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INSIDE

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Behavioral Change Techniques Are Needed to Reduce Unintended Pregnancies

Programming necessary both in and out of provider offices

Pregnancy rates in U.S. adolescent and young adult women declined by 71% from 1990. However, these pregnancy rates are two to seven times higher than rates in other high-income countries, and the unintended pregnancy rate among women ages 15-17 years is 57 in 1,000.[1-4]

Social and behavioral change techniques might help women improve adherence to contraceptives, but this approach has not received as much attention as warranted. As the authors of one recent paper on family planning programs noted, the global family planning community's 2012 goal of enabling 120 million more women and girls to use contraceptives by 2020 fell short by 60 million. More work needs to be done and it needs to be done better, the authors concluded.[5]

> "WE'RE ESSENTIALLY TRYING TO SHINE MORE LIGHT ON SOCIAL AND BEHAVIORAL CHANGE AND THE BEHAVIORAL FACTORS IN FAMILY PLANNING."

"We're essentially trying to shine more light on social and behavioral change and the behavioral factors in family planning," says **Joanna Skinner**, MA, MHS, lead author of the paper and population and reproductive health technical lead with the Breakthrough ACTION Project at the Johns Hopkins Center for Communication Programs. "We have three key messages that we're trying

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to get across to those in the family planning phase. These are based on how there has been limited investment and attention to social and behavioral change in family planning. We're looking to change that."

The first message is that behavioral factors in family planning are a key barrier to family planning uptake, and need more attention. Secondly, social and behavioral change approaches need to be evidence-based. They also need proper investment.

"There have been more recent studies that explain how incorporating behavioral and social change is cost effective," Skinner explains. "Our third message is that, essentially, we are not suggesting social and behavioral change should be done at the expense of service delivery, but that it complements that investment."

This work does not begin and end at a family planning provider's office. "We're not only talking about what happens at a facility with a provider," says **Lynn Van Lith**, MPA, technical director of the Breakthrough ACTION Project.

While some approaches are highly effective within a facility-based setting, there also is a great deal that happens before a woman even enters a provider's office.

"A lot of the social and behavioral change programming we're talking about happens outside of the facility," Van Lith explains. "They can shape norms and other behaviors before someone gets to the facility."

For instance, social and behavioral change techniques can have an outsized influence on social norms, including those involving family planning use and the ideal family size.

"That's where we've seen that, although some women can make individual choices on using family planning, it is very hard to do if they don't have support from the people in their families or from their partners and the broader community," Skinner explains. "It's more about the family members and the community members. Their opinions about family planning and family size, their attitudes toward gender norms and what it means to be a man or woman and how that relates to fertility — all of these things can influence a woman's choice in whether to use family planning."

Social norms influence whether a woman sees a particular provider for contraceptives or family planning services. The provider often is part of the woman's community and shares

EXECUTIVE SUMMARY

Social and behavioral change are important factors to consider and incorporate into family planning, even before a woman enters a provider's office.

- Social norms and opinions of the surrounding community can affect a woman's attitude toward family planning.
- Some social and behavioral change tactics include shared decision-making, ideational models, multifaceted community campaigns, and value clarification exercises.
- Social and behavioral changes also need to be implemented by clinicians and providers to ensure they hold their own biases back when counseling.

similar opinions with the broader community.

"There are social change and behavioral techniques that can be integrated into that counseling," Skinner says.

Social and cultural norms around menstrual changes might occur as a side effect of contraception. In some situations, social norms may make a particular contraceptive method unacceptable to a woman.

"Some hormonal contraception may change menstruation or make periods irregular, heavier, or absent completely," Skinner explains. "There are misconceptions about what it means when a woman doesn't have a period."

Reproductive health providers can initiate these social and behavioral change techniques in their communities and clinics:

• Shared decision-making. One technique for eliciting behavioral change is to engage in shared decision-making with patients, says **Andrea Elena Bonny**, MD, section chief in adolescent medicine and principal investigator, Center for Clinical and Translational Research at Nationwide Children's Hospital in Columbus, OH. She also is an associate professor of pediatrics at The Ohio State University.

"The concept of shared decision-making has reached the forefront, where people are cognizant that the old idea is too patriarchal," Bonny explains. "There is more movement in the process of shared decision-making and that the contraceptive decision should come from the patient."

Reproductive health providers should be stewards of the decision-making process, she adds.

Shared decision-making and better counseling and communication skills are particularly important with adolescent patients, since they are at a different stage of neurocognitive development than adults, Bonny says. *(See story on better contraceptive counseling in this issue.)* The way a family planning provider communicates and interacts with a 14-year-old patient might be different from how the provider interacts with a 16-year-old, 18-year-old, and 30-year-old.

