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Abortion Care Beyond 13 Weeks' Gestation: A Global Perspective

MEGAN A. COHEN, MD, MPH,*
NATHALIE KAPP, MD, MPH,†
and ALISON EDELMAN, MD, MPH*†

**Department of Obstetrics and Gynecology, Oregon Health and Science University, Portland, Oregon; and †Ipas, Chapel Hill, North Carolina*

Abstract: The majority of abortions are performed early in pregnancy, but later abortion accounts for a large proportion of abortion-related morbidity and mortality. People who need this care are often the most vulnerable–the poor, the young, those who experience violence, and those with significant health issues. In settings with access to safe care, studies demonstrate significant declines in abortion-related morbidity and mortality. This review focuses on evidence-based practices for induced abortion beyond 13 weeks' gestation and post-abortion care in both high- and low-resource settings. We also highlight key programmatic issues to consider when expanding the gestational age for abortion services.
Key words: abortion, second trimester abortion, later abortion, D&E, medical abortion, low-resource setting

Introduction

Worldwide, an estimated 55.7 million abortions occurred each year between 2010 and 2014, including 25.1 million unsafe abortions.[1] Later abortion, or second trimester abortion occurring after the first 12 or 14 weeks of pregnancy,[2] accounts for ~10% of abortions worldwide,[3] though country-level estimates vary widely.[4] The incidence of later abortion can be difficult to measure accurately, particularly in areas where legal restrictions exist and a higher proportion of abortions are clandestine.[5,6]

Despite comprising a small proportion of total global abortions, later abortion accounts for a large proportion of abortion-related serious complications especially where access to abortion is restricted and the proportion of unsafe abortion is significant.[1,3] With safe care, case-fatality rates increase slightly with increasing gestational age, but as compared with unsafe care or even term pregnancy, the case-fatality rate is lower.[2] For example, in the United States where generally care is safe, abortion-related mortality ranges from 0.3 deaths per 100,000 procedures performed at $\leq$8 week's gestation to 6.7 deaths per 100,000 procedures performed at $\geq$18 weeks' gestation.[7]

Correspondence: Alison Edelman, MD, MPH, Department of Obstetrics and Gynecology, Mail code UHN 50, Oregon Health and Science University, Portland, OR. E-mail: edelmana@ohsu.edu

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Women who need later abortion procedures across different cultures and countries are more likely to be young, have lower educational levels, live in rural areas, be single, recognize pregnancy late, and experience logistical challenges including financial and transportation barriers to seeking care.[8–18] In humanitarian settings, individuals may face higher rates of sexual violence as well as barriers to accessing care.[19] Medical conditions arise or can worsen with pregnancy leading to the need for care later in pregnancy, and many fetal anomalies cannot be diagnosed early in pregnancy. In general, where legal restrictions exist, women may be more likely to need care in the second trimester because of barriers in abortion access earlier in pregnancy, including long waiting times.[12,15,17]

The availability of later abortion and the management and treatment of complications (eg, postabortion care or PAC) is life-saving and health-saving, but not readily available in many settings. In a study of 10 developing countries from 2007 to 2015, 7 had capacity for basic PAC treatment in <10% of primary-care level facilities and in 8 of the countries, the majority of referral-level facilities lacked comprehensive PAC capacity.[20] This paper reviews evidence-based practices for second trimester abortion and PAC including in low-resource settings, and discusses ways to introduce later abortion services.

Recommended Methods of Abortion

Just as with early abortion, later abortion can be safely performed either medically or surgically.[2] The World Health Organization (WHO) recommends misoprostol-based medical regimens or a surgical procedure called dilatation and evacuation (D&E). A comparison of the 2 methods can be found in Box 1. The recommended medical regimens (Box 2) use a combination of mifepristone, where available, followed by misoprostol. Both medications are listed on the WHO List of Essential Medicines although many countries still do not have access to mifepristone.[33] D&E is a procedure that uses a combination of vacuum aspiration (electric or manual) and specialized forceps after sufficient preprocedure cervical ripening.[34] The safety of D&E is dependent on having the correct equipment (see Fig. 1), an experienced provider, and adequate cervical preparation. Unfortunately, most providers outside of North America or Europe do not have easy access to D&E-specific equipment or training. Sharp curettage is considered an unsafe and obsolete method of abortion care.[2]

