

Improving access to highly effective emergency contraception: an assessment of barriers and facilitators to integrating levonorgestrel IUD as emergency contraception using two applications of the Consolidated Framework for Implementation Research

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Abstract

Background: Emergency contraception prevents unwanted pregnancy after sexual intercourse. New evidence has demonstrated that the 52 mg levonorgestrel IUD is a highly effective method of emergency contraception. However, translating this research finding into clinical practice faces existing barriers to IUD access, including costs and provider training, novel barriers of providing IUDs for emergency contraception at unscheduled appointments. The purpose of this study was to identify barriers and facilitators to utilization of the levonorgestrel IUD as emergency contraception from client, provider and health systems perspectives.

Methods: We conducted focus groups of both contraceptive users and providers to examine how levonorgestrel IUD as EC was perceived and understood by these populations and to determine barriers and facilitators of utilization. We used findings from our focus groups to design a high-fidelity in-situ simulation scenario around EC that we pilot tested with clinical teams in three settings (a county health department, a community clinic, and a midwifery clinic). Simulation scenarios examined health systems barriers to provision of levonorgestrel IUD as EC. We coded both focus groups and in-clinic simulations using the modified Consolidated Framework for Implementation Research. We then applied our findings to the CFIR-Expert Recommendations for Implementing Change (ERIC) Barrier Busting Tool and mapped results to implementation recommendations provided by participants.

Results: Ultimately 9 constructs from the CFIR were consistently identified across focus groups and simulations. Main barriers included challenges with knowledge and acceptability of the intervention itself, appropriately addressing knowledge and education needs among both providers and contraceptive clients, and adequately accounting for structural barriers inherent in the health system. The CFIR-ERIC Barrier Busting Tool identified eight strategies to improve levonorgestrel IUD as EC access: identifying implementation champions, conducting educational meetings, preparing educational toolkits, involving patients and their partners in implementation, conducting a local needs assessment, distributing educational materials, and obtaining patient feedback. These solutions can be utilized to design implementation interventions to institute clinical practice changes in EC provision.

Conclusions: To sustainably incorporate IUD as EC into clinical practice, education, health systems strengthening, and policy changes will be necessary.

Contributions To The Literature

- Emergency contraception is an important means of preventing unintended pregnancy. Recent evidence supports the use of a new option, the levonorgestrel IUD, as a form of emergency contraception.
- Through focus groups and simulation trainings we identified individual, provider, and clinic-level barriers to the use of IUDs for emergency contraception.

- We used well-established implementation frameworks to pair the identified barriers with specific recommendations for how to overcome those barriers.
- These findings demonstrate how implementation frameworks can be used to translate identified barriers into actionable solutions, potentially increasing the likelihood that new clinical evidence will become standard clinical practice.

Background

Emergency contraception is a critical tool to reduce unwanted pregnancy. Until recently, there were three options for emergency contraception in the United States: oral levonorgestrel (LNG), oral ulipristal acetate, and the copper IUD. Each of these methods have benefits and limitations in their use. The copper IUD is the most effective of the available methods at preventing pregnancy (< 0.1% of use results in pregnancy) and provides a long-term solution to prevent pregnancy after use.¹ However, among IUDs, the copper IUD is less popular than the LNG IUD because of some of the side effects associated with the copper IUD, such as a heavier bleeding profile.^{2–4} For ongoing contraception, many people prefer the LNG IUD because it reliably reduces or eliminates menstrual bleeding and discomfort.^{5–7} Despite the preference shown to LNG IUD over the copper IUD, until recently patients have not been able to receive the levonorgestrel (LNG) IUD for emergency contraception, due to lack of sufficient efficacy data.⁸ A recently conducted randomized controlled trial at the University of Utah found that the 52 mg LNG IUD (please note all mentions of LNG IUD in this paper refer to the 52mg variety) demonstrates high efficacy for emergency contraception.⁹ The participant-blinded randomized noninferiority trial compared outcomes of women seeking an IUD as EC who received either the 52 mg LNG IUD or the copper IUD. One-month pregnancy rates were 0.3% (95% CI: 0.1, 1.7) in the LNG group and 0.0 (95% CI: 0, 1.1) in the copper IUD group, demonstrating that both methods are effective in preventing pregnancy when used as emergency contraception.⁹ This efficacy data opens the door for 52 mg LNG IUDs to be the next method option for emergency contraception: the first new method of emergency contraception since ulipristal acetate oral emergency contraception in 2010.³ Now is a critical time to implement these findings because both emergency contraception and IUD use are steadily increasing with over one fourth of reproductive age women reporting having used emergency contraception and greater than 1 in 10 contraceptive users selecting IUDs.

If the LNG IUD were broadly available as emergency contraception, it may prove to be the more preferred IUD emergency contraception method and offer additional benefits to people seeking an IUD for their emergency contraception needs. Studies have demonstrated that offering a wider selection of methods increases contraceptive satisfaction and reduces unintended pregnancy.¹⁰ Expanding method choice for emergency contraception will have extensive clinical impact if these findings can be broadly disseminated and implementation barriers can be identified and addressed early.

