for mail-order pharmacy, $p = 0.25$). The highest pregnancy duration on the date of mifepristone ingestion was 78 days. Results from sensitivity analyses excluding the 375 TelAbortion study participants yielded similar results (Appendix Table 2).

4. Discussion

In our sample of medication abortions provided without ultrasound or pelvic exam, we found that the average time from patients' first contact with the clinic to ingestion of mifepristone was one week. Time to mifepristone ingestion was 2–3 days longer when the medications were mailed to the patient than when they were dispensed in-person. Data from a sample of our cases suggest that the mailing process itself typically took only 1–2 days, which was consistent with the information on medication shipping times in 2020–2021 provided to us by Honeybee Pharmacy, one of several mail-order pharmacies that filled mifepristone prescriptions in the US during those years (email communication, April 2022). We estimate that patients who receive their medication by mail tend to take the pills on average 2 days after they were received. Additionally, our estimation of delivery dates was consistent with another of abortion medications dispensed from mail-order pharmacies, which found that 82% received the medications within three days [13]. In contrast, while it took somewhat longer to get an in-person appointment, most patients who obtained the medications in-person took the mifepristone that same day. However, a 3-day difference is unlikely to affect either safety or effectiveness of the treatment. The difference may reflect patient preference for taking the medications at the most convenient time once they are received by mail. Notably, the medication dispensing method had no apparent effect on the

average pregnancy duration at mifepristone ingestion. The medication dispensing method also did not impact the proportion of patients who took the medications at more than 70 days of pregnancy duration.

The interval between first contact and mifepristone ingestion was shorter in patients whose first contact was later in pregnancy, due primarily to a shorter interval between first contact and medication dispensing. This finding may reflect both clinicians' and patients' desire to expedite treatment when patients are at later pregnancy durations. Medication abortion care provided earlier is consistent with patient-centered care, results in fewer side effects, and is more effective [11,12].

Our analysis has several limitations. We included only records where the patient provided medication administration dates, which may have biased our findings. Several important characteristics differed between patients whose medication administration dates were and were not known, which may have influenced time to mifepristone ingestion. Because some clinics do not maintain detailed records about when patients schedule appointments, the date of first contact for some records may have reflected a subsequent interaction, resulting in an underestimation of several intervals in our analysis. Similarly, the date of medication dispensing for the patients who received medications by mail could have reflected the date the clinician approved the medication for the patient or the date the package was mailed, which were not necessarily the same day for all patients although this would not impact overall time to mifepristone ingestion, the main outcome. Delivery dates were missing for most cases, which impaired our ability to investigate the dynamics of the post-dispensing interval among the cases where medications were mailed. Within the group that received abortion medications in-person, we were unable to distinguish between cases where the intake visit was conducted via telehealth or in-person. This may have obscured differences in the length of the interval between first contact and medication dispensing within this group, and underestimated differences in this interval between abortions with medications provided in-person and by mail. Finally, our data did not enable us to estimate the time from the patient's decision to terminate the pregnancy to treatment, which may be more salient to patients than the intervals we examined in this study.

Patients should be able to start their abortions at a time that is most convenient to them and decide whether they want to pick up the abortion medications at the clinic or receive them by mail. Patients should be informed about the small delay associated with obtaining medications by mail. In January 2023, the Food and Drug Administration allowed for retail pharmacies to dispense mifepristone; however, important restrictions remain in place that limit access. Our findings support regulatory shifts to expand pharmacy access to the medication abortion regimen by demonstrating that patients take the abortion medications at a clinically acceptable time and early in pregnancy, regardless of how they receive the medications.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

Acknowledgments

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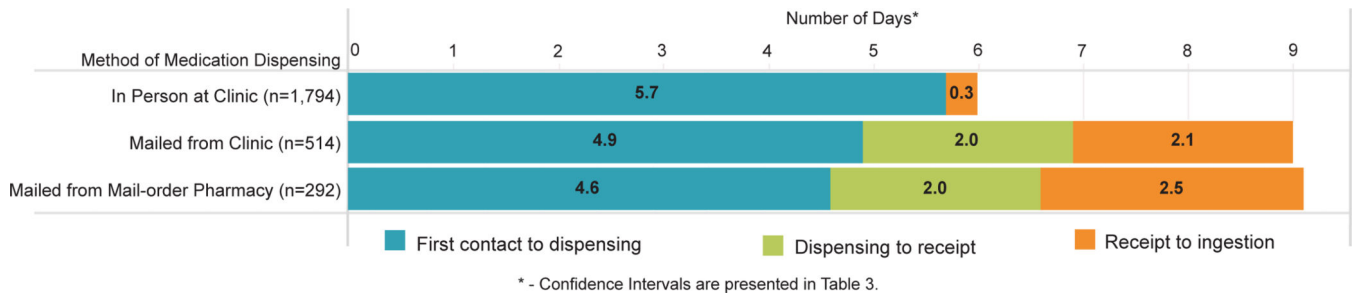


Fig. 1.
 Mean days from first contact to mifepristone ingestion among medication abortions provided in the US, February 2020–January 2021 (n = 2600).