Providers should utilize the same approach for the management and treatment of PAC. The PAC-specific medical regimens vary minimally (Box 2) from induced regimens. For a surgical intervention, the cervix may already be open, so preprocedure cervical preparation may not be needed. It is important to note that PAC management is based on uterine size rather than gestational age as the pregnancy may have stopped growing, oligohydramnios may be pre-existing or secondary to premature rupture of membranes, or expulsion of some but not all of the uterine contents may have occurred.

Where both abortion techniques are available, women should receive their preferred method.[34,35] Data from randomized controlled trials comparing D&E and medical abortion (MA) are sparse, as individuals often have strong preferences regarding mode of abortion which makes study recruitment almost impossible.[36,37] When given a choice of methods, women may be more satisfied with D&E,[37] though some may prefer medical abortion if they desire to see or hold the intact fetus, as in cases of termination for fetal anomalies. Overall rates of serious adverse events for D&E and medical abortion are rare, occurring in <2% of cases (Box 1). Compared with D&E, medical abortion has higher risk of retained products requiring surgical intervention [relative risk (RR): 4.58, 95% confidence interval (CI): 1.07-19.64], but not an

BOX 1. Comparison of Medical Abortion to Dilatation and Evacuation

	Medical Abortion	**Dilatation and Evacuation**
Antibiotic prophylaxis	Not required	Recommended, but not required if not available.[2] Acceptable regimens: Doxycycline 200 mg orally before procedure OR Azithromycin 500 mg orally before procedure OR Metronidazole 500 mg orally before procedure
Cervical preparation	Not required	Important, see table below
Supplies/medications	Similar to routine obstetric care with exception of mifepristone	Requires vacuum aspiration 12-14 mm cannulae Specialized extraction forceps (large Bierer forceps, small Sopher and Bierer forceps) Graduated metal dilators up to 55 mm Needle, syringe, lidocaine for paracervical block
Training	Similar to obstetric care	Requires specialized training
Complication rates	0.7% hemorrhage requiring blood transfusion[21] 4%-21% retained products requiring intervention[22–24] 1% Thromboembolism[24] 1.7% serious adverse events*[25] 0.04%-0.28% uterine rupture[21] 0.2% requiring major surgery[26]	0.1%-0.6% hemorrhage requiring blood transfusion[21] 0.2%-0.7% reaspiration[23,27] 1% cervical laceration[27] 0.8% signs of infection[27] 0.2%-0.5% confirmed or suspected uterine perforation[21,27] 0.002% adverse reaction to paracervical anesthesia[27]
Hospital resources	Almost always inpatient 24-48 h stay†	Outpatient day procedure Requires procedure room or operation theater
Pain management	Initiate NSAIDs with misoprostol Offer oral or parenteral narcotic analgesics and anxiolytics Regional anesthesia and patient-controlled anesthesia can be offered where available[28]	Recommend combination paracervical block, NSAIDs, narcotic analgesics, with or without anxiolytics Intravenous sedation should be offered where available General anesthesia is not recommended for routine procedures[28]

*Serious adverse events defined as need for hospitalization postabortion, blood transfusion, need for further surgery beyond intervention to remove retained products of conception, or death.
†Limited evidence suggests medical abortion may be feasible in an outpatient setting, but this is limited by available outpatient resources and logistical challenges.
NSAID indicates nonsteroidal anti-inflammatory drug.

increased risk of hemorrhage or transfusion.[35] In evaluating the evidence to generate new National Institute for Health and Care Excellence (NICE) guidelines for the United Kingdom, Schmidt-Hansen et al[35] found rates of hemorrhage requiring transfusion, uterine injury, cervical laceration requiring repair, and infection within 1 month