To date, dissemination and implementation best practices surrounding how to implement the results of contraceptive research is limited.¹¹ Successful translation of research into practice generally takes many

years and may be stymied by unforeseen or unaddressed barriers to implementation.¹² For example, while IUDs and implants have high demand, existing access barriers such as high cost and lack of provider training on insertion and removal still impede their wider availability, particularly in primary care settings.¹³ Uptake of the LNG IUD as emergency contraception will face some of those same existing barriers, as well as additional challenges to use, such as the need to provide same-day services for this method in an emergency contraception setting.¹⁴ Additionally, educating providers on how to counsel on this method as emergency contraception, and increasing awareness among the patient population about this method option will be needed to sustain an inclusion of this method in the broader emergency contraception offering. As such, assessments of how to translate clinical research into broader care offerings is the next critical step in improving access to this method.

This study sought to address the issue of successful implementation by collecting and analyzing data on key aspects of patient, provider and health system barriers and facilitators to LNG IUD as emergency contraception. The barriers and facilitators identified in this study should help to develop guidance and recommendations for best practice to implement IUD as emergency contraception as well as health systems strengthening mechanisms to support clinics, providers and patients facing barriers to emergency contraception access.

Methods

To understand the barriers and facilitators to providing LNG IUDs as emergency contraception we conducted exploratory research in three ways: 1) focus groups with clinical providers who offer contraceptive care in practice, including IUDs; 2) focus groups with community members who have had prior experience with contraceptive care (any method); and 3) in-clinic simulation trainings including providers and clinical staff. The focus groups allowed us to investigate facilitators and barriers from both the patient and provider perspectives. The simulations allowed us to expand from individual perspectives to health system level barriers, including organizational and workflow limitations.

Focus Groups

We developed semi-structured discussion guides for both provider and community member focus groups. The discussion guides were built around key constructs from the Consolidated Framework for Implementation Research (CFIR)¹⁵, an implementation tool which was also used to guide our analysis (see analysis section for further description). CFIR is well-suited for implementation research on health service delivery and specifies determinants that can act as barriers and facilitators to health service implementation.¹⁵ The provider discussion guide focused on providers' clinical knowledge of IUDs, their understanding and experience of using IUDs as EC, as well as examining how providers typically receive updated clinical guidance and care recommendations. The community member discussion guide focused on understanding participants' experiences with IUDs (particularly hormonal IUDs) and capturing their knowledge and beliefs around use of IUDs as emergency contraception.

Community member participants were recruited from the HER Salt Lake research study, a prospective cohort study which occurred between September 2015 and March 2017. The HER Salt Lake sample consisted of women aged 18–45 years of age receiving new contraceptive services at health centers in Salt Lake County, Utah.⁶ We only contacted participants who indicated on prior consents that they were willing to participate in future research, were of reproductive age (between 18–45), current or prior residents of Utah and were currently trying to prevent pregnancy. Additionally, we recruited participants through University of Utah-affiliated community Latina/o/x organizations. Participants were consented and included on a first response basis up to 20 participants, per group, to account for scheduling conflicts and unexpected no-show participants during the focus group. English-speaking focus groups were conducted by members the study team (RS and SE) and the Spanish-speaking focus group was conducted by a local community facilitator fluent in Spanish. All interviewers were female, held higher education credentials, and had prior experience and training in conducting focus groups. Focus groups occurred and were recorded on Zoom. All focus groups took approximately 60 minutes.

Healthcare providers were recruited by contacting community clinicians participating in Family Planning Elevated, a Utah statewide contraceptive initiative¹⁶, as well as University of Utah faculty list-servs to women's health care departments. Providers were eligible to participate if they were currently employed as a healthcare clinician and currently offering contraceptive care as part of their healthcare practice. Focus groups occurred and were recorded on Zoom. All focus groups took approximately 60 minutes.

Once a potential participant expressed interest, an enrollment email was sent with additional details including the full consent language both as an attachment and in the body text of the email. Participants were only enrolled and included in the focus group if they responded affirmatively to the consent communication. Focus group participants received gift card compensation for their time. All focus groups were audio recorded and transcribed verbatim.

Simulation Scenarios

The LIFT Simulation Design Lab, at the University of Utah, designed a 2-hour emergency contraception clinical training. Simulation was selected as an appropriate method to gain insight within a clinical setting as there is a significant body of evidence from varied clinical settings that demonstrates the value of incorporating highly realistic simulation techniques into in-service trainings for improving clinical decision-making, teamwork, and use of evidence-based practices.^{17–20} Simulation can both identify barriers and facilitators of health systems implementation, and provide opportunities for technical education and improvement to team communication.^{21–24} The simulation training was designed with the following components: 1) brief didactic training sharing the current evidence around the efficacy of the 52 mg LNG IUD as EC, as well as a review of currently offered methods of EC; 2) simulations scenario(s) with facilitated debrief, and 3) discussion of barriers/facilitators to EC access in the clinical setting (see Fig. 1).

The simulation training was pilot tested within the Family Planning Division team prior to clinic recruitment. We recruited clinics via email, inviting them to participate in a two-hour in-clinic simulation

training on the use of LNG IUDS as EC. Clinics recruited included those which had participated in Family Planning Elevated and clinics which had expressed prior interest in engaging around contraceptive training. Clinic were eligible to participate if IUDs were offered as a contraceptive method at time of the simulation. Participants were consented prior to participation by emailing the consent document to participating staff. Prior to initiating the training, the consent was reviewed, and assent confirmed. Participating clinics did not receive financial compensation for participation.

