

# Update on Medical Abortion: Expanding Safe and Equitable, Patient-Centered Care

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**Abstract** Addressing disparities in abortion access and efforts to end the global problem of unsafe abortion are key public health and human rights priorities. Optimizing the role of various health workers in supporting safe medical abortion practices and working to remove unnecessary barriers to care are key strategies that address inequities in outcomes after abortion worldwide. Medical abortion using evidence-based protocols is effective through 70 days gestation and can safely be provided by non-physician providers in outpatient settings. Removing barriers of in-office administration of mifepristone and simplifying follow-up protocols are evidence-based approaches to expanding access to medical abortion, particularly in settings where access to surgical abortion is limited. Research supports expanding the role of women themselves, as well as task-shifting among health worker teams in providing safe abortion and postabortion care. Simplifying the process of medical abortion, including allowing prescription and home administration of mifepristone and utilizing telemedicine for follow-up protocols are safe and feasible, can optimize use of health resources and improve patient experience with medical abortion.

**Keywords** Unsafe abortion · Medical abortion · Mifepristone · Misoprostol · Task-shifting

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## Introduction

Despite focused efforts to improve maternal health worldwide, disparities in outcomes after induced abortion persist. While efforts to study the morbidity and mortality of unsafe abortion remain challenging [1], it is estimated that each year 22 million women experience unsafe abortion [2]. Of these, 7 million suffer complications that require medical attention [3•] and 47,000 die [2]. Unsafe abortion accounts for up to 15 % of all maternal deaths worldwide [4], a burden that is primarily felt by women living in the developing world where access to legal, safe abortion is constrained and clandestine procedures are the norm [2]. Risk for unsafe abortion relates strongly to the legal status of abortion in a country where a woman lives [5] because where abortion is illegal, women suffer complications after unsafe procedures. In contrast, when performed in safe contexts, early abortion has a mortality of 1 per 1 million procedures [6]. Yet, the death rate from unsafe abortion is up to 800 times higher in regions like Sub-Saharan Africa where a paucity of safe abortion care is available, compared with regions where women can access legal, safe abortion care [7].

## Disparities in Abortion Outcomes: Unsafe Abortion and Unequal Access

Beyond impacts on morbidity and mortality, the impact of unsafe abortion extends to families, communities, health systems, and governments. The financial cost of care for complications after unsafe abortion procedures is significant, estimated at several million dollars per year. These burdens are primarily shouldered by the developing world [8].

According to the World Health Organization (WHO), unsafe abortion is a procedure for terminating a pregnancy performed by persons lacking the necessary skills or in an

environment not in conformity with minimal medical standards, or both [9]. In order for this definition to be appropriately interpreted, evolving evidence-based recommendations must inform health policy around safe abortion care. To this end, the WHO does not provide a static definition of where safe abortions can occur and who can provide this competency-based care [10]. Rather, the WHO guidelines are clear that most safe abortion care in the first trimester can occur by non-physician providers in an outpatient setting [11].

In the developed world, where unsafe abortion is uncommon, disparities in reproductive health outcomes and access to family planning services exist. Adolescents and minority women have disproportionately high risk for unintended pregnancy and poor pregnancy outcomes [12]. In the USA, women living in poverty are more likely to seek abortion care and less likely to have insurance coverage for abortion [13]. Additionally, a 2015 study found a correlation between state restrictions on Medicaid funding for abortion and anomaly-related infant mortality, highlighting how access to abortion care can have a broader impact on notable health outcomes, like infant mortality [14]. Finally, as legislative restrictions to abortion access grow, an increase in self-abortion techniques is being observed in the USA, particularly among low-income and young women who lack resources to travel for abortion care [15, 16].

Addressing disparities in abortion access and efforts to end the global problem of unsafe abortion are key public-health priorities [17]. There are many factors that contribute to disparities in abortion outcomes—including the legal status of abortion, reproductive health policy, access to effective contraceptive methods, the cost of safe abortion services, and the status of women and their ability to access reproductive healthcare. The many layers that contribute to this public-health problem are complex and the strategies to address unsafe abortion multi-faceted [18]. Research agendas have evolved to focus on improving the abortion experience for women, decreasing risk associated with clandestine abortion and addressing disparities in abortion outcomes.

Worldwide, medication abortion with mifepristone and misoprostol (or misoprostol alone when mifepristone is not available) has become more common in both legal and clandestine procedures. Increased availability of medical abortion is attributed to declines in mortality and morbidity of unsafe abortion [19]. Medical abortion with evidence-based mifepristone and misoprostol protocols is safe and effective for pregnancy termination up to 70 days gestation [20–24]. A 2015 retrospective cohort study including over 30,000 women undergoing early abortion found similar efficacy and low complication rates when comparing surgical abortion with medical abortion [25]. In contexts where mifepristone is not available, misoprostol, while less effective, can be used for pregnancy termination through 63 days gestation [26]. This

review will explore emerging research and guidelines on how to improve medical abortion services and address disparities in abortion outcomes.