BOX 2. Evidence-based Medical Abortion and Postabortion Care Regimens

	Mifepristone+Misoprostol	Misoprostol Only
Medical Abortion Regimens for Pregnancies at or Over 12 wk' Gestation		
Regimen	Mifepristone 200 mg PO, followed in 24-48 h by Misoprostol 400 μg sublingual, buccal, or vaginal every 3 h	Misoprostol 400 μg sublingual, buccal, or vaginal every 3 h
Efficacy	Mifepristone 24-48 h prior: 94.4% fetal expulsion at 24 h after misoprostol; 96.8% fetal expulsion at 48 h[29] 88% fetal and placental expulsion at 24 h after misoprostol; 92% at 48 h[30] Mifepristone at time of misoprostol: 85% fetal expulsion at 24 h after misoprostol; 95.7% at 48 h[29]	Fetal expulsion: 72%-91% at 24 h; 91%-95% at 48 h[28] Fetal and placental expulsion: 62%-64% at 24 h; 79%-82% at 48 h[28]
Median time to expulsion*	7.7-10.4 h[30–32]	10-20.6 h[28,30,31]
Medical management of intrauterine fetal demise (based on uterine size)		
Regimen	200 mg mifepristone oral once+400 μg misoprostol vaginal or sublingual every 4-6 h	400 μg misoprostol sublingual (preferred) or vaginal every 4-6 h
Medical management of incomplete abortion (based on uterine size)		
Regimen		400 μg sublingual (preferred) or vaginal every 4-6 h

*Median time to expulsion from first dose of misoprostol.
PO indicates postoperative.

of abortion were similar for medical abortion and D&E for abortion between 13+0 and 23+6 weeks' gestation.

MEDICAL ABORTION

In their updated 2018 medical abortion guidance, the WHO has reinforced and clarified several key items including:

(1) Misoprostol-based regimens should be utilized for abortion care including for abortion at or after 12 weeks' gestation.
(2) Where available for both induced abortion and fetal demise, a combination mifepristone and misoprostol regimen should be used as it is the most effective and efficient regimen, even in low-resource settings (Boxes 1 and 2).[38]

Compared with misoprostol-only regimens, combination mifepristone and misoprostol regimens are associated with a decreased time to pregnancy expulsion (mean: 5.87 h, range: 3.96 to 7.78 h shorter), and higher rates of completed abortion at 24 hours (RR: 1.42, 95% CI: 1.01-1.99) and 48 hours (RR: 1.13, 95% CI: 1.01-1.26).[25] Even with a combined regimen, the time to expulsion may take longer when the gestational age is higher and amongst adolescents and those who are nulliparous.[22]

(3) The combination regimen is most effective when mifepristone is given 1 to 2 days before misoprostol but the interval can be shortened if needed.

Mifepristone should be given 1 to 2 days before initial misoprostol dosing to achieve optimal time to expulsion from first misoprostol dose. However, waiting for this interval is sometimes impossible, impractical or not desired by the patient. In cases where it is not feasible to wait between mifepristone and

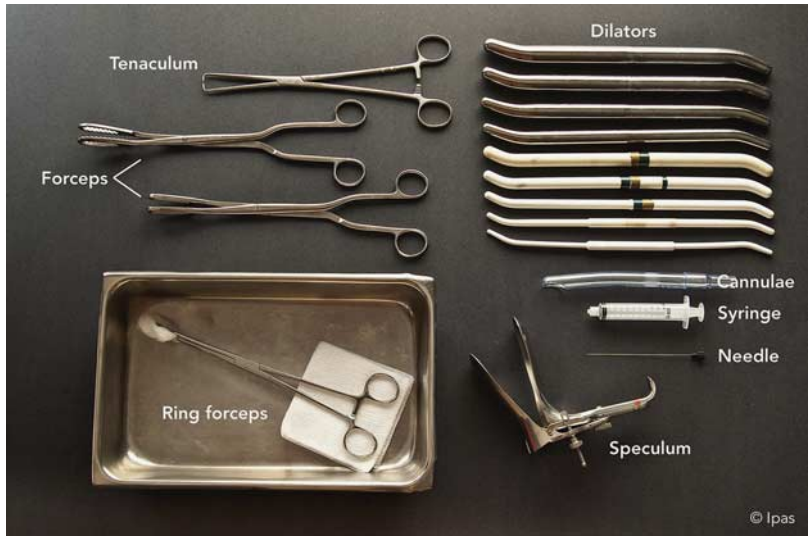

FIGURE 1. Instruments needed for dilatation and evacuation procedures. Reprinted with permission from Ipas. full color online