"We probably need to do contraceptive counseling differently as the patient matures and grows," Bonny says.

• Ideational model. The ideational model of behavior change uses components from different behavioral change theories, addressing how different factors influence individual behavior, says **Paul L. Hutchinson**, PhD, associate professor in the department of international health and sustainable development in the School of Public Health and Tropical Medicine at Tulane University in New Orleans.

Social norms, attitude, knowledge, and social influences all play a role in how a person behaves regarding contraceptive use, he adds. One of the most important attitudes is approving of family planning.

"It is absolutely essential," Hutchinson says. "If you don't approve of family planning, you are much less likely to use it."

A recent study revealed that husbands are a critically important influence on women's family planning attitudes and actions. Women who discussed family planning with their husbands were three times more likely to use contraception or intend to start using contraceptives within the next six months.[6]

• Multifaceted community campaigns. The Nigeria Urban Reproductive Health Initiative works to create social and behavioral change through mass media messages, community-level outreach, and practices within healthcare facilities.[7]

"Those social and behavioral [efforts] working in concert together tend to have the greatest impact," Van Lith says. "Making sure the woman is at the center of any campaign is the fundamental starting point."

The next step is to determine which channels or combination of channels will reach those audiences to address their needs and concerns, Van Lith says.

Hutchinson was part of a scientific team that evaluated a Nigerian project that encouraged dialogue within couples to help them agree on how many children they would have.

"We wanted to look at that specific outcome of whether or not the couple had discussed family planning," Hutchinson says. "We would like to think that having that discussion positively relates to the couple deciding to use family planning."

Whether there is a causal relationship between the couple having the discussion and improved family planning has not yet been determined. "There is a good bit of evidence of mass media shifting fertility outcomes and contraceptive use," Hutchinson notes.

But research has not shown whether women noticed the media programs because they already were interested in family planning or if they developed an interest because of the programming.

"If you bought a car, you might be more likely to notice car commercials," Hutchinson says. "We can't necessarily say that those who are exposed to mass media may be just as amenable to family planning as those who are already using it or thinking about using it."

• Value clarification exercises. Clinicians and providers also could

benefit from social and behavioral change techniques, particularly in the area of bias about certain patient populations.

"It's relevant both for providers in this country and in the countries where we work that providers may hold their own bias about whether a young person should access contraception," Skinner says.

One way to address this is to hold value clarification exercises, which help clinicians examine their own values and how those affect contraceptive counseling.

"In the countries where we work, there may be unmarried women, and there are biases around that or around the methods they use," Skinner explains. "There is a value exercise that can be done to make sure providers are offering the highest-quality counseling that is not based on their own values."

For example, the Nigeria project included work with providers and distant learning modules in which providers would see a video clip of a biased provider in counseling. This illustrated the effect of bias, she says.

The project asked providers how they felt viewing the video and how it might affect their own counseling.

"Across the board, we know that behavioral change is [challenging], and the social and behavioral drivers that affect family planning are complex," Van Lith says. "But there has to be a growing recognition that social and behavioral factors really impact every aspect of family planning, and it is worth investing in." ■

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Clinicians Need More Research Data to Learn Best Practices in Contraceptive Counseling

Counseling quality varies greatly

The type of contraceptive method women choose and their patterns of contraceptive use can have a big effect on their risk of unintended pregnancy, new research shows.[1]

It is important for healthcare professionals caring for adolescents to be part of a support system to empower adolescents with their reproductive health choices — regardless of race or gender.[2]

"In my practice, we've spent a lot of the last decade increasing access to different types of birth control, which is needed," says **Andrea Elena Bonny**, MD, section chief of adolescent medicine and principal investigator at the Center for Clinical and Translational Research at Nationwide Children's Hospital. She also is an associate professor of pediatrics at The Ohio State University.

"I think we've done a lot less of considering what we say and how we say it," she adds. "We've been really focused on information-giving and imparting information rather than supporting decision-making."

Counseling adolescents is different because young people are in a unique development period in which they have relatively weaker executive functioning and a higher reward system, Bonny says.

Investigators of a recent study on contraceptive counseling, which Bonny references in her editorial on this topic, suggested clinicians look at intermediate outcomes that address neurodevelopmental functioning in the counseling they provide.

"We should be looking at whether our counseling ability affects skills like emotional regulation and stress modulation, rather than looking at the outcome of whether the adolescents used a birth control method," Bonny says. "If we begin to look at these mediating outcomes, we might find new opportunities for counseling."

For instance, researchers and clinicians should consider adolescents' cognitive and emotional skill sets. Are they prepared to make a good decision?

"Instead of looking at what decision they made, what if we start looking at those skill sets and how our counseling can impact the strength of those skill sets?" Bonny asks. "For example, an adolescent might be more impulsive with decision-making, rather than slowing down."

Clinicians could engage in motivational interviewing, a technique often used with adolescents with substance use issues. "We can help them look at the pros and cons of whatever decision they're making," Bonny explains. "Adolescents may want to make a quick decision, but we may counsel so they are slower in their decision-making." If adolescents make a decision more slowly, they could better understand side effects that might occur from the contraceptive they selected.

Bonny also references the contraceptive counseling study's four critical and unique time frames in the contraceptive care continuum:

• Counseling before sexual activity. "The literature has really focused on counseling before you become sexually active. That's our comprehensive sex education programs, which are widely variable," Bonny says.

Not all sex education is of high quality in terms of evidence-based information. But several randomized trials focused on sex education programs and the various types of education provided prior to sexual initiation.

• Counseling after someone has initiated sexual activity. Research shows that reducing unintended pregnancies in young, sexually active women requires clinicians supporting these women to use their chosen method correctly and consistently.[1]

Contraceptive counseling for sexually active young women also should include guidance on how to switch contraceptives to avoid usage gaps that place them at risk for pregnancy. This means providers should identify and address patients' individual contextual factors in their lives.

• Counseling to support adherence or tolerance of side effects. One study of 10,000 women in St. Louis found that young women were 1.4 times more likely to stop contraception in the first 12 months of use when compared to older adult women.[1,3]

Reproductive health providers should counsel their patients about the side effects of using methods such as the pill, patch, vaginal ring, and shot, which are methods that require daily, weekly, monthly, or quarterly dosing. When young women experience difficulty adhering to their dosing regimens because of side effects or other reasons, it results in method failures.[1]

More research is needed to learn about what type of counseling can help support adherence or transition to a new method if an adolescent is dissatisfied with their current method, Bonny says.

• Counseling in the postpartum period. "There has been a lot of work done in the postpartum area," Bonny says. "People are much more open to the idea of counseling an adolescent once they've had a baby."

Reproductive health clinicians can use a variety of counseling techniques in working with adolescents, including motivational interviewing, decision-support tools, and reproductive life planning frameworks such as PATH (Parenthood preferences/pregnancy attitude, Timing of desired pregnancy, and How important is pregnancy prevention currently).

Consistent, quality contraceptive counseling has been elusive, but clinicians are getting better at it, Bonny says. Research that identifies best practices in contraceptive

EXECUTIVE SUMMARY

New research shows more supportive counseling in reproductive health is needed for adolescents, especially after sexual initiation, and in support of adherence or tolerance of side effects.

- Access to different types of birth control has increased in the past decade, but not as much progress has been made in supporting decision-making or counseling with respect to neurodevelopmental functioning.
- Clinicians need to take adolescents' cognitive and emotional skill sets into consideration.
- Clinicians and researchers need to change their counseling techniques to be used by a wider range of healthcare providers, such as pediatricians and primary care providers, and to use methods like electronic toolkits.

counseling and that is targeted for various providers, including pediatricians, primary providers, OB/GYNs, and other reproductive health providers, is needed.

"Counseling science needs to improve," Bonny says. "If you want a very busy primary care provider to be able to do this in the context of their clinical practice — along with everything else they're doing — we need something that is comprehensive and easy to do."

Clinicians also could benefit from using electronic toolkits. "I think it would be helpful to have easy-to-use tools that can be utilized at different windows of counseling, for any range of sexual activity," she adds. "These types of tools could focus on where patients are in the contraceptive continuum, and also give [providers] a sense of where their patients are neurocognitively in terms of skill sets."

Incorporating science-based tactics and toolkits could help increase access and decrease barriers to contraceptive use.

"Helping these providers feel confident in doing this is important so that women have equal access to these reproductive health options," Bonny says. ■

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State Laws and Local Practices Hinder Birth Control Access for Minors

Adolescents should have equal access to contraceptives

States are not equal in permitting access to contraceptives for minors. This creates inequities and unintended pregnancy risks for adolescents in nearly half of states.

"New York is great, with very flexible reproductive health laws when it comes to minors. However, a lot of states do not have the same laws," says **Savannah Kaszubinski**, MD, resident, post-graduate year one at the University of Rochester (NY).

Some states are so restrictive that minors have to be married to obtain birth control without parental permission. "There's a law where they can get married at ages 14 to 16, but they can't consent to their own birth control," Kaszubinski adds.

Even adolescents who have given birth are restricted from receiving birth control, such as long-acting reversible contraceptives (LARC), in some states. These restrictions create problems for reproductive health providers who are willing to place the contraceptive for the patient but cannot because of state restrictions and guidelines.[1]

In a recent paper, Kaszubinski argues that adolescent mothers should be allowed to consent to the placement of LARC because they can legally consent to healthcare for their child, starting in the prenatal period.[1]

"LARC use has increased in the adolescent population, and for women overall," Kaszubinski says. "People who have LARC placement after they give birth are not very

EXECUTIVE SUMMARY

Access to contraceptives for reproductive-age minors varies across the United States but should be accessible to all, according to the authors of a recent paper.

- State laws often prevent minors from consenting to contraception by themselves or only allow access without parental permission if the minor is married.
- A federal policy might be necessary to make contraceptives available to adolescents across the United States and to allow adolescents without the means or parental support to access contraception.
- Adolescents especially need postpartum contraception options, since a rapid repeat pregnancy could pose negative effects to their socioeconomic status and education.

likely to take the device out. The overall favorability of LARC has increased quite a bit for almost all populations."

Reproductive health practitioners should know their state laws and offer contraceptive counseling and services to adolescents wherever it is permissible.

"However, with state law restrictions, my hope would be that there is eventually some federal policy where the state law is overridden," Kaszubinski says. "Adolescent mothers are able to consent for all of their prenatal care and pediatric care after giving birth. Using that framework, we can justify that if an adolescent is able to consent for their fetus and potential child, their right to contraception and reproductive rights should not be forbidden."

LARC placement is very safe, Kaszubinski notes. "Of course, there has to be a conversation with the provider in terms of going over the risks and benefits," she explains. "There is no greater harm to LARC placement in the adolescent population than there is in the non-adolescent population."

These disparities call for a federal policy making contraceptives available to adolescents. State laws should not prevent them from making reproductive choices, Kaszubinski says.

For instance, minors who are uninsured, have non-involved parents, or are in the foster care system might not be able to obtain parental consent for contraception. Many of these patients could come from low socioeconomic status, so it is a major issue for them, she says.

There also are adolescents whose parents have insurance and could consent to contraceptives but refuse to do so, even though the adolescents are sexually active. "Having a federal policy would provide equal opportunity in every state," Kaszubinski argues. "This would allow adolescents without the opportunity or without parental support to have the option of birth control."

Reproductive health providers should counsel all patients about their contraceptive options and help them understand the risks and benefits so they can make an informed decision. "I don't think that LARC placement should be the only option, but it is important to have a wide range of knowledge and options available to them," Kaszubinski says.

Adolescent mothers especially need contraceptive options and counseling because a second pregnancy at a young age could affect their socioeconomic status and education. "Having a contraceptive plan and avoiding a rapid repeat pregnancy is really important, especially in that population," Kaszubinski adds. "Regardless of age, they should be able to choose their reproductive plan."

Clinicians should ensure they are not pressuring adolescents into selecting a certain type of contraception, and should be respectful and unbiased regarding the choice the adolescent makes.

"I think it's important to have a conversation about every option," Kaszubinski notes. "Make sure you've given them every choice to make an informed decision — not only offering LARC." ■

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An Investigational Vaginal Film Could One Day Prevent Pregnancy, HIV, Herpes

Early trial suggests film is effective, easy to use

Researchers are studying a novel contraceptive delivery system, which uses a vaginal film to produce antibodies to sperm. The same film also could be developed to protect against HIV infection and herpes (HSV).[1,2]

"It's been known for some time that a large percentage of infertile patients have anti-sperm antibodies. They're associated with reduced sperm function, which is speculated to cause infertility," says **Deborah J. Anderson**, PhD, professor of medicine, OB/GYN, and microbiology at Boston University School of Medicine.

Studies have detected anti-sperm antibodies in approximately 15% of couples with unexplained infertility.[1]

"We have been interested in anti-sperm antibodies for contraception," Anderson says. "Because the monoclonal antibodies are so much better [evolved] now, we were finally able to produce a medical-grade monoclonal antibody for contraception."

The antibody was first developed in the 1980s in Japan from the blood of an infertile woman. Investigators sequenced it and put the gene sequence in a new antibody platform, which uses tobacco plants.

"We put the antibody's DNA in the tobacco plant, and the plants produce clean reagent-grade antibodies," she adds.

In a Phase I clinical trial, which began in early 2021, investigators recruited couples and gave women the contraceptive film containing the antibody. The woman inserts the film into her vagina and the couple have intercourse about an hour after insertion.

"Then they come into the doctor's office within two hours and the woman's cervical mucus is sampled, and the number of progressive sperm in the cervical mucus is tested," Anderson explains. "It is a pretty good indicator of whether the sperm are impaired by the contraceptive."

The film is rectangular and about an inch wide. Survey results suggest it is easy to use, Anderson says. "We are hopeful this will be a good method," she adds. "We could put the antibody in a gel, tablet, or ring, but this is what we're testing right now."

Earlier, Anderson and colleagues completed a Phase I clinical trial using a similar film, called MB66, to prevent HIV and HSV infections. The investigators found that single and repeated intravaginal applications of the film were well-tolerated, safe, and acceptable to study participants.[2]

Concentrations of the anti-HIV/HSV agents were significantly elevated, suggesting that they could provide protection for up to 24 hours post-dose. The same platform also could protect against other sexually transmitted infections as well as provide contraception.

The early research shows that the film dissolves within an hour of placement in the vagina, and the women's sexual partners could not discern its presence. Also, there were no reported side effects, Anderson says.

Studies of the contraceptive film took place in the United States. If the film is successful in future clinical trials, it could be used worldwide.

"There are a lot of couples who will have sex infrequently and don't really want to use a method like the pill that is constant; they want to use a contraceptive when they need it," Anderson explains. "We call this an on-demand method."

On-demand contraception is appealing to a large percentage of women who are not interested in taking birth control pills or using an intrauterine device, she says. Compared to a spermicide like N9 that is used in gels and foams, the new contraceptive film product is not messy, does not cause irritation, and can last longer.

"A film may be more discreet and acceptable to a lot of women," Anderson says.

Plus, a woman-controlled product that can provide protection against sexually transmitted infections and work as a contraceptive could be very popular should it become available to consumers.

"We think it's going to be a game-changer, especially for preventing HIV and herpes," Anderson says. ■

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Smart Speakers Can Help Remind Women to Take Their Birth Control Pills

Multiple reminders work well

The results of a recent study revealed that young women like a birth control pill reminder from a virtual home assistant or smart speaker.[1]

"I've been working with trying to see what devices have the potential to help people with health management," says **Cynthia L. Corbett**, PhD, RN, FAAN, SmartState endowed chair in clinical effectiveness research/chronic care management and professor at the University of South Carolina College of Nursing.

One idea was to use a smart speaker like Amazon Echo, Google Home, or Google Nest as a medication reminder system. "For the Amazon Echo program, our team worked on developing a skill/app that reminds people to take their medicine," Corbett says.

Researchers decided to test the app on college undergraduates who were taking oral contraceptives. Initially, they were planning to test it with an older adult population, but one of the undergraduate researchers suggested asking the young women on birth control who are more tech savvy and would be less likely to become frustrated.

"My undergraduate student assured me that women who take oral contraceptives have a hard time remembering to take them," Corbett explains. "We decided that was a good idea, so we recruited women who are college students to use our new app using Amazon Echo Dot."

They recruited women through flyers, personal websites, and social media announcements. The young women who responded visited the lab and set up their phone and Amazon Echo Dot with the medication adherence skill that the researchers named MedBuddy, Corbett explains.

"It gives them three reminders at whatever reminder time they want to do it," she says. "If you connect the Amazon account on your phone, you can get [reminders] on your phone or on the Dot at the same time."

Students tested the app for two months, around the start of the COVID-19 pandemic. Because students were sent home, not all were able to continue consistently using the app. Some left their smart speaker at their school apartment.

"We were still able to finish the study, and they really seemed to like it," Corbett says. "I was a little bit surprised they liked it as well as they did."

For example, some students said that the voice-based reminder helped them feel more accountable to taking their medication than if they just had an alarm on their phone. "People tend to personify voice-based speakers, so they feel more accountable to them," Corbett says.

The Amazon Echo uses the name Alexa. "It sounds like a person's name and it responds in a conversational manner," Corbett explains. "We were trying to design it to seem like you were having a conversation with somebody."

It also is possible that a voice-reminder system is harder to ignore. "You can do other things with the smart speaker, like ask it to play music or ask it for information," Corbett says. "It becomes more like another presence or human-like device that people feel accountable to [respond to]."

The intervention's three reminders were designed to make it difficult to ignore the medication prompt. The first reminder would say that it was time to take the medication. Then, it would go off again 15 minutes later, and for a third time 15 minutes after that.

If a woman wanted to stop the alarm because she took her pill, she would say, "Alexa, open MedBuddy," and "Tell MedBuddy I took my medicine."[1]

EXECUTIVE SUMMARY

A new program using smart speakers could function as a birth control and other medication reminder, improving adherence, according to the authors of a recent study.

- Investigators followed college-age women on birth control for two months, giving them three reminders a day through a smart speaker to take their medication.
- Some participants found the voice-based reminder made them feel more accountable to take their medicine.
- Some problems arose in voice recognition and skill name similarities.

The device would ask what time the woman took the medication and record her answer on a calendar. Then, MedBuddy would stop sending reminders, Corbett says.

As researchers developed the app, they found the name MedBuddy caused problems with the voice recognition. They changed the name to PillMinder and received fewer complaints.

"One of the things we learned from the study was that sometimes they would have to tell Alexa to tell MedBuddy several times," Corbett says. "We found that there are a lot of skills on Amazon Echo that are called something buddy, so we needed to change the name of the skill."

One woman enrolled in the study stopped responding to the MedBuddy app because she found it frustrating that it would not understand her. But, she continued to use the reminders to take her birth control pill.

"Overall, I think about two-thirds of the women said they would continue to use it if given the opportunity," Corbett notes. "We asked people, at baseline, how often they missed taking their contraceptives, and then we asked them again at the end of the study. When we checked the Likert scale, they said they improved [adherence] overall."

Investigators have not yet made this skill publicly available on Amazon, and it may be a year before they do. They want to study it further and make sure the app is working as well as possible.

"If people want to use something now, both Amazon and Google have a reminder system where you can tell [the smart speaker] to remind you to take your medication every day at a certain time," she explains. "It can be put on your phone, but it won't have the three reminders, which is something that our people liked."

People could set up their own system with three reminders at separate times.

"They could definitely set it up just using the basic features that these smart voice-activated speakers currently have," Corbett says. "Based on our results, I think people might like it." ■

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Peer-Led Family Planning Intervention Can Help Women with Substance Use Disorder

It is important for women to feel respected

Individuals with substance use disorder (SUD) and higher rates of unintended pregnancies could benefit from a family planning intervention targeted for that population.[1]

"I've worked for many years in research for HIV prevention and substance use treatment. I was interested in making sure that women experiencing substance use disorder have access to knowledge and empowerment to make decisions on their reproductive health," says **Deborah J. Rinehart**, PhD, associate research scientist with the Center for Health Systems Research at the Denver Health and Hospital Authority. Rinehart also is an associate professor of medicine in the division of general internal medicine at the University of Colorado Anschutz Medical Campus.

"The concept of using a peer was something that we thought might be salient in this work. We kind of had that idea when we wrote the grant proposal," she says. "We did qualitative interviews, and women endorsed that they would feel comfortable talking about this topic with someone who gets where they're coming from and what they're going through."

The peer-led family planning navigation intervention employed women who were successful in connecting with study participants. The healthcare organization has a robust integration for Title X and family planning in its healthcare facilities.

"We have, in our ambulatory care services, Title X funding, and we have set up a really great system in most of our federally qualified health centers [FQHCs]," Rinehart explains. "Health educators are embedded in the clinic and work alongside providers so we're able to get people in quickly. They have more time to talk to educators about their particular needs."

Using health educators has helped patients learn about contraceptive

methods and obtain their method of choice in the same day.

"If a patient wants to leave here with an implant, they can have the provider pop in and give them an implant," Rinehart says. "What we really need to think about is the generalizability of this kind of work, so we need a navigator/health educator intervention."

The goal is to provide education to women and navigate them to clinical services as needed. "We call it a peer navigator," she says. "We developed a step-by-step manual so that anyone could deliver the intervention."

Navigators deliver the intervention on their own, but it is designed through support training to be consistent, Rinehart explains. Researchers recruited people into the study and randomized them so that half of the study participants got to work with a peer navigator. Peer navigators met with the women and conducted a standardized intervention that included motivational interviewing techniques.

"We developed an educational pamphlet with this population in focus groups because one of the things we found in doing some of our qualitative work was this concept that the women in treatment felt that they wanted to know a lot about the different methods of contraception so they could make an informed choice," Rinehart says.

The women had fluid ideas regarding whether they wanted to prevent pregnancy. "We started the conversation by asking if they wanted a pregnancy within the next year," Rinehart says. "If they did, we told them to talk with someone about prenatal care and planning for a pregnancy. If they did not, then we offered them some contraceptive options."

Researchers created educational materials that offered all the necessary information, including listing various contraceptive methods. The women sought information about when their fertility would return after they stopped taking contraceptives. They also asked about side effects and what they had to do for the various methods, Rinehart notes.

Asking about the women's pregnancy intentions in the next year was the key question that was used to start the reproductive health conversation. Peer educators screened women for nicotine use because it could be a contraindication for some birth control medications. They also determined women's contraceptive intentions and whether they wanted to meet with a clinician.

The first sessions with peer educators were kept short with the goal of helping women feel comfortable and engaged, Rinehart adds.

"We're really just providing choices with someone having the time to work through what the different contraceptive methods are and connecting women with them so they feel respected and empowered," she says. "There's a lot of trauma in this population, so having that connection and respect is important." ■

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CONTRACEPTIVE TECHNOLOGY UPDATE®

Contraceptive Technology Update is endorsed by the **National Association of Nurse Practitioners in Women's Health** and the **Association of Reproductive Health Professionals** as a vital information source for healthcare professionals.

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CME/CE QUESTIONS

1. **Research shows that the unintended pregnancy rate among women ages 15 to 17 years is:**

   a. 65%.
   b. 74%.
   c. 81%.
   d. 90%.

2. **What is required for adolescents to obtain a birth control prescription without parental consent in states that restrict birth control access for minors?**

   a. Minors must be married to consent to birth control without parental permission.
   b. Minors must obtain signatures from at least four close adult relatives if their parents are unable to sign the consent form.
   c. Minors have access only if they are arrested for sex trafficking.
   d. A judge must bypass parental consent.

3. **An investigational new contraceptive delivers anti-sperm antibodies to women via:**

   a. vaginal foam.
   b. diaphragm.
   c. vaginal gel.
   d. vaginal film.

4. **When reproductive health providers counsel adolescents about contraceptives, they should look at which type of functioning in the counseling they provide?**

   a. Cognitive
   b. Hormonal
   c. Neurodevelopmental
   d. Sexual

CME/CE OBJECTIVES

After reading *Contraceptive Technology Update*, the participant will be able to:

1. identify clinical, legal, or scientific issues related to development and provisions of contraceptive technology or other reproductive services;
2. describe how those issues affect services and patient care;
3. integrate practical solutions to problems and information into daily practices, according to advice from nationally recognized family planning experts;
4. provide practical information that is evidence-based to help clinicians deliver contraceptives sensitively and effectively.

STI QUARTERLY™

A SUPPLEMENT TO CONTRACEPTIVE TECHNOLOGY UPDATE

STI Intervention Tactics in Rural Areas Should Be Prioritized

Investing in and supporting existing resources is key

Rural areas in the United States have limited access to screening and testing of sexually transmitted infections (STIs). Tailored interventions for these populations are important.[1]

"STI rates can be quite high in some rural areas," says **Wiley D. Jenkins**, PhD, MPH, FACE, research professor and chief of epidemiology and biostatistics at Southern Illinois University School of Medicine.

Reproductive health providers often think about STIs, such as gonorrhea and chlamydia, as a metropolitan problem, Jenkins notes. Not only are the STI rates in rural areas high, but the same phenomenon can be seen with HIV.

"The rates of HIV, especially in the rural South, are notoriously high," Jenkins says. "STI rates are important. If we want to have control of sexually transmitted infections, we can't just ignore rural areas."

Although many rural areas are predominately white, there is a lot of diversity in some places, he notes. For instance, one rural county in Illinois reported about 33% Black residents at the last census.

"Especially in the deep South, the number of racial minorities can be much higher," he says.

There also are sexual gender minorities, as well as people with substance use issues. "[Rural residents] all have their own distinct risk profiles, and there are a lot more of these individuals in rural populations than people tend to surmise," Jenkins says. "It is not all the white race; it is highly variable."

Several factors might lead public health officials and providers to underestimate STI risk in rural areas. One factor is that rural populations tend to be older. Relatively few people live in these counties, and it can be harder to obtain data on their risk behaviors.

"But STIs seem to be an increasing risk among geriatric populations," Jenkins says. "Probably, the increased rates of drug use — even among older people — may be contributing to those STI problems."

There is not yet enough information on this trend. "Overall, the data show that a large proportion of STIs are diagnosed in clinical environments, such as primary care providers and hospitals, and they are not done at STI clinics," Jenkins says. "What we're finding is that many of these clinical environments in rural areas are closing, and there is a retraction of clinical services."

This trend creates challenges for designing interventions to reduce STIs in rural communities.

"In my personal opinion, we cannot create the same types of interventions in rural areas that work in metropolitan areas," Jenkins says. "I think the city of Chicago has nine or 11 standalone STI clinics. You just cannot support that in rural areas."

STI prevention and treatment methods for rural areas should focus first on strengthening and funding the few existing resources to make them more efficient and accessible, he explains. For example, the federal government could add funding to federally qualified health centers (FQHCs) to enable them to open for longer operating hours, including weekends.

"Our research found that in rural areas, the open hours [of FQHCs] were less than in metropolitan areas," Jenkins says.

Also, local health departments exist in almost every county in the United States, but the ones in rural counties operate with tight budgets.

"Funding could be directed to health departments to increase STI screening and to expand hours," Jenkins says. "There are some rural areas where STI clinics may be open only two half-days a week."

STI prevention and screening can be made both more accessible and efficient. "We also need to invest in things that work better in rural areas and don't require an economy of scale," Jenkins explains.

For example, reproductive health clinics could offer patients mail-in STI kits for chlamydia and gonorrhea, he notes. Internet-based companies offer home test kits for those STIs. Patients can self-collect a specimen and mail it back to the company for testing.

"If the results are positive, then the company will report that to a public health authority," Jenkins explains.

Although these types of companies charge people for the kits, it is possible that a government agency could offer the same service at no charge — depending on its source of funding.

"I think this [option] might be disproportionately useful in rural areas because there are so few alternatives," he says. "Having an option to be able to do this online would be huge [in a rural area]."

One obstacle to providing an online STI testing service is the challenge of capturing people's attention. "You have to have some mechanism to engage people and to get them to return the testing kit," he notes.

The return rate for online STI testing kits is very low, but the positivity rate is very high, Jenkins says. One tactic that may work in a rural area is to market online STI testing through school systems or organizations with the potential to reach the target audience.

"There needs to be engagement," Jenkins says. "But, it obviously will not reach everyone."

Another method of STI outreach in rural areas is to build on existing community-based organizations (CBOs). Local CBOs have tried different types of outreach, but they do not always receive research funding, which can be a problem.

For instance, a small CBO that targets a rural community could be a sexual risk reduction provider as well as a syringe service provider for people who use injectable drugs. The CBO might provide screenings, condoms, and referrals for drug treatment through a combination of novel state, research, and philanthropy funding, Jenkins explains. Such a CBO could fill a gap in a rural area and become a trusted partner for populations of drug users and sexual gender minorities.

People who are sexual gender minorities often experience stigma, so they do not disclose their sexuality. "In my mind, rather than trying to build a new clinical venue, investing in an already existing resource, like a CBO, may make much more sense," he says.

Building new infrastructure to deliver STI services is not going to be feasible, but it also is not effective to duplicate what works in a metropolitan area to a rural area.

"If we want to change things, we have to invest in the organizations that already exist, making them more accessible with longer hours, more funding, and increased personnel," he says.

There has never been a national strategy to invest in and explore new types of STI screening that target specific populations and areas, including rural communities, Jenkins says. ■

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Study: Young Cisgender Women Are Less Adherent to PrEP

New research on the proportion of adolescents and young adults (AYA) who are adherent to pre-exposure prophylaxis (PrEP) revealed that young cisgender women have a lower adherence rate than young men who have sex with men (MSM) and serodiscordant heterosexual couples.[1]

"The study that we conducted was a meta-analysis that was looking at, essentially, adolescents and young adults' experience with pre-exposure prophylaxis," says **Bianca A. Allison**, MD, MPH, assistant professor in the department of pediatrics at the University of North Carolina at Chapel Hill. "We were trying to determine across studies that have been done to investigate PrEP use in AYA what the adherence was overall. We looked at factors associated with PrEP adherence."

Allison and colleagues compared adherence among groups divided

by gender and risk categories. They looked at self-reported measures or biological measures like blood samples.

"We looked at the type of pill-taking regimen people were on and the different interventional components that might be related to PrEP adherence," she explains. "We found that the majority of AYA did meet study-defined thresholds for adherence to PrEP."

For instance, one of the thresholds for adherence could be someone who takes their pills four to seven days a week, Allison explains. Knowing the thresholds and what percentage of the population was adherent is helpful in understanding their adherence to other medications as well.

"The study's findings were similar to findings that were shown in adherence to PrEP in older adults as well as other drugs like antivirals for HIV," Allison says. "It is important that AYA are as adherent to this preventive medication as they might be for treatment for other conditions."

For example, research on AYA and their adherence to oral contraceptives showed a similar range of adherence as they had to PrEP. "The studies that we included had a wide variety of populations that were studied," Allison says. "There were several focused on cisgender women only, several on men who have sex with men or transwomen, and serodiscordant couples, especially outside of the U.S."

The study's broad findings were that 64% of young people were adherent to PrEP. "Some of the other findings were that self-reported methods of adherence, like asking someone how many times in the past month they had skipped a dose, were actually very reliable, and were similar to drug levels in their bloodstream," Allison says. "We also found that cisgender women had the lowest adherence compared to MSM, transwomen, or serodiscordant couples."

These findings suggest that clinicians need better intervention to increase PrEP adherence and acceptance among all populations — not just those deemed at the highest risk, she says.

Reproductive health providers could improve counseling and education for cisgender women who