The trainings were conducted collaboratively by the University of Utah Family Planning team and LIFT Lab simulation team members. Each of these individuals is female, possesses higher education credentials, and has had prior experience and training in conducting simulations in clinical settings. One member of the Family Planning team (JB) collected field notes during the training. The field notes included a list of barriers the clinic teams identified during the training, as well as any solutions they identified to those barriers. Following each training, those barriers and solutions were organized into memos containing key points, barriers, and solutions from each training.

Analysis

The study follows the COREQ guidelines for qualitative research (see Fig. 1). All focus group audio recordings were transcribed, verbatim, and the Spanish focus group was translated into English. Transcripts were uploaded to Dedoose Version 8.0.35.²⁵ The research team conducted a content analyses of the data, using an adapted the CFIR codebook¹⁵ for use in this study. CFIR supports rapid-cycle evaluation of the implementation of complex health care delivery interventions due to its comprehensive framework for identifying factors that may emerge in various, multi-level contexts that subsequently influence implementation. The initial codebook included 39 codes. The team collaboratively (RS, JB, SE) coded one provider focus group and one community member focus group, and further refined the CFIR codebook based on which codes emerged as salient, and which did not, until saturation occurred. The revised codebook contained 18 CFIR constructs. Final transcript coding was conducted by individual team members (JB, SE) using the refined codebook. Codes and representative quotes were organized into a CFIR matrix, following the principles of Framework Analysis.²⁶ Finally, field notes detailing clinic-level barriers from each of the simulation trainings were also mapped onto the CFIR matrix, with solutions categorized separately.

After completing coding and mapping onto the framework, we subsequently ran our findings through the CFIR-ERIC Barrier-Buster tool (V0.53) which was developed to match CFIR constructs to corresponding Expert Recommendations for Implementing Change (ERIC) strategies.²⁷ The top eight endorsed ERIC implementation strategies were compared and mapped along with proposed solutions provided by participants. We utilized the refined compilation of implementation strategies²⁸ to provide further clarifying language around recommended approaches.

Results

Twenty-two individuals participated in the three client focus groups (6 in the Spanish-speaking group; 16 in the two English speaking groups). Contraceptive client participants were all current or prior residents of Utah, of reproductive age (18–45), and currently trying to prevent pregnancy. The two provider focus groups consisted of 13 participants: four medical doctors, four certified nurse-midwives, four nurse practitioners and one physician assistant. Seven providers are employed within the University of Utah and six are employed in community clinics within the state of Utah. All participants currently provide contraceptive care in the state of Utah.

Four clinics received the emergency contraception simulation training: one county health department, two community clinics, and one midwifery practice. Participating clinic staff included nurse practitioners, registered nurses, physician assistants, medical assistants, clinic managers, front desk managers and nursing students.

Table 1 provides an overview of CFIR constructs identified through focus groups and simulations, with descriptive quotations for each construct. Of the original eighteen constructs in our revised CFIR codebook, nine constructs were used most frequently across the groups. We combined “Structural Characteristics” and “Complexity” into one construct, as they had considerable overlap in our results.

Table 1
CFIR Constructs Associated with Provision of Intrauterine Devices as Emergency Contraception

Construct¹	Provider Focus Groups	Community Focus Groups	Barriers identified during simulation training
INTERVENTION CHARACTERISTICS			
Evidence Strength and Quality: stakeholders have a negative perception of the quality and validity of evidence supporting the intervention	<i>"I was just going to say I would guess more globally that if ACOG or someone came out saying that it was appropriate and safe that people would feel a lot more easy... they would feel a lot more comfortable doing it simply from a CYA perspective."</i>	<i>"Yeah. I guess kind of the general like effectiveness [of IUDs in preventing pregnancy]. I think that's something that doesn't get talked about a lot, is I think people start with like the pill thinking that it's going to be 100% the cure-all, fix-all, this is the way to go. That's for me, what the lure of the IUD was is that I never had to think about it and the accuracy of it."</i>	Providers are concerned about using IUDs as EC because they are not FDA-approved
What are people's beliefs about the quality of evidence regarding use of LNG IUDs as EC?			
Complexity: stakeholders believe the intervention is complex based on their perception of duration, scope, radicalness, disruptiveness, centrality and/or intricacy and number of steps needed to implement	<i>"So, now we got to counsel on all of this. Did we make sure we got an STD screening? Did we make sure we got all of the things that we usually have planned and plenty of time to talk about and whether it's a same day insert or something different?"</i>	<i>"I was enthusiastic enough about the idea to go and [get an IUD] again, like I did almost pass out at that appointment, and I did bleed for like three months intermittently afterwards, and sometimes quite heavily. Which is really unpleasant, and the intervening four and a half years after that were totally amazing and more than made up for it, but the initial kind of barrier was pretty high."</i>	Some clients have contraindications to IUDs
How difficult is it to implement provision of IUDs and EC in a clinical setting?			
OUTER SETTING			

¹ Table includes constructs that 1) were coded in at least 2 of the 5 focus groups and 2) were used at least 5 total times in the focus groups.

