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ORIGINAL ARTICLE

# A direct-to-patient telemedicine abortion service in Australia: Retrospective analysis of the first 18 months

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**Background:** In 2015, the Tabbot Foundation launched a nationwide direct-to-patient telemedicine service to enable women to obtain medical abortion without visiting an abortion provider.

**Aims:** We aimed to describe results from the first 18 months of this service.

**Materials and Methods:** To have an abortion through the Foundation, a woman obtained screening tests locally and had a telephone consultation with a Foundation doctor. If she was eligible, mifepristone, misoprostol and other medications were sent to her by mail. After taking the drugs, the woman obtained follow-up tests at local facilities and had a consultation with Foundation professionals. The Foundation charged $250 to patients with Medicare eligibility and $600 otherwise. We summarised clinical data collected by the service.

**Results:** Between June 2015 and December 2016, 1010 women received medications, of whom 56% lived outside of major cities. Ninety-five percent of packages were sent within 15 days after registration. Of the 965 women who took misoprostol, outcomes were definitively documented for 754 (78%), of whom 96% had a complete abortion without surgical intervention, and 95% had no face-to-face clinical encounter after treatment. Of women with Medicare cards, 72% paid no out-of-pocket charges other than to the Foundation. Nearly all women (781/802; 97%) were highly satisfied.

**Conclusions:** The direct-to-patient telemedicine medical abortion service was effective, safe, inexpensive and satisfactory. It disproportionately served women in parts of Australia with limited access to abortion facilities. This experience may be instructive for others desiring to use telemedicine to enhance access to abortion.

KEYWORDS

abortion, access, Australia, telemedicine

## INTRODUCTION

Although surgical abortion has been available in Australia for decades, the introduction of medical abortion has been slow. Mifepristone was effectively banned until 2006, when a limited number of providers were authorised to import and distribute the drug under strict conditions. In 2012, 23 years after approval was given to market the drug in France, a registered mifepristone product finally became available in Australia. Measures were instituted to facilitate access: in particular, unlike most other countries, Australia allowed distribution of the drug by prescription in pharmacies, dramatically increasing the number and distribution of certified dispensers.[1] In 2013 mifepristone and misoprostol were added to the Pharmaceutical Benefits

Scheme, which subsidises the cost of the drugs. Nevertheless, by 2016 use of medical abortion was substantially less than anticipated,[2] and obtaining medical abortion remains difficult for many Australian women.[3–5]

To address this problem, the Tabbot Foundation, based in Sydney, New South Wales, launched a direct-to-patient telemedicine service in June 2015 to enable women to obtain medical abortion without visiting a medical practitioner. In this paper, we present observations from the first 18 months of this service.

## MATERIALS AND METHODS

### The Tabbot Foundation Service

The specific procedures for providing abortion evolved somewhat over the course of the first 18 months (http://www.tabbot.com.au/). A basic description of the service follows.

Each woman who contacted the Foundation was screened by telephone to confirm that she desired an abortion and met preliminary criteria. These criteria included the following: she had a positive pregnancy test, was <8 weeks gestation by menstrual dating, lived ≤60 minutes from a medical facility, had no major medical illnesses or history of severe dysmenorrhea, identified someone to be with her during treatment, spoke English and could pay by electronic fund transfer. In addition, because laws in the Australian Capital Territory, Northern Territory and South Australia specified that abortions must be performed in an approved medical facility, women from those jurisdictions were required to have an address in another state where they could receive and ingest the abortifacients.

If preliminary criteria were met, Foundation staff referred the patient to facilities of her choice for a screening ultrasound, haemoglobin, blood type and quantitative serum human chorionic gonadotropin (HCG) concentration. The results were reviewed by a Foundation doctor (a gynaecologist or general practitioner with training in abortion provision), who then spoke with the patient by telephone to confirm eligibility, discuss instructions and expectations, and agree on a follow-up plan. A woman was considered eligible if she was projected to have an intrauterine pregnancy of ≤63 days gestation by ultrasound at the proposed abortion date and no medical contraindications (chronic adrenal failure, haemorrhagic disorder, current anticoagulant or long-term corticosteroid therapy, inherited porphyria, allergy to the abortifacient drugs or intrauterine device in place). If the patient was deemed eligible for the service, the Foundation charged $250 if she had a Medicare card or $600 otherwise. The service then authorised a central pharmacy to send a package containing abortifacient drugs, ancillary medications and a urine pregnancy test to her specified address by express mail. Initially, a few patients chose to receive their drugs at a surgical abortion clinic in Tasmania that shared a medical director with the Foundation or at a pharmacy. Rh-negative patients were referred to local hospitals to receive Rh(D) immunoglobulin. A 24-h toll-free phone number was provided to all patients.