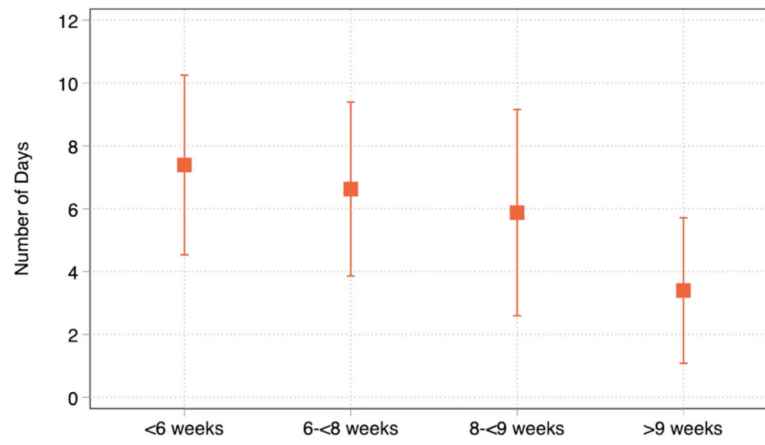


Fig. 2. Days from first contact to mifepristone ingestion among medication abortions provided by 11 clinics in the USA, by pregnancy duration at first contact with the clinic, February 2020–January 2021 (n = 2600).

Table 1
 Characteristics of patients obtaining medication abortion at 11 clinics in the United States from February 2020 to January 2021, by method of medication dispensing (n = 2600)

	Overall	In-person at the clinic	Mailed from the clinic	Mail-order pharmacy	p Value
N	2600	1794	514	292	
Treatment date (range)	February 2020–January 2021	February 2020–January 2021	February 2020–January 2021	October 2020–January 2021	
Age (mean + SD)	28+6	28+6	30+6	29+6	< 0.001
White	1096 (42)	681 (38)	275 (54)	140 (48)	< 0.001
Black	668 (26)	430 (24)	139 (27)	99 (34)	
<i>Race/ethnicity</i>					
Latinx/Hispanic	391 (15)	326 (18)	34 (6.6)	31 (11)	
Other	257 (10)	198 (11)	46 (89)	13 (5)	
Unknown	188 (7)	159 (9)	20 (4)	9 (3)	
<i>Residence</i>					
Rural	363 (14)	213 (12)	114 (22)	36 (12)	< 0.001
Urban	2237 (86)	1581 (88)	400 (78)	256 (88)	
Paid out of pocket for abortion					
Did not pay for any portion of abortion out of pocket	1249 (48)	1179 (66)	55 (11)	15 (5)	
Paid for any portion of abortion out of pocket	1351 (52)	615 (34)	459 (89)	277 (95)	< 0.001
Pregnancy duration at the first clinic contact					
< 6 wk	1420 (55)	934 (52)	300 (58)	186 (64)	
6–< 8 wk	942 (36)	681 (38)	176 (34)	85 (29)	< 0.001
8–< 9 wk	167 (6)	117 (7)	34 (7)	16 (6)	
> 9 wk	71 (3)	62 (3)	4 (1)	5 (2)	
Tel/Abortion study participant					
No	2225 (86)	1793 (100)	140 (27)	292 (100)	< 0.001 ^a
Yes	375 (14)	1 (< 1)	374 (73)	0 (0)	

^aFisher's exact test.

Table 2
Pregnancy duration in days at mifepristone ingestion and days to mifepristone ingestion among patients obtaining medication abortion at 11 clinics in the United States from February 2020 to January 2021 (n = 2600)