Construct ¹	Provider Focus Groups	Community Focus Groups	Barriers identified during simulation training
Patient needs and resources: Patient needs, including barriers and facilitators to meet those needs are not accurately known and/or this information is not a high priority for the organization What needs do clients have around accessing IUDs as EC? What are the barriers and facilitators to meeting those needs?	<i>I've had some patients who aren't in a stable relationship and they're kind of hooking up with people and there's a different perception about your need for a long-term method when you aren't necessarily planning to have regular intercourse. It's not that you're in a partnered situation where you really want to plan long term. I think that can make it hard and I'm not sure the right way to approach, you know to make people think about the long-term but meet them where they are in terms of not really having a long-term situation in terms of relationship.</i>	<i>"I think maybe for someone, if they're going to get it in, it might be helpful to know like when can I get it out? If I choose not to have it, can I get it out a week after? Does it have to be a few months or like something like that?"</i>	Some clients do not have transportation to the clinic Can be difficult for clients to take time off work for IUD appointment Uninsured clients may not be able to afford an IUD
External policy and incentives: external policies, regulations, mandates, recommendations or guidelines, pay-for-performance, collaborative, or public or benchmark reporting do not exist or they undermine efforts to implement the intervention	<i>"And then me on my end, I'm like, 'Okay, is insurance going to pay for the counseling and the insert in the same day? Who pays for that? Who doesn't pay for that? How much cost can we eat?' That type of thing."</i>	<i>"When I've had to access EC before, I didn't know there was anything available other than the pill. I am overweight, and because I'm overweight, I can't just go to the drug store. I need to actually get a prescription for this pill, which then you have to make an appointment, you have to go to the doctor, pay for the doctor and pay for the pill, so not only the time but the cost of all of that is just a major blocker."</i>	Utah's parental consent laws are a barrier for some adolescents accessing IUDs
How does insurance coverage/external policies effect EC access?			
INNER SETTING			

¹ Table includes constructs that 1) were coded in at least 2 of the 5 focus groups and 2) were used at least 5 total times in the focus groups.

Construct ¹	Provider Focus Groups	Community Focus Groups	Barriers identified during simulation training
Structural Characteristics and Compatibility (combined): the degree of tangible fit between the organization values and characteristics and the intervention	<i>"I would say in our clinics, the barrier would be just getting same-day appointments. It's just busy clinics and so, getting them squeezed in in a timely manner is the hardest thing."</i>	<i>"For me, it's more like having to make an appointment. Just having to call and wait on hold especially at Planned Parenthood and then hoping that they have an appointment in time or they're going to like accommodate your schedule."</i>	Availability of clinical staff Lack of same-day appointments Competing priorities (vaccine clinic)
How well do IUDs as EC work within the existing clinic workflow?			Some clinics don't regularly stock IUDs, and so may not have one on hand to insert
Access to knowledge and information: Ease of access to digestible information and knowledge about the intervention and how to incorporate it into work tasks.	<i>"I also think that [providers] get a lot of information [about updates in contraceptive methods] from their professional organization."</i>	<i>"I think like when I first started having sex, I didn't have education on EC or how it worked or where to get it or that it was even a thing."</i>	Lack of provider knowledge about IUDs as EC Clients do not know their EC options General lack of knowledge/sex education
Do providers and clients have access to current information about IUDs as emergency contraception?			
CHARACTERISTICS OF INDIVIDUALS			

¹ Table includes constructs that 1) were coded in at least 2 of the 5 focus groups and 2) were used at least 5 total times in the focus groups.

Construct ¹	Provider Focus Groups	Community Focus Groups	Barriers identified during simulation training
Knowledge and Beliefs about intervention:	<i>"For the ParaGard I always try to include that it's an abortifacient [...] that's the way I was taught. That's what I include in my teaching."</i>	<i>"They choose to make a sacrifice. Like, a lot of women use an intrauterine device because they intend to use it for a long time. I don't know. They planned or plan not to have children for four years, five years. But in the case of an emergency contraceptive, if it's safe and it's going to prevent the formation of the fetus within those five days, it would a good option."</i>	Clients may not want a long-term method
Individuals' attitudes toward and value placed on the intervention as well as familiarity with facts, truths, and principles related to the intervention.	<i>"The answer I usually give is that pregnancy happens up in the tubes and [an IUD] makes it so that if you did have a fertilized egg, it wouldn't implant.."</i>		Some clients hear personal stories from family and friends about bad experiences with IUDs
What do patients and providers know and believe about IUDs as EC?			Clients may view IUD insertion as an invasive or scary procedure
Personal attributes: A broad construct to include other personal traits such as tolerance of ambiguity, intellectual ability, motivation, values, competence, capacity and learning style.			
How does provider bias impact provision of IUDs as EC?	<i>"It's my passion in life to get IUDs in all kinds of people.... If people don't want them, I don't stronghold them into it obviously, but I think if we spend some time talking to patients, but it's really the best thing we have. I mean, I just feel strongly about that. I really do think it's the best thing we have for so many of these girls out there especially the ones that find themselves in these emergency contraceptive places."</i>	<i>"I think I had the hormonal one first and then I got the copper one later. The second time, it was actually so much worse but it was only because I think the provider did not explain anything, what she was doing, did not ask for my consent. It was like not trauma-informed. I think that that was like such a huge part of that process and I think the pain again, can be super manageable as long as you actually understand."</i>	

¹ Table includes constructs that 1) were coded in at least 2 of the 5 focus groups and 2) were used at least 5 total times in the focus groups.

Intervention Characteristics

Evidence Strength and Quality

LNG 52 mg IUDs are not currently FDA approved as a method of emergency contraceptive.^{29,30} Some providers participating in the simulations noted that this created some concern around counseling for this use. Providers also would like to see organizations, such as the American College of Obstetrics and Gynecology, adopt formal recommendations for its use as EC. For clients, the focus was on how to interpret the evidence around the effectiveness of the IUD as emergency contraception. Many clients felt that the effectiveness of IUDs as EC should be presented alongside information about the effectiveness of the IUD as a method of contraception, since a person may need both pieces of information to make an informed choice.

Complexity

Providers identified several challenges to offering LNG IUD as EC, including the availability of same-day services for insertion. To insert an IUD, the provider typically conducts pregnancy testing. The tests, plus the time needed for counseling and device insertion, often make IUD appointments longer than other contraceptive visits. Providers struggled with the desire to make the LNG IUD as EC available, while also accounting for current low demand for their use as EC and the need for scheduling flexibility to ensure same-day availability. For clients, there was decisional complexity around IUD as EC. Aspects such as pain at insertion and the long-term commitment of the method were juxtaposed against the method's high efficacy at preventing pregnancy. The simulation also identified that counseling around potential contraindications for an IUD could also increase the complexity of offering the LNG IUD as EC.

Outer Setting

Patient Needs and Resources

Providers noted challenges some subpopulations may face in accessing LNG IUD in an emergency setting. Clients in carceral settings, clients experiencing homelessness, and clients with challenges accessing broader healthcare (e.g., transportation challenges, lack of health insurance coverage, etc) would likely not find this method widely accessible. In-clinic simulations underscored the challenges for clients who were un- or under-insured. Clients also noted that there could be two distinct groups of individuals choosing the LNG IUD as EC. The first group identified would select the LNG IUD because the method was highly effective as emergency contraception and the second would choose the LNG IUD as EC because they both needed emergency contraception *and* an ongoing method. For those who simply needed the LNG IUD as EC, the issue of how to remove it after the immediate threat of pregnancy had passed was an important consideration, particularly given the high cost of both insertion and removal procedures.

Providers also shared significant concerns about their ability to offer the LNG IUD as EC to adolescents, who they noted are major utilizers of emergency contraception. Providers felt that adolescents, particularly nulliparous adolescents, are more likely to experience high pain levels at insertion and insertion is more likely to be considered difficult.

Clients also discussed cultural considerations around Utah's largely religious population, noting that partner involvement in contraceptive decision-making may look different when the emergency method ends up being a long-term method.

External policy and incentives

In 1983, Utah passed a law preventing clinics receiving state funding from providing care to teens without parental consent. Though this law was ultimately overruled in a court challenge (Planned Parenthood Association of Utah v. Matheson, 1983), its continued existence on the books causes confusion and concern among providers. Providers brought up concerns about their ability to provide care to adolescents in need of EC without parental consent, despite the law being unenforceable. For clients, the over-the-counter availability of oral emergency contraception was seen as an easier option than the process required to obtain an IUD for a similar purpose.

Inner Setting

Structural Characteristics and Compatibility

Simulation trainings demonstrated many challenges to providing IUD as EC services, including the lack of same-day appointments, the availability of clinical staff to support an insertion without a prior appointment, clinic competing priorities for same-day walk-in services (such as COVID vaccines), and stocking challenges of IUDs, which are expensive to purchase without guaranteed use. Providers also noted that scheduling within the required 5-day window for services, particularly if some of those days occur over the weekend, would be a challenge. Similarly, clients noted the difficulty of getting an appointment when desired, given how full most clinics are, a difficulty especially prevalent in low-income clinics. The cost of the IUD was also a main barrier for clients, particularly if it was not fully covered by insurance and the intended use was for a short period of time.

Access to knowledge and information

Both providers and clients were unfamiliar with the use of an IUD for EC and demonstrated confusion over the mechanism of action of the LNG IUD as an emergency contraceptive. Clients noted, more broadly, that they were unaware of most other emergency contraceptive options outside of the oral LNG emergency contraceptive (e.g., ulipristal acetate or the copper IUD). Providers who were affiliated with research institutions were more likely to have access to current evidence, such as the effectiveness of LNG IUDs as emergency contraception.

Characteristics of Individuals

Knowledge and Beliefs About the Intervention

A barrier identified during both client and provider focus groups, as well as during simulation training, was a lack of awareness of emergency contraceptive options beyond oral levonorgestrel (Plan B). Clients shared that even when they were aware of all their options, they were often confused about where and how to access each of the methods. Providers and clients also lacked understanding about the mechanisms of action for each of the EC methods. Specifically, providers were uncertain about how IUDs work for emergency contraception, with some incorrectly believing that IUDs can act as an abortifacient to an established pregnancy, and others unsure if it is appropriate to place an IUD when an individual is at risk of being pregnant but has a negative urine pregnancy test (current evidence^{31–33} indicates it is appropriate).

Personal Attributes

When discussing the use of IUDs (for emergency contraception or as ongoing contraception) some providers described IUDs as a method of birth control that is “best” or “right” for their patients. While providers acknowledged that it is ultimately up to the patient to select the method that is best for them, many spoke of the need to persuade patients that the process of inserting IUDs isn’t as bad as they may imagine. The view some providers had of IUDs as a universal good stood in stark contrast to experiences shared by some patients. Some patients described the IUD insertion as very painful. Many of those who experienced pain during the insertion wished their providers had been more forthcoming about how painful the insertion could be, and shared recommendations for managing the pain during and following the procedure.

Recommendations

The CFIR-ERIC Barrier Buster tool identified eight “Level 1” strategies (i.e., where a majority of experts agreed the approach was in their top seven strategies to address a particular CFIR barrier) across four of the nine CFIR constructs identified in our analyses (see Table 2). Of those strategies, participants in our focus groups and simulations identified similar recommendations for six of the eight ERIC recommendations.

Table 2
Recommended Strategies for Implementing Use of LNG IUD as EC

CFIR-ERIC Barrier Buster Tool Implementation Strategies Recommended	Parallel strategies proposed by study participants	Mapping Summary
CFIR Construct: Culture ERIC recommendation: Identify and prepare champions- Identify and prepare individuals who dedicate themselves to supporting, marketing, and driving through an implementation, overcoming indifference or resistance that the intervention may provoke in an organization	<p><i>"I would guess more globally that if ACOG or someone came out saying that it was appropriate and safe that people would feel a lot more easy... they would feel a lot more comfortable doing it simply from a CYA [cover your ass] perspective. I think people are always paranoid that they're going to do something wrong and if it's supported in guidelines I certainly imagine that more people would feel comfortable with it. I personally think that the data we have is sufficient."</i></p>	Implementation champions should include both local individuals and those within governing/formal bodies
	<p><i>-Provider</i></p> <p><i>I think in our clinic just because sometimes I feel like we're a little bit more under the microscope. We would probably just really consult with general OB with... I mean we'd probably talk to [Department Chair] and be like, "Listen, are you guys on board with this or not?" And if there's general consensus that everybody's on board we would do it but if we didn't get that sort of nod, we'd probably be like, "Yeah, not doing it."</i></p>	
CFIR Construct(s): Access to Knowledge & Information/ Knowledge & Beliefs about the Intervention ERIC Recommendation: Conduct educational meetings - Hold meetings targeted toward different stakeholder groups (e.g., providers, administrators, other organizational stakeholders, and community, patient/consumer, and family stakeholders) to teach them about the clinical innovation	<p><i>You also have, other providers have to do CME. If this is something that is introduced in some of the main conferences that people use for their continuing ed, that'd probably help."</i></p>	Identifying and using existing venues of knowledge distribution for both clinicians and clients could facilitate educational meetings.
	<p><i>-Provider</i></p> <p><i>Giving informational lectures in churches works well like with mammograms. The church is where women find out where they can go, how, when, and at what cost. Because a lot of women don't do it because they know or think that if they don't have insurance, it's really expensive. Churches are a really good place for that. Or places where there are a lot of volunteers. For example, I work in the Food Bank. There are a lot of women there. So, the information given there is really good."</i></p>	
CFIR Construct: Access to Knowledge & Information ERIC Recommendation: Develop educational materials- Develop and	<p><i>I love the little laminated sheet that I don't know where it comes from. You</i></p>	Educational materials/toolkits can serve as both a reminder/refresher for clinicians as

CFIR-ERIC Barrier Buster Tool Implementation Strategies Recommended	Parallel strategies proposed by study participants	Mapping Summary
format manuals, toolkits, and other supporting materials in ways that make it easier for stakeholders to learn about the innovation and for clinicians to learn how to deliver the clinical innovation	<p><i>guys could probably tell me but you guys have all seen. I have the one that tells you all your options and makes it so clear to the patient. Then the one that says – Oops, and then like tells you what the emergency contraception options are. I don't know, if you could replicate those somehow and then make one that includes the LNG IUD, that would be helpful and a good reminder to both patients and providers."</i></p> <p><i>-Provider</i></p> <p><i>Just something along the lines of like the bathroom stall flyers to get hung. It's something that's very simple. I think about the emergency kits that go out with needle exchange and they're full of all sorts of things which this would be an incredible thing to add in there. Just – here are your emergency contraceptive options. By the</i></p>	well as a decisional tool for clients.

CFIR-ERIC Barrier Buster Tool Implementation Strategies Recommended	Parallel strategies proposed by study participants	Mapping Summary
	<p><i>way, there's a long-term contraceptive option that can be also used as emergency contraception so you could get both things at once but just that is very almost like business card sized and you can stick it anywhere and hand them out by the dozens. Because I think word of mouth, once the first few women successfully navigate the process, they quickly tell their friends.</i></p> <p><i>-Provider</i></p>	
<p>CFIR Construct: Access to Knowledge & Information</p> <p>ERIC Recommendation: Involve patients/consumers and family members - Engage or include patients/consumers and families in the implementation effort</p>	<p><i>"Yes, but it's good that men get involved so they can talk with their partners or girlfriends...But they can motivate them and say, "You know what? We have to be responsible." Men can't use an IUD, but women can. So, it's good that they can talk with girlfriends, partners, or whoever else, right?"</i></p> <p><i>-Client</i></p> <p><i>"Honestly, I feel like it could</i></p>	<p>Education about emergency contraception, including IUD as EC, should include efforts to educate male partners.</p> <p>Education about LNG IUD as emergency contraception should use peer-educators/peer influencers both in-person and through social media to improve visibility.</p>

CFIR-ERIC Barrier Buster Tool Implementation Strategies Recommended	Parallel strategies proposed by study participants	Mapping Summary
	<p><i>make a good TikTok. Like if it's like – oh, fun fact. Like did you could use this as a emergency... I'd be like, "Hmm, now, I know." It's just so like easy and fast and it doesn't feel like I'm being lectured, at least on like social media."</i></p> <p><i>-Client</i></p> <p><i>"I don't get my news from Instagram, but I find that I'm going to Instagram more to kind of digest the news, to kind of get the op-ed piece of my news. So I don't know if it's targeted ads or the sponsorships or what, but working with those accounts that do empower women, and that make educated resources available to you, and just easy to digest, I think that would be a really helpful way to get this to someone who doesn't really have access to or know to go to WebMD or Planned</i></p>	

CFIR-ERIC Barrier Buster Tool Implementation Strategies Recommended	Parallel strategies proposed by study participants	Mapping Summary
	<p><i>Parenthood or to Google</i></p> <p><i>'How will the IUD affect me?"</i></p> <p><i>-Client</i></p> <p><i>"You would want to hear it from your family and friends because those are the people that you kind of trust the most and you can go further into an in-depth conversation and ask them and they would be truthful with you about their experiences more than anyone."</i></p>	
<p>CFIR Construct: Patient Needs & Resources</p> <p>ERIC Recommendation: Conduct local needs assessment – Collect and analyze data related to the need for innovation</p>	<p><i>"Would they bleed at all? Like you put that [LNG IUD] in, I think a lot of people with emergency contraception like to see that it worked. Would you necessarily bleed after you had it or did you just have to take another pregnancy test or how do you know it worked?"</i></p> <p><i>-Provider</i></p> <p><i>So I've never counseled for one for using like an LNG IUD but has it ever kind of come</i></p>	<p>Information around both the mechanism of action and the expected outcomes of LNG IUD placement for EC in different scenarios are important data needs for future implementation projects.</p>

CFIR-ERIC Barrier Buster Tool Implementation Strategies Recommended	Parallel strategies proposed by study participants	Mapping Summary
	<p><i>up for anybody like how it works for preventing pregnancy? There's probably a lot of lack of education and probably concern that it's like having an abortion or something..."</i></p> <p><i>-Provider</i></p> <p><i>Because I was just thinking about it, especially in a domestic violence situation, like say you're trying to get emergency contraception, but if you could also know that if you could get into Planned Parenthood within that five days, you could also get an IUD at the same time, I think that would be really useful. I think in that situation I would still get the Plan B and still take it, but I'd also schedule an appointment for an IUD, so I'd want to make sure that that was safe, and I wasn't going to take the time and energy to schedule an</i></p>	

CFIR-ERIC Barrier Buster Tool Implementation Strategies Recommended	Parallel strategies proposed by study participants	Mapping Summary
	<p><i>appointment just to go on and be told that I took Plan B three days ago, I can't do this now.</i></p> <p><i>-Client</i></p>	
CFIR Construct: Access to Knowledge & Information ERIC Recommendation: Distribute educational materials - Distribute educational materials (including guidelines, manuals, and toolkits) in person, by mail, and/or electronically	<i>[Not identified by participants]</i>	Distribution considerations are a possibly overlooked component of implementation success.
CFIR Construct: Patient Needs & Resources ERIC Recommendation: Obtain and use patients/consumers and family feedback – Develop strategies to increase patient/consumer and family feedback on the implementation effort	<i>[Not identified by participants]</i>	Channels for receiving and incorporating patient/consumer feedback are possibly an overlooked component of implementation success.

Additional strategies identified by study participants included development and strengthening both the educational and referral pathways between the pharmacy and clinical care settings, to ensure clients seeking oral EC from a pharmacy were aware of a) the limitations of oral EC among individuals with higher body mass index (and thus, these individuals may benefit from an IUD as EC, which does not have weight limitations) and b) that the IUD as EC has higher efficacy for all people, and thus may be an important avenue for people with very high prioritization on not becoming pregnant.

Participants also noted the importance of changing clinical care pathways so that standard contraceptive visits include counseling about and possible provision of emergency contraception. Counseling about the LNG IUD as EC during a normal contraceptive visit should also include information about the possibility to have it removed after the immediate threat of pregnancy has passed. Recommendations to ensure provision of LNG IUD as EC was possible in standard clinical settings included the importance of educating the entire medical team (e.g., front desk staff, medical assistants, providers) on how to ensure

clients seeking these services could get same-day care, as well as obtaining support from administrative staff on creating openings to provide these services to drop-in clients.

Discussion

This study assessed potential barriers and facilitators to utilization of LNG IUD as EC with the aim to develop an implementation intervention. Use of the LNG IUD as emergency contraception has many potential benefits to patients; however, in order to realize these benefits, interventions aimed at improving uptake will need to address underlying challenges to its implementation. Findings in the CFIR framework demonstrated barriers at the external, internal, and intervention-levels, which would require strategies at multiple levels of the health system, including governance-, clinical-, provider- and patient-levels in order to successfully address challenges.

Notably, many barriers identified in our study have also been identified in studies on other methods of emergency contraception.³⁴ Studies on barriers to use of both ulipristal acetate, a prescription-only oral emergency contraceptive, and the copper IUD as EC, have found issues of knowledge/awareness, cost, and healthcare system barriers to be key components of low utilization.³⁵⁻³⁷ Many studies of emergency contraception have noted the misperception that these methods result in abortion.^{34,38,39} Thus, many of the strategies to improve uptake of LNG IUD as EC are likely also needed to improve uptake of *any* emergency contraception and it is possible that successful interventions could target improving access to emergency contraception broadly, rather than simply focusing on LNG IUD as EC. However, some strategies are specific only to LNG IUD, such as distributing specific evidence around the use of LNG IUD as EC, seeking FDA approval for its use as an emergency contraceptive, and receiving recommendations for its use as EC from governing bodies such as ACOG.

Similarly, many of the barriers to IUD as EC are similar to known barriers to IUD use broadly. Cost of intrauterine devices is often prohibitive for patients⁴⁰ and the burden of these costs may be further perceived as too high if the device is only used for a short period of time. Addressing IUD insertion pain has been an ongoing challenge for implementors interested in increasing access to these devices.⁴¹ Further, addressing provider bias toward these methods is also a general challenge around intrauterine device use and promotion.⁴² Use of the IUD in emergency scenarios likely compounds, rather than diminishes these challenges.

This study sought multiple perspectives in order to fully identify implementation challenges to offering the LNG IUD as EC in clinical settings. Mapping both the CFIR framework and the CFIR-ERIC Barrier tool to participant responses was an effective approach to contextualizing implementation challenges and potential solutions in an intervention planning phase. Potential limitations to our study include the generalizability of our sample, given that all participants live/practice in Utah. As each state and country has different external environments, our findings may not represent the full context or impact of various state/country policies on emergency contraception provision and coverage. Intervention designs require

local context, as well as expert recommendations, in order to be successful, but individuals interested in implementing this intervention elsewhere could likely map their work onto our findings as a starting point.

Conclusions

Availability of the levonorgestrel IUD as a new form of emergency contraception has potential to benefit many people seeking emergency contraception; however, in order to successfully provide access to this method, implementing teams must account for barriers across multiple levels of the health system and address ongoing barriers to both emergency contraception use and intrauterine device access.

Abbreviations

CFIR: Consolidated Framework for Implementation Research

EC: Emergency contraception

ERIC : Expert Recommendations for Implementing Change

FDA : Food and Drug Administration

IUD: Intrauterine device

LNG : Levonorgestrel

Declarations

Ethics approval and consent to participate: This study was approved by the University of Utah Institutional Review Board (IRB # 00137804).

Consent for publication: Not applicable

Availability of data and materials: The qualitative data supporting the conclusions of this article is available upon request.

Competing interests: None to report

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Authors' contributions:

RS designed the study, led the focus groups, coded the transcripts, composed the manuscript, and prepared it for publication.

JB co-led the simulation trainings, collected field notes during the simulation, coded the transcripts and contributed to the manuscript.

SE co-led the simulation trainings, collected field notes during the simulation, coded the transcripts and contributed to the manuscript.

SC designed and co-led the simulation trainings and contributed to the manuscript.

DT provided clinical expertise in designing focus group discussion guides and simulation scenarios and provided editorial review of the manuscript.

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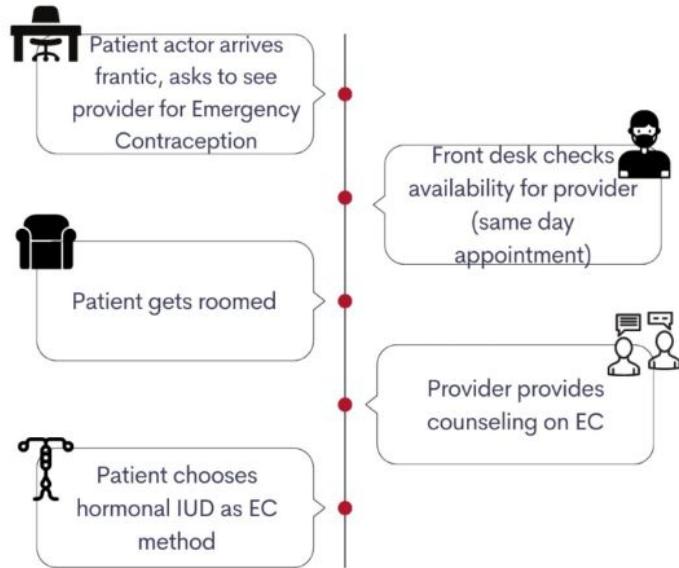
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Figures

Scenario 1



Scenario 2

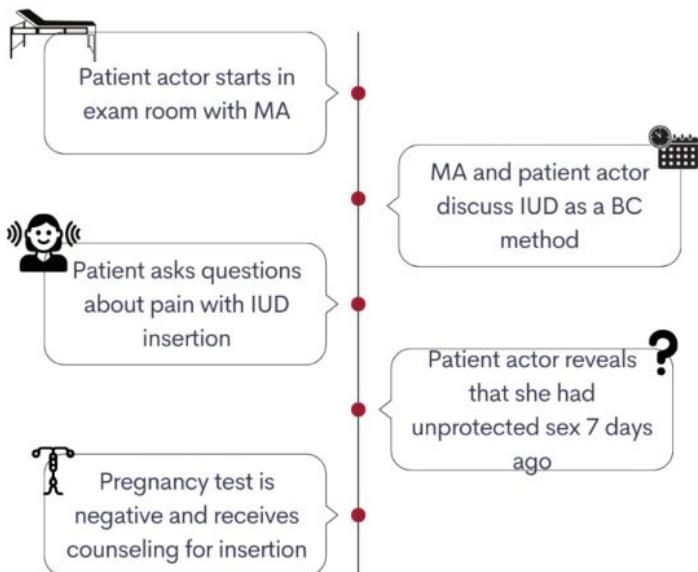


Figure 1

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