## Health Worker Roles in Safe Abortion Care

Despite the fact that the lack of skilled providers is one of the most critical barriers to safe abortion for many women, resources within the global health workforce—including advanced practitioners, midwives, nurses, and auxiliaries remain insufficiently utilized [27]. Because the shortage of skilled health providers is especially pronounced in regions of the world with a high burden of unsafe abortion, excluding non-physician providers from supporting safe abortion increases maternal mortality [28, 29]. In settings where abortion is legally permissible, shortages of abortion providers result from lack of training and the stigma and professional and administrative barriers associated with providing abortion care [30]. Allowing a range of health workers to be involved with and support the provision of safe abortion addresses the shortage of specialized health professionals, improves equity in access and increases the acceptability of abortion services for women [31••]. The practice of allowing health workers with less specialized training to support provision of care by completing tasks normally done by health workers with more specializing training is called task-shifting. By rationally redistributing tasks within healthcare teams, task-shifting is an important approach to deal with shortages of specialized health workers.

With this rationale, in 2015 the World Health Organization released evidence-based guidelines for how systems of care can be restructured to safely expand the role of different health workers in providing abortion care [31••]. The guideline incorporated data from 36 studies on safety and effectiveness and 204 qualitative studies of acceptability and feasibility in both high- and low-resource settings [32]. The guidelines consider a broad definition of health workers, include implementation considerations, and establish a research agenda. While the entire spectrum of abortion care is considered—including referral, counseling, first- and second-trimester medical and surgical abortion, management of postabortion complications, and postabortion contraception care—the guidelines emphasize that medical abortion in the first trimester has a particular potential for expansion of health worker roles.

## The Role of Non-physician Providers in Safe Early Medical Abortion Care

Medical abortion care provided by non-physician providers is well supported by available literature. A 2015 meta-analysis evaluating eight studies with over 22,000 participants

compared the safety and effectiveness of abortion provision by physicians compared with advanced-level practitioners (nurse practitioners or nurse midwives). This analysis, which included studies in high- and low-resource settings, found no statistically significant difference in the risk of failure for medical abortion or risk of complications for first-trimester surgical abortions [33••].

In addition to equivalent effectiveness and safety, there may be benefits of medical abortion provision by advanced practice clinicians. For instance, a 2015 randomized study comparing early medical abortion in 1180 women demonstrated benefit of non-physician care. While no difference in complication rates or safety parameters was found between the groups, patients in the nurse-midwife group had higher effectiveness of successful medical abortion, and greater satisfaction in their experience with the abortion provider. Further, they were more likely to return for long-acting reversible contraception postabortion when compared with patients in the physician group [34]. This study was done in a high-resource setting, confirming that expansion of health workers' roles in medical abortion is beneficial in many contexts and should be implemented in both low- and high-resource settings. To accomplish this, change in the regulation of medication abortion and prescribing is an important consideration for policy makers [31••].

### Women's Role in Safe Early Medical Abortion Care

Acknowledging that women themselves are uniquely positioned to play a role in medical abortion, the WHO health workers role in safe abortion guidelines considers how women's role can be safely expanded. These guidelines suggest a research agenda to evaluate women's ability to perform specific components of medical abortion. The tasks considered appropriate for self-management in medical abortion include use of the medications used for medical abortion, determination of success of the medical abortion, and self-administration of injectable contraception postabortion (see Table 1).

Targeted research of the safety and feasibility of these options over the past year has challenged tenets of the conventional medical abortion protocols. These alternatives can improve the patient experience with medical abortion and have the potential to empower women to play a larger role in their medical care. Examples of these alternative protocols include allowing self-administration of mifepristone and simplifying follow-up protocols after medical abortion.

### Home Administration of Mifepristone

The requirement of administering mifepristone for women to take in the clinic setting decreases the flexibility for women in

timing the abortion process. This requirement is not medically justified, rather is the result of legislative regulation of medical abortion [35]. Emerging research demonstrates that home use of mifepristone is acceptable to women [36], with benefits of decreased time missed from work and no apparent difference in efficacy [37•]. It is clear that women are able to successfully follow instructions on the use of misoprostol for medical abortion at home, and there are no clear reasons that home use of mifepristone should be limited [38].