	Days from first contact to mifepristone ingestion	Pregnancy duration in days at mifepristone ingestion
	Estimate [95% confidence interval]	
Overall	6.9 [4.1–9.7]	48.7 [46.9–50.6]
<i>Medication dispensing method</i>		
In-person at clinic (<i>ref</i>)	6.0 [2.2–9.9]	48.1 [45.4–50.8]
Mailed from the clinic	8.7 [7.6–9.9]	50.3 [49.5–51.2]
Mail-order pharmacy	9.0 [7.3–10.7]	49.8 [48.4–51.2]
<i>Pregnancy duration at the first contact</i>		
< 6 wk (<i>ref</i>)	7.4 [4.5–10.3]	
6–< 8 wk	6.6* [3.9–9.4]	
8–9 wk	5.9* [2.6–9.2]	
> 9 wk	3.4*** [1.1–5.7]	
<i>Residence</i>		
Rural (<i>ref</i>)	7.8 [5.6–10.1]	50.7 [49.4–52.1]
Urban	6.8 [3.8–9.7]	48.4** [46.4–50.4]
<i>Race/ethnicity</i>		
White (<i>ref</i>)	7.1 [4.1–10.0]	48.6 [46.3–50.9]
Black	7.6 [4.8–10.4]	49.1 [47.8–50.4]
Latinx/Hispanic	5.2 [1.3–9.0]	47.9* [45.6–50.2]
Other ^a	7.8 [6.1–9.6]	50.0 [48.8–51.1]
Unknown	5.5 [2.4–8.6]	47.7 [45.0–50.4]
<i>Paid out of pocket for abortion</i>		
Did not pay for any portion of abortion out of pocket (<i>ref</i>)	6.6 [2.8–10.3]	48.9 [46.8–51.0]
Paid for any portion of abortion out of pocket	7.2 [5.0–9.4]	48.5 [46.5–50.6]
<i>TelAbortion study participant</i>		
No (<i>ref</i>)	7.1 [4.2–9.9]	48.9 [46.9–50.8]
Yes	6.2 [3.8–8.7]	47.8 [46.0–49.7]

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Results are marginal estimates from multivariable Poisson regression models. Models are adjusted for all variables listed in the table as covariates as well as age and standard errors are clustered at the clinic level. The model that examines pregnancy duration at mifepristone is not adjusted for pregnancy duration at first contact.

* $p < 0.05$.

** $p < 0.01$.

*** $p < 0.001$.

^aOther race/ethnicity: Alaska Native, American Indian, Asian, Asian Indian, Filipino, Guamanian/Chamorro, Japanese, Middle Eastern, Native American, Native Hawaiian, Pacific Islander, and Turkish.

Table 3

Component intervals from first contact to mifepristone ingestion among patients obtaining medication abortion at 11 clinics in the United States from February 2020 to January 2021

	Days from first contact to medication dispensing (n = 2600)	Medication dispensing to mifepristone ingestion (n = 2600)	Among mailed cases (n = 806)
	Estimate [95% confidence interval]	Medication dispensing to mifepristone ingestion (n = 2600)	Medication dispensing to receipt
Overall	5.4 [2.4–8.4]	1.5 [1.2–1.9]	2.0 [1.7, 2.3]
Medication dispensing method			Medication receipt to mifepristone ingestion
In-person at the clinic (<i>ref</i>)	5.7 [1.7–9.8]	0.3 [0.0–0.7]	2.2 [2.0, 2.3]
Mailed from the clinic	4.9 [3.9–5.8]	4.0 [3.2–4.8] ***	2.0 [1.6, 2.3]
Mail-order pharmacy	4.6 [3.4–5.8]	4.6 [3.9–5.3] *** ^a	2.2 [1.9, 2.5] ***
Pregnancy duration at the first contact			2.5 [1.9, 3.1] *** ^b
< 6 wk (<i>ref</i>)	5.9 [2.8–9.0]	1.5 [1.1–1.8]	0.9 [0.6, 1.1]
6–< 8 wk	5.0 [2.1–8.0] **	1.6 [1.3–2.0] *	2.0 [1.7, 2.3]
8–< 9 wk	4.6 [1.3–7.9] *	1.3 [1.0–1.7]	2.1 [1.7, 2.4] *
> 9 wk	2.5 [0.2–4.8] *** ^c	1.0 [0.5–1.5]	1.9 [1.8, 2.1]
			1.3 [1.0, 1.7]

Results are marginal estimates from multivariable Poisson regression models. Models are adjusted for age, pregnancy duration at first contact, urban/rural residence, race/ ethnicity, out-of-pocket payment for the abortion, and participation in the TelAbortion Study, and standard errors are clustered at the clinic level. Estimates for component intervals do not sum exactly to the estimates for overall intervals because they are modeled separately.

* $p < 0.05$.

** $p < 0.01$.

*** $p < 0.001$.

^a p Value for comparison of mail-order pharmacy versus mailed from the clinic; $p = 0.01$.

^b p Value for comparison of mail-order pharmacy to mailed from the clinic; $p < 0.001$.

^c p Value for comparison of > 9 weeks versus 6–< 8 weeks; $p = 0.03$.