misoprostol dosing, simultaneous or shorter-interval mifepristone dosing still leads to improved outcomes as compared with misoprostol-only regimens. Simultaneous mifepristone and misoprostol administration is associated with similar expulsion rates at 48 hours (95.7% vs. 96.8%, RR: 1.01, 95% CI: 0.97-1.04) and decreased overall time from mifepristone administration to uterine expulsion (13 vs. 32.3 h, $P < 0.001$) when compared with misoprostol administration 24 hours after mifepristone, but increased median misoprostol dosing time (13 vs. 7 h, $P < 0.001$) and increased median misoprostol doses required to achieve expulsion (5 vs. 3, $P < 0.001$).[29]

(4) For induced abortion, misoprostol dosing should be every 3 hours until expulsion with no maximum number of doses.[39]
(5) No misoprostol loading dose is necessary.[39]
(6) For induced abortion, the route of misoprostol dosing can be buccal, vaginal, or sublingual.[25]

Oral dosing of misoprostol has been associated with increased time to abortion and higher ongoing pregnancy rates at 24 hours (RR: 3.60, 95% CI: 1.99-6.51) and 48 hours (RR: 8.01, 95% CI: 1.74-36.87) compared with vaginal misoprostol administration.[25,40] Oral misoprostol is therefore not recommended as first-line route of administration.[39]

Other Issues Key to the Provision of Safe Care

GESTATIONAL AGE DATING

Accurate gestational age dating is paramount before initiating care as optimal medical regimens vary by gestational age and for D&E, the skills, equipment, and cervical preparation necessary for later abortions is directly related to the rates of complications. Providers can accurately determine gestational age through performing a patient history and physical exam. Experienced providers demonstrate high concordance in their estimates of gestational age through physical exam as compared with measured fetal foot length after expulsion.[41]

Routine gestational dating using preprocedure ultrasound is not necessary.[2] In areas where ultrasonography is widely available gestational age dating using ultrasound is often standard of care, but no evidence exists that the safety of medical abortion and D&E is improved with ultrasound dating.[42] In a case control study of 2294 women undergoing D&E or medical abortion at >13 weeks in Nepal, use of preoperative ultrasound was not associated with decreased odds of adverse events.[41] Ultrasound may be helpful in scenarios with discrepant physical exam findings compared with expected gestational age based on last menstrual period. For medical management of incomplete abortion or intrauterine fetal demise, dosing regimens should be based on uterine size and not expected gestational age based on last menstrual period as the fetus may have stopped growing or part of the pregnancy may have expelled.[39]

ANTIBIOTIC PROPHYLAXIS

Antibiotic prophylaxis is recommend before D&E as it decreases the risk of infection, but is not required if antibiotics are unavailable.[2] Given the low risk of infection with medical abortion, routine antibiotic prophylaxis is not recommended.[2] Providers should only give treatment-dose regimens if a concern for or signs of an infection is present.

PAIN MANAGEMENT

The WHO recommends pain management for both D&E and medical abortion.[2] Patient pain perception varies greatly and is influenced by patient age, gestational age, parity, history of dysmenorrhea, and anxiety level.[2] For medical abortion, pain typically begins only after administration of misoprostol and is associated with increased number of misoprostol doses and longer induction-to-abortion interval.[28] The optimal regimen for pain control is not known as little evidence exists for later abortion care pain management, particularly for medical abortion.[43] Organizations like Ipas recommend administering nonsteroidal anti-inflammatory drugs (NSAIDs) with initiation of misoprostol, offering narcotic analgesics and anxiolytics, and, where available, offering patient-controlled bolus or continuous epidural analgesia for medical abortion.[28] Paracervical block for medical abortion after misoprostol dosing was not effective.[43]

For D&E, recommended pain management includes a combination of paracervical block, administration of oral or intramuscular NSAIDs and narcotic analgesics, with or without anxiolytics.[28,43] A job aid for performing a paracervical block for D&E can be found at https://www.ipas.org/resource/paracervical-block-technique. Intravenous sedation is safe, effective, and improves women's satisfaction; thus, it should be offered if available.[43] Deep sedation without intubation has been shown to be safe in later abortion settings with rates of complications including pulmonary aspiration, upper airway obstruction, and need for conversion to endotracheal intubation of <1%,[44] but routine general anesthesia is not recommended given increased risk for complications.[2] Nonpharmacologic techniques including verbal support techniques by providers or support persons may not decrease patient pain perception, but may improve patient coping during procedures.[2,45] Indeed, Nepali women expressed a preference for having a family member present for support while undergoing later abortion.[46]

D&E: CERVICAL PREPARATION

Before second trimester D&E, the cervix must be sufficiently prepared for the procedure (Box 3). The amount of cervical preparation needed is based on the gestational age, the cervical preparation methods available, and the provider's experience and preferences. Providers need to balance attaining adequate cervical preparation to perform the D&E

BOX 3. Cervical Preparation Methods Before Dilatation and Evacuation

Gestational Age	Method	Dosing	Notes
13-16 wk	Mifepristone	200 mg orally 24-48 h before D&E	Few, if any, side effects. May be preferred over osmotic dilators[47]
13-18 wk	Misoprostol	400 μg, buccal or vaginal, 3 h before D&E	May repeat dose if necessary If repeated, a full 3 h may not be needed to achieve the desired dilation[48] Compared with osmotic dilators, increased need for mechanical dilation (35% vs. 8%) and increased side effects, but no difference in procedure time[49]
13-20 wk	Mifepristone and misoprostol	Mifepristone 200 mg, orally, 24-48 h before D&E followed by Misoprostol 400 mcg, buccal or vaginal, 3 h before D&E[48,50–52]	May be preferable to patients compared with osmotic dilator placement[50,51]
13-24 wk	Osmotic dilators	Laminaria japonica placed 12-24 h before D&E Synthetic osmotic dilator placed 2-24 h before D&E	For gestations 21 wk and over, the cervix may need to be mechanically dilated to accommodate an adequate number/size of osmotic dilators OR 2 d of successive sets of osmotic dilators may be needed[27,53,54]
13-24 wk	Osmotic dilators and misoprostol	Osmotic dilator (see timing, above) followed by 400 μg, buccal or vaginal, 3 h before D&E	For gestations 20 wk and over, the cervix may need to be mechanically dilated to accommodate an adequate number/size of osmotic dilators OR 2 d of successive sets of dilators may be needed[55,56] Initial dilation improved with adjunctive misoprostol, but no difference in procedure time[56] Misoprostol associated with increased pain, fever, chills[56]
19-24 wk	Osmotic dilators and mifepristone	Mifepristone 200 mg, orally, with concurrent placement of osmotic dilators the day before D&E[56]	Addition of mifepristone improves perceived procedure difficulty (4.1% perceived as "difficult" vs. 18.8%)[56] Mifepristone better tolerated the misoprostol[56]

D&E indicates dilatation and evacuation.
Adapted with permission from Ipas.[48]

safely while avoiding preprocedure uterine expulsion or extreme patient discomfort. Cervical preparation can be accomplished through a variety of techniques but usually a combination of methods are necessary as gestational age

increases (Box 3). Providers should also be prepared to utilize mechanical dilation at the time of the procedure in addition to any preprocedure cervical preparation regimen. As gestational age increases, more time may be necessary to achieve the preprocedure dilation needed to safely perform the procedure. Adequate cervical preparation improves procedure time and decreases complication rates.[23,53,57]

Osmotic dilators are not universally available but where they are, their preoperative use decreases procedure time and immediate complication rates compared with cervical preparation with mifepristone and misoprostol alone for procedures between 20 and 24 weeks' gestation.[57] Two-day cervical preparation involving initial insertion of a few osmotic dilators 2 days before procedure and exchanged for a greater number of dilators 1 day before procedure may increase cervical dilation at time of procedure, but is not associated with improvements in procedure time compared with 1 day preparation.[53]

More research is required to document utility of singular or adjunctive mifepristone with misoprostol for cervical preparation before second trimester D&E, but it appears to be a feasible alternative for experienced providers if osmotic dilators are not available or practical. For D&E between 15 and 18 weeks' gestation, preoperative medication preparation with mifepristone 200 mg followed 24 hours later by misoprostol 400 μg buccally 2 hours before procedure was associated with similar mean operative time, mean total procedure time, and ease of procedure compared with preoperative cervical preparation with osmotic dilators, but patient satisfaction was improved.[50] In New Zealand, mifepristone plus misoprostol was associated with similar procedural difficulty and complication rates compared with misoprostol alone or misoprostol plus osmotic dilators for D&E between 14 and 19 6/7 weeks' gestation.[51] For D&E up to 16 weeks, mifepristone 200 mg administered 24 hours before D&E is effective for cervical preparation and is well tolerated.[47,48]

POSTABORTION CONTRACEPTION

WHO recommends that all patients be offered contraceptive counseling and methods for postabortion contraception before discharge, as ovulation can resume as early as 2 weeks postprocedure.[2] It is important to tailor the counseling to the individual, taking into consideration the desire for future pregnancies. Almost all contraceptive methods can be initiated immediately following confirmation of successful surgical or medical abortion. Hormonal methods including pills, injections, implants, patch, and vaginal ring may be started the same day. Intrauterine devices (IUDs) may be inserted immediately after a D&E, or after confirmation of completed medical abortion.[58] Immediate post-D&E IUD insertion is associated with increased receipt of an IUD and decreased pain with IUD insertion as compared with delayed insertion 3 to 6 weeks postprocedure, but may be associated with slightly higher rates of expulsion.[59] Placement of an IUD should be delayed if concern for infection or ongoing hemorrhage is present.[58]

Introducing Second Trimester Abortion Programming or Services

Introducing second trimester abortion services into country or regional programs or just at individual clinics has been successfully accomplished even in low-resource settings. Ipas (http://www.ipas.org), a global nongovernmental organization, has extensive experience supporting expansion of second trimester services globally and we have summarized some of their key lessons learned in this section.[60]

Ideally, both medical abortion and D&E should be introduced in order to provide patients options for care. However, D&E is more resource-intensive and its introduction may not be feasible or practical. In that case, a medical abortion-only approach is reasonable and can be rapidly introduced as it can leverage similar staffing, facilities, supply chains, and equipment already in place for obstetric service-delivery and first-trimester abortion.[19,61] This approach is especially useful when a critical event occurs such as humanitarian crises which already incorporate emergency obstetric care and PAC services.[19]

Individuals or agencies desiring to expand abortion services should perform a needs assessment to gauge capacity and provider willingness before the design of a program and to aid in deciding if both technologies can feasibly be introduced. The unwillingness of providers and key stakeholders, especially to perform D&E which requires an additional emotional burden of providers, may be a major barrier to moving a comprehensive program forward. Programming may also need to initially focus on services or indications for care which are considered emergent and life-threatening like PAC. A complete needs assessment should include attention to availability of supplies, trained providers and personnel, available space including areas for counseling and recovery, and gauging what additional resources are required.[62] Government restrictions may exist regarding where and who can provide later abortion. Training schedules for providers should consider time constraints related to staff shortages and competing demands on providers.[63] In addition, a team approach in training, including both nursing and providers, aids in supporting the reality of a team approach to care. For example, a physician may need to oversee care of a patient undergoing medical abortion, but the nurses are the ones who are supporting the patient, administering medications, and monitoring for expulsion.

The expansion of services is facilitated by a foundation of awareness, support, knowledge, and proficiency of skills already existing for first-trimester abortion and PAC services. The safety of D&E is based on proficiency and competency with technical skills; thus, service expansion is easiest when providers are proficient in other intrauterine procedures, like first-trimester vacuum aspiration. Medical abortion is a knowledge-based service and thus the success of the introduction is not as contingent on technical skill. However, the provision of abortion care is a continuum and accessibility and availability of earlier abortion care and access to modern methods to prevent and plan pregnancy decreases but does not eliminate the need for later services. For example, in Nepal, abortion was legalized in 2002. Services first focused on provision of first-trimester abortion using manual vacuum aspiration (MVA) and medical abortion, facilitated through training a wide-range of providers including midlevel providers which improved access and decreased complications.[64] Yet not until the introduction of later abortion services was a significant decline in risk of serious complications observed (OR: 0.6, 95% CI: 0.47-0.75).[65] This likely contributed to similar declines in maternal mortality in Nepal in the same time period.[65]

Government and not just individual or hospital-based approvals may be necessary to expand services. For example, in Nepal, Vietnam, and South Africa, government approval was necessary before program expansion, which can take months to assure.[62] Policy change in Nepal occurred after partnership of government, international and local nongovernmental organizations, advocacy groups, and private partners.[64] Government approvals are usually needed for guidelines and strategic planning, while

approvals from drug agencies may also be needed to expand use of mifepristone and/or misoprostol for later abortion care.[62] Drugs and equipment may also require regulatory approval for procurement. D&E services may have a more important role in areas where mifepristone is unavailable either because of cost or regulatory restrictions.[62] Ipas produces a second trimester abortion toolkit available online to help health facilities plan for expansion of abortion services including examples of needs assessments and training materials.[60]

Although D&E requires specialized equipment, limited access to electric vacuum aspiration (EVA) need not impede introduction of D&E services. In Vietnam, second trimester D&E services were introduced using available resources including buccal misoprostol, forceps, and a 60-mL double-valve MVA and tubing for patients between 13 weeks and 18 weeks gestational age.[66] Before introduction of second trimester D&E, a site visit revealed no availability of osmotic dilators and limited availability of EVA. Of 439 patients with median gestational age of 14.6 weeks, 100% had successful procedures, 91% required only 1 dose of misoprostol for preoperative cervical ripening, and the rate of major complications was 0.7%.[66] Advantages included pre-existing physician proficiency in first-trimester procedures using MVA. A similar technique was used in South African settings where there is also limited availability of EVA.[49]

Stigma and negative perceptions from colleagues may affect abortion providers' willingness to expand services.[63] Mitigation strategies include providing support, rotating staff, and conducting values exploration or clarification exercises.[63] When later abortion services were introduced in Vietnam, no values clarification exercises were conducted. Of 5 providers trained, only 3 ever performed D&E and 1 retired shortly after training.[66] Subsequently, when Ipas introduced D&E into Nepal, a 2-day values clarification workshop was held with key stakeholders including policy makers, hospital managers, nurses, and physicians.[62] Of the 9 providers who participated in the values clarification workshop and subsequent clinical training for second trimester abortion provision, all 9 were providing second trimester services 1 year later.[67]

Values clarification and other preabortion service provision workshops have been successfully used in Uruguay, Bangladesh, South Africa, Nepal, and Ethiopia.[63] Prestudies and poststudies from 12 countries in Africa, Asia, and Latin America showed statistically significant improvements in knowledge, positive attitudes, and behavioral intentions regarding abortion following values clarification and attitude transformation workshops.[68] It is important to include all facility staff in such workshops, not just health care providers.[63]

Clinical training of providers should incorporate ongoing supervision, monitoring, and evaluation to ensure quality of programs.[2,60] Training should involve instruction on medical regimens, surgical techniques, counseling, management of complications, and postabortion contraceptive provision.[64] Strategies for monitoring include scheduled site visits, annual stakeholder meetings, and performance improvement checklists.[63] In Nepal, abortion service indicators were incorporated into the pre-existing health management information systems, capturing data on number of PAC clients, induced abortion clients, postabortion contraceptive uptake, and abortion-related complications.[64] Scheduled reviews allowed for identification of challenges and timely intervention.[64]

Innovations in Care

TASK-SHARING/SHIFTING

Midlevel providers, including advanced associate and associate clinicians,

midwives, nurses, auxiliary nurses, and auxiliary nurse midwives, can help improve access to abortion care, by ensuring optimization of the workforce and addressing shortages of specialized providers.[69] For example, in Nepal, training of midlevel providers including staff nurses and auxiliary nurse midwives in earlier medical abortion techniques allowed for rapid expansion of services and decentralization of abortion provision in the first-trimester, increasing access in rural areas.[64] Midlevel providers can safely and effectively perform paracervical block and vacuum aspiration and provide medical abortion for abortion before 13 weeks' gestation with appropriate training.[28] Doctors of complementary medicine may also be trained to perform components of abortion care, such as assessing patient eligibility for medical abortion or assisting with medication cervical preparation.[69] For later abortion care, any provider trained in emergency obstetrical management has the clinical foundation to provide medical abortion. Midlevel providers can assist with preabortion and postabortion counseling, medical abortion provision, cervical preparation, PAC management, and postabortion contraception provision. Programs can refer to the WHO technical guidance for expanding health workers roles in providing safe abortion care.[69]

HOSPITALIZATION IS UNNECESSARY

Hospitalization is unnecessary for later abortion care, but governments may dictate where care occurs or, in some countries, the hospital may be the only location that can support the care. D&E in the United States and United Kingdom is almost universally performed in outpatient clinics for patients with no medical comorbidities.[70] For medical abortion in the second trimester, care is often performed in the hospital as resource needs are similar to requirements for obstetric care. However, even later medical abortion can be started or entirely performed in an outpatient setting. In Nepal, 200 mg mifepristone administered in clinic followed by 400 μg buccal miso administered every 3 hours the subsequent day in an outpatient setting resulted in 89.6% successful induced abortions without needing transfer to overnight care for 230 women between 13 and 18 weeks gestational age.[71] Pooled data from 6 studies of later medical abortion including 868 patients receiving mifepristone and misoprostol between 13 and 22 weeks' gestation showed that by 10 hours postmisoprostol dosing 73.3% of patients between 13 and 18 weeks and 44.3% of patients between 19 and 22 weeks had completed expulsions, increasing to 85% for 13 and 18 weeks and 67.4% for 19 and 22 weeks at 12 hours postmisoprostol.[72] Split models where patients self-administer mifepristone and possibly the first dose of misoprostol at home and then come to a facility (outpatient or hospital) for expulsion may be best suited to creating outpatient medical abortion protocols.

SELF-MANAGEMENT OF MEDICAL ABORTION

Patient self-management of WHO-recommended medical abortion regimens are increasingly being shown to be effective with low complication rates, particularly when patients have adequate support, counseling, and access to health facilities in case of complications.[73,74] A safe abortion hotline in Indonesia helped 83 (91.2%) women successfully terminate pregnancies beyond 12 weeks' gestation using self-managed medications without requiring formal medical care.[73] Five women (5.5%) required dilation and curettage either for heavy bleeding or incomplete abortion.[73] In Chile, Argentina, and Ecuador, 241 of 318 abortions (76%) were completed with patient self-managed medication alone with accompaniment group support, 37 (12%) required MVA

or D&E in the formal health system.[74] While these procedures do not technically meet the WHO definition of safe abortion as of yet, they have been classified as "less safe" as opposed to "least safe" given that they follow evidence-based practices for pregnancy termination.[1]

Conclusions

Access to later abortion, through either medical abortion or D&E services, is important given its significant association with maternal morbidity and mortality. It is estimated that introduction of even misoprostol-only regimens to areas with limited access to safe abortion can save thousands of lives per year and reduce MMR by up to 8%.[75] WHO recommends country-level enabling of the regulatory and policy environment ensuring access to safe abortion services based on a human rights approach for this reason.[2]

Medical abortion and D&E when practiced using evidence-based, WHO-recommended methods are both safe and efficacious for inducing later abortion. Both have been successfully introduced into programs in low-resource settings, but logistical and regulatory environments may lead to one being easier to expand or introduce compared with the other. When feasible, access to both methods should be available as patients often have strong preferences for one modality over another.

Successful introduction of later abortion services is best achieved through performance of pre-expansion needs assessment, close collaboration with stakeholders including government, training of providers including pre-training values clarification exercises, and integration with pre-existing health management information systems to facilitate improved monitoring and evaluation.

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