A Foundation nurse contacted each patient on the planned misoprostol ingestion date to check her status. Each patient was instructed to obtain a second serum quantitative HCG concentration seven days after misoprostol ingestion. Abortion outcomes were assessed by reviewing these results and through scheduled phone calls with Foundation staff. Complications such as excessive or insufficient bleeding and inadequate pain relief were actively managed with additional misoprostol or analgesics; hospital referrals were made when necessary. Active follow-up was discontinued when Foundation clinicians determined that no further care was needed. All patients were instructed to perform the urine pregnancy test at home 28 days after treatment and to contact the Foundation if the results were positive.

In the first year of the service, the standard abortifacient regimen was mifepristone 200 mg orally followed 40-45 h later by misoprostol 800 μg buccally. In August 2016, all patients were provided with additional misoprostol 200 μg to take sublingually thrice daily for two days. A specific combination of analgesics, anti-emetics and an antibiotic was also recommended.

### Analysis

De-identified information was transferred from the electronic medical record into an analysis database. Some data from six patients were obviously invalid: three patients had recorded dates of registration, drug shipment authorisation and misoprostol ingestion that did not occur in that order, one had an interval of 273 days between registration and drug shipment authorisation, and two had intervals of ≥274 days between registration and ultrasound. Our analyses considered these dates as missing. Patients' addresses were classified according to the 2011 Australian Statistical Geography Standard Remoteness Area classification, which reflects relative access to services.[6] For this analysis, we defined a complete medical abortion as one that met any of these criteria: serum HCG concentration declined by ≥80%, urine pregnancy test was negative, ultrasound showed complete abortion, or a clinician diagnosed complete abortion without surgery. We defined a patient to have had full follow-up if she had had a complete medical abortion according to the analysis definition, a uterine evacuation, or an ongoing pregnancy that she planned to continue. We used descriptive statistics to describe the women who accessed the service, the process indicators and the outcomes. We used $\chi^2$ tests to test associations between remoteness area classification and source of initial introduction to the service and between abortifacient regimen and outcomes. We considered a $P$-value <0.05 as statistically significant. The Allendale Investigational Review Board (Old Lyme, CT, USA) approved the analysis.

## RESULTS

Between 11 June, 2015 and 23 December, 2016, 1409 people registered with the Foundation (Table 1). Most lived outside

**TABLE 1** Patient characteristics

| | Registered *N* = 1409 *n* (%) | Sent drugs *N* = 1010 *n* (%) |
|---|---|---|
| Age at registration† | | |
| 14–24 | 354 (25%) | 240 (24%) |
| 25–34 | 732 (52%) | 523 (52%) |
| 35–49 | 319 (23%) | 243 (24%) |
| Unknown | 4 | 4 |
| Insurance status | | |
| Medicare | 1348 (96%) | 973 (96%) |
| Other | 61 (4%) | 37 (4%) |
| Remoteness area class | | |
| Major city | 614 (44%) | 406 (40%) |
| Inner regional Australia | 557 (40%) | 427 (42%) |
| Outer regional Australia | 203 (14%) | 153 (15%) |
| Remote Australia | 27 (2%) | 20 (2%) |
| Very remote Australia | 8 (0.5%) | 4 (0.4%) |
| State | | |
| Tasmania | 445 (32%) | 351 (35%) |
| New South Wales | 443 (31%) | 301 (30%) |
| Victoria | 203 (14%) | 127 (13%) |
| Queensland | 187 (13%) | 143 (14%) |
| Western Australia | 102 (7%) | 69 (7%) |
| Australian Capital Territory | 23 (2%) | 16 (2%) |
| Northern Territory | 5 (0.4%) | 3 (0.3%) |
| South Australia | 1 (0.1%) | 0 |
| Referral source | | |
| Web search | 804 (57%) | 576 (57%) |
| Tabbot-associated surgical abortion clinic‡ | 131 (9%) | 112 (11%) |
| Other clinical provider or advisory service | 344 (24%) | 232 (23%) |
| News media | 72 (5%) | 48 (5%) |
| Personal contact | 58 (4%) | 42 (4%) |
| Gestational age by ultrasound at registration§ | | |
| 28–35 days | 353 (31%) | 315 (31%) |
| 36–42 days | 439 (38%) | 399 (40%) |
| 43–49 days | 256 (22%) | 221 (22%) |
| 50–56 days | 82 (7%) | 64 (6%) |
| 57–63 days | 17 (1%) | 7 (1%) |
| 64–70 days | 2 (0.2%) | 0 (0%) |
| >71 days | 5 (0.4%) | 0 (0%) |
| Had ultrasound but gestational age undetermined | 6 | 4 |
| No ultrasound recorded | 249 | |
| Rh status¶ | | |
| Positive | 1005 (86%) | 862 (85%) |
| Negative | 164 (14%) | 148 (15%) |
| Unknown | 240 | 0 |

†Percents exclude women in whom age at registration could not be determined due to data errors.
‡A clinic in Tasmania that shared a medical director with the Tabbot Foundation.
§Percents exclude women who had ultrasound but gestational age could not be determined due to data errors and women who did not have any ultrasound recorded.
¶Percents exclude women with unknown Rh status.

major cities; a third lived in Tasmania. Overall, 57% discovered the service through the internet, and a third were referred either by a surgical abortion clinic in Tasmania that shared a medical director with the Foundation (9%) or by another clinical provider or advisory service (24%). Registrants in major cities were significantly more likely than other women to have used the internet (69% vs 48% respectively; $P < 0.001$), and less likely to have been referred by medical professionals (20% vs 45%, respectively, $P < 0.001$).

A total of 399 registrants (28%) withdrew from the screening process before medications were sent. The records of 200 (50%) of these women include no screening test results or Foundation doctor consultation; 178 (45%) were missing at least one test and/or the doctor consultation; and 21 (5%) had all tests and the doctor consultation but did not provide payment. Only seven of the valid ultrasound results received showed gestational ages of >63 days at registration. Most women who withdrew did not report a reason for discontinuing, but some indicated that they decided to continue the pregnancy or to have an abortion elsewhere. Some were deterred by harassment when obtaining the required screening tests or by misinformation about medical abortion in the community. A few had suspected ectopic or molar pregnancies.

The Foundation provided medications to 1010 of the 1409 registrants (72%). The characteristics of these women were similar to those of the full registrant population (Table 1). All women who were sent packages had recorded gestational ages of <63 days by ultrasound at drug shipment authorisation, except one whose recorded gestational age was 66 days and four whose gestational ages were unavailable. Nearly all (970/1010; 96%) had at least one contact with Foundation staff after drug shipment authorisation.

Progress through the process was efficient (Table 2). Patient evaluation and drug shipment authorisation were completed within 15 days for more than 95% of women who ultimately

**TABLE 2** Process indicators among women to whom drug packages were mailed†

| | *N* | Minimum | Median | 95th percentile | Maximum |
|---|---|---|---|---|---|
| Intervals between events (days) | | | | | |
| Registration to drug shipment authorisation | 1006 | 0 | 6 | 15 | 34 |
| Registration to ultrasound | 1006 | −14 | 1 | 9 | 21 |
| Shipment of drug to misoprostol ingestion‡ | 962 | 0 | 5 | 10 | 16 |
| Misoprostol ingestion to final contact§ | 948 | 1 | 11 | 19 | 66 |
| Gestational age in days by ultrasound on day of misoprostol ingestion‡ | 962 | 33 | 51 | 62 | 69 |

†Table excludes three cases in which registration, drug prescription and misoprostol ingestion if any were not recorded as having occurred in that order and one case in which an interval of 273 days was recorded between these dates.
‡Row excludes 44 who did not take misoprostol or provided no relevant information after shipment.
§Row excludes 44 who did not take misoprostol or provided no relevant information after shipment, 12 whose last contacts were on the day of misoprostol ingestion, and two whose last contacts were recorded as having occurred >100 days after misoprostol ingestion.

**TABLE 3** Abortion outcomes among women who took misoprostol and had full follow up

| | ***N* = 754**<br>***n* (%)** |
|---|---|
| Abortion outcome | |
| Complete abortion without surgical evacuation | 727 (96%) |
| Surgical uterine evacuation† | 26 (3%) |
| Continuing pregnancy | 1 (0.1%) |
| Clinical encounters after package mailed | |
| Hospital admission† | 21 (3%) |
| Outpatient face-to-face encounter | 16 (2%) |
| No clinical encounter | 717 (95%) |

†One woman had a transfusion

received medications. This interval was shorter for the 16% of women who had ultrasounds before registration than for those who had ultrasounds on or after registration (median three vs seven days, respectively). Of the 962 women who had a valid date of misoprostol ingestion recorded, nearly all took the drug within 10 days after drug shipment authorisation. Sixteen women reported having taken the misoprostol at gestational ages of more than 63 days, but all were less than 70 days.

Of the 1010 women who were sent medications, 31 (3%) provided no relevant information after shipment, and 14 (1%) reported that they did not take the misoprostol. Most of the latter group reported that they had either miscarried or decided not to have a medical abortion. Of the other 965 women, full follow-up according to our analysis definition was accomplished in 754 (78%). Of those, 96% had a complete abortion without surgical uterine evacuation, and 95% had no face-to-face clinical encounter (other than for providing the HCG specimen) after the package was sent (Table 3). Neither abortion outcomes nor the incidence of face-to-face encounters changed significantly after the introduction of the extended misoprostol dosing in August 2016 (data not shown).

A total of 211 women who took misoprostol did not have full follow-up by the analysis definition. Of these women, seven were known to have been admitted to hospital and seven had outpatient consultations with outside providers for symptoms related to the abortion. The outcomes of these encounters were not ascertained. Foundation clinicians using clinical judgment (i.e., criteria other than those defined for this analysis) determined that 75 of the 211 women (35%) ultimately had complete medical abortions without a face-to-face clinical encounter.

From February 2016, the Foundation began asking each woman at discharge how much she had spent on abortion-related tests and other care in addition to the Foundation charge. Of the 584 women with Medicare cards who had full follow-up by the analysis definition and provided this information, 421 (72%) paid no additional costs. The other 163 women reported additional costs ranging from $30 to $310 with a median of $130.

Women were asked at the last contact to rate their satisfaction with the process. Of the 802 who responded, 781 (97%) rated it a 1 (highly satisfied) on a scale of 1–5.

## DISCUSSION

Telemedicine is increasingly recognised as an important approach for increasing access to abortion and for enhancing patients' privacy and autonomy.[7] For more than a decade, several international organisations have been mailing abortifacient drugs across international boundaries to women in countries where abortion is illegal or severely restricted.[8,9] In the United States of America, videoconferencing is being used in several states to evaluate patients and authorise provision of these drugs at clinics that have no authorised prescribers on site.[10] A Canadian doctor instituted a program that counsels and evaluates women by videoconference and then sends medications to their homes by mail.[11] Research has shown that these programs are safe and well accepted by patients.

The Tabbot Foundation program is the first known nationwide telemedicine service to legally offer abortion directly to patients without an in-person visit to an abortion provider. Our analysis of data from the first 18 months of this service indicates that it worked well. It provided abortions to over 1000 women from all but one of the Australian states and territories. Nearly all of these women were counselled, screened and sent the medications within 15 days after initial registration. Of those with full follow up, 96% completed the abortion without surgical evacuation, consistent with outcomes of in-person medical abortion.[12–14] Only 5% of treated women required any subsequent face-to-face clinical encounter. Of women with Medicare cards, 72% paid only $250 total out of pocket, considerably less than the median of $470 for medical abortion obtained from a large provider organisation in Australia.[3] Nearly all patients were highly satisfied.

The service was used disproportionately by women outside of major cities: 60% of women who received abortion drugs from the Foundation lived in regional and remote communities, compared to 29% of the Australian population (Fig. 1).[15] This finding is encouraging because these communities are underserved by abortion clinics[5,16,17] and constitute a priority population group for health interventions in Australia.[18] Notably, whereas most registrants from major cities discovered the service from internet websites, fewer than half of non-urban women did so; for the latter group, referrals from medical providers were relatively more important. Ensuring that health professionals in non-urban settings inform patients about the option of telemedicine is key to realising its potential for enhancing service in these areas.

One limitation of our study is that only 76% of the women who were sent medications either had full follow-up according to our analysis definition or reported not having taken the misoprostol. This proportion is somewhat lower than the 87% reported in a recent series of in-person medical abortions in Australia.[14] Also, information about outcomes after face-to-face encounters was incomplete. However, 96% of patients had at least one post-treatment contact with the Foundation, and every patient was sent a urine pregnancy test to perform at home four weeks after treatment. Symptom-based follow up with or without pregnancy testing has been validated in several studies[19,20] and is now routinely offered after in-person medical abortion by organisations in the UK, Norway and Australia.[14,21,22] Nevertheless, our analysis may have missed some abortion failures or complications. In addition, our dataset lacked some information of potential interest, such as confirmation of mifepristone ingestion, the number of misoprostol doses taken, confirmation of receipt of Rh(D) immunoglobulin and incidence of side effects.

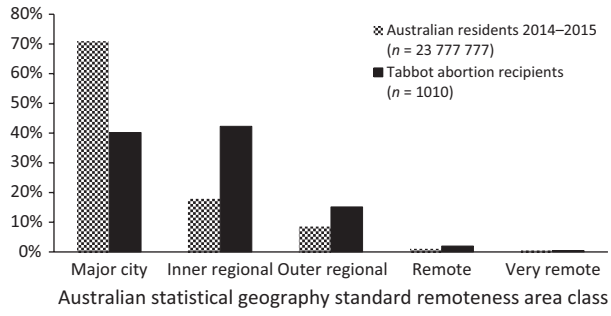


**FIGURE 1** Australian resident population and Tabbot abortion recipients by Remoteness Area class. Australian resident population data estimated by Australian Bureau of Statistics.[17]

The Foundation encountered several challenges in implementing its service. From the outset, considerable planning was needed to ensure compliance with the unique regulations in each Australian state and territory. Finding facilities that would administer Rh(D) immunoglobulin to Rh-negative women promptly and nonjudgmentally has been problematic. Some surgical abortion providers dissuaded women from choosing medical abortion, citing excessive pain and bleeding.

The Foundation's experience yields recommendations for maximising the efficiency and success of a direct-to-patient telemedicine service. Standardised protocols and an electronic medical record are essential to effectively managing large numbers of patients. A well-designed website that provides full information to patients before and after treatment facilitates registration, screening and follow up. Communication with patients can be accomplished satisfactorily using telephone and text; videoconferencing, which has been required by North American telemedicine abortion services, is unnecessary. Indeed, a videoconferencing requirement can impede access by women who do not have the needed equipment and a reliable internet connection. Sending the medications to patients by mail from a central source can be preferable to issuing prescriptions, particularly in settings with a limited number of pharmacies that stock mifepristone and misoprostol or with high levels of stigma about abortion. Finally, providing adequate analgesics to minimise side effects is critical for acceptability.

The launch of the Tabbot Foundation service in 2015 was a turning point for abortion care in Australia. The following year, a second home-based telemedicine abortion service was introduced that also provides services in most Australian states and territories.[23] With the commencement in July 2017 of the Termination of Pregnancy Law Reform Act in the Northern Territory, which removed the requirement that abortion must be provided in hospitals, in-home abortion through one or both services is now available to over 93% of women in the country, excluding only those in South Australia. We hope that Australia will serve as a model for other nations desiring to use telemedicine to increase access to abortion care.

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