Another burden of medical abortion care is the requirement that mifepristone be dispensed in outpatient clinics. Prescription of mifepristone with distribution by pharmacies is currently allowed in some settings, including in Mexico and Australia [39]. Recent changes in medical abortion health policy in Australia have changed the landscape of medical abortion practice. First, mifepristone became available by prescription, allowing pharmacies to dispense it directly to clients. Second, the cost of malpractice coverage required to offer medical abortion services decreased [39]. After implementation, a subsequent increase in the number of medical abortion providers in Australia was observed. This example highlights how access to medical abortion can be improved by restructuring health systems to remove barriers for women and providers of abortion care.

If mifepristone was universally available for home use by prescription, the initial in-person visit for medical abortion could feasibly occur via remote communication or telemedicine [40]. Telemedicine improves access to medical abortion in regions where access to surgical abortion is limited [41] and is feasible and effective in simplifying follow-up for patients across varied international settings including the UK [42], Vietnam [43], and the USA [44]. Additionally, this practice has high patient and provider satisfaction [45, 46]. Because some women choose medical abortion for convenience or to have more control over the abortion process, decreasing unnecessary in-person visits and allowing for home use of mifepristone may improve women's experiences with medical abortion.

### Simplifying the Follow-Up for Women

Ongoing pregnancy, or failure of medical abortion, is a rare outcome. Despite this, medical abortion protocols have traditionally mandated in-clinic follow-up visits for women. Particularly for women who live in remote regions or who have transportation difficulties, these additional visits can be burdensome. Elimination of unnecessary follow-up visits and exams can simplify the process of ensuring complete abortion, appropriately use healthcare resources and improve medical abortion care for women. Current WHO guidelines do not require in-clinic follow-up after uncomplicated medical abortion [47].

**Table 1** Women's role in managing the process of medical abortion

Woman's role	Recommendation	Justification
Managing the entire process of medical abortion up to 84 days	No recommendation for the overall package; recommendations made for subtasks as below.	Individual components of the self-management of medical abortion have been tested; however, there is as yet insufficient evidence on using all three components together.
Self-assessing eligibility for medical abortion	Recommended within the context of rigorous research.	Women may be more conservative in assessing eligibility using simple checklists (low certainty). However, the approach is promising and further work is needed on developing appropriate assessment tools.
Managing the mifepristone and misoprostol medication without direct supervision of a healthcare provider	Recommended in specific circumstances. We recommend this option in circumstances where women have a source of accurate information and access to a healthcare provider should they need or want it at any stage of the process.	There is evidence that the option is safe and effective (low-certainty evidence from numerous studies, but using non-randomized designs given the strong preferences of women for one or the other option). More women report the method to be satisfactory when it is self-managed (low certainty). Women find the option acceptable and feasible (high confidence) and providers also find the option feasible (high confidence).
Self-assessing completeness of the abortion process using pregnancy tests and checklists	Recommended in specific circumstances. We recommend this option in circumstances where both mifepristone and misoprostol are being used and where women have a source of accurate information and access to a healthcare provider should they need or want it at any stage of the process.	There is evidence that the option is safe and effective including in low-literacy, low-resource settings (moderate to high certainty).

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Telemedicine has been studied in various postabortion follow-up protocols. Questionnaires—including self-assessment of symptoms [48], and use of ancillary tests such as urine pregnancy tests, have been developed and used to help women perform self-assessment of medical abortion completion. Because women experience medical abortion outside a healthcare facility, their assessment of symptoms is an obvious way to evaluate completion of medical abortion. A 2015 retrospective review of 1726 women choosing self-assessment after early medical abortion confirmed this method of follow-up as acceptable to women and successful in confirming completion of medical abortion [49].

The use of self-administered urine pregnancy tests with remote communication has also been studied as an adjunct to self-assessment of symptoms for early medical abortion follow-up. Self-administered pregnancy tests that have been studied in this context include high-sensitivity urine pregnancy tests (HSUPT), low-sensitivity urine pregnancy tests (LSUPT), and semi-quantitative urine pregnancy tests (SQUPT). Because of their low threshold of hCG (typically 25 milli-international units per milliliter (mIU/mL)) and the variable amount of time hCG can be present after successful medical abortion, HSUPTs have minimal utility in medical abortion follow-up. With a higher hCG threshold, follow-up protocols using telemedicine and LSUPTs have demonstrated

efficacy and patient satisfaction [42]. A 2014 study including over 900 women from the UK demonstrated that telemedicine combined with a LSUPT at 2 weeks is a suitable method for screening for ongoing pregnancy after early medical abortion [50].

The development of semi-quantitative urine pregnancy tests, which have a multi-bracketed assay panel with several hCG thresholds ranging from 25 to 10,000mIU/mL, allows for monitoring of the hCG trend over time. In a 2013 study including 300 women in Vietnam, SQUPTs were found to have high sensitivity and negative predictive value when evaluating ongoing pregnancy after early medical abortion [51]. A 2014 including 490 women in the USA found SQUPTs to be a feasible tool to use as an alternative to in-office follow-up after early medical abortion [44]. Simplifying follow-up protocols for medical abortion has the potential to improve the experience for women but can also optimize use of health resources.

When in-person follow-up visits are not routine, ensuring access to postabortion contraception is important. Recent studies support the initiation of the contraceptive implant [52] and injectables [53] on the same day as mifepristone administration to improve contraceptive initiation after medical abortion. While initial studies do not suggest a decrease in efficacy, more research is needed to clarify the potential impacts these methods may have on medical abortion.

## The Role of Pharmacists in Safe Medical Abortion Care

As the first-line health workers in remote regions of the world, pharmacists can play an important role in promoting safe medical abortion services. While available research demonstrates that pharmacists in Latin America, Asia, and Africa often sell medications to be used for medical abortion to women seeking to end a pregnancy, the quality of associated counseling and safety of medical abortion protocols recommended by pharmacists is unknown [54]. Improved training of pharmacists regarding safe use of medical abortion regimens is needed.

The WHO Health Worker Roles in Providing Safe Abortion Care considers how the role of pharmacists can be expanded in early medical abortion care (see Table 2). These guidelines provide a research agenda to evaluate how pharmacists can safely and effectively perform the discrete subtasks of medical abortion. These subtasks include: assessing eligibility for medical abortion, administering and counseling on correct use of the medications, managing common side effects and assessing for completeness of medical abortion. The development of tools to assist pharmacists in completing these tasks, along with studies of the safety and efficacy of educational interventions, are needed. Health systems challenges to expansion of pharmacist roles could include: inability to stock mifepristone and/or misoprostol, pharmacist refusal to participate in abortion care, and legal challenges to provision of abortion care. Thus, the practicality of expanding the role of pharmacists will vary across different contexts.

## Health Workers and Refusal of Participation in Abortion Care

As the role of various health workers in improving access to safe abortion and postabortion care expands, issues related to conscientious refusal should be considered. Health workers have the right to refuse to participate in care of patients that violate their religious beliefs; however, all health workers have a moral obligation to promote safe care for women. This includes referral for services, treatment of postabortion complications, and provision of postabortion contraceptive methods. Even where abortion is not legal, management of postabortion complications and incomplete abortion are always permissible. Women who present with complications after abortion obtained outside of traditional health systems deserve respectful, evidence-based care.

## Conclusion

Research over the past years has explored strategies to safely expand access to medical abortion services to women, while improving the patient experience. The strategy of task-shifting in abortion care is an important approach to deal with shortages of abortion providers in high- and low-resource settings. By expanding various health workers' roles in providing safe abortion care, empowering women to play a larger role in the medical abortion process and simplifying the process of follow-up represent important strategies that have demonstrated efficacy, feasibility, and patient satisfaction. When legal

**Table 2** The provision of medical abortion subtasks in the first trimester by pharmacists

Subtask	Recommendation	Justification
Assessing eligibility for medical abortion	Recommended within the context of rigorous research	The approach has the potential to improve the triage of healthcare by screening and referral to appropriate healthcare facilities. Rigorous research on this approach using simple tools and checklists is needed to address the uncertainties and to test the feasibility of the option in a program setting.
Administering the medications and managing the process and common side effects independently	Recommended within the context of rigorous research	Dispensing medications on prescription is within the typical scope of practice of these health workers and should be continued. However, well-designed research is still needed on the effectiveness and feasibility in a program setting of the approach of pharmacists independently making clinical judgments related to managing the process and its common side effects. The approach has the potential to improve access as pharmacies are often women's first point of contact with the health system; however, the feasibility of developing referral linkages with the health system also needs to be studied.
Assessing completeness of the procedure and the need for further clinic-based follow-up	Recommended within the context of rigorous research	This option has the potential to improve the triage of healthcare by screening women in need of further care. Research on this approach using simple tools like urine pregnancy tests and checklists is needed, as is research to test the feasibility of the option in a program setting.

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abortion is not available to women, health workers can play a role in educating patients about the risks of clandestine abortions and supporting quality care for women with postabortion complications. Future study of how health systems can effectively implement these changes and the subsequent impact on patient outcome and experience is needed.

### Compliance with Ethical Standards

**Conflict of Interest** Natalie S. Whaley and Sarah J. Betstadt declare that they have no conflict of interest.

**Human and Animal Rights and Informed Consent** This article does not contain any studies with human or animal subjects performed by any of the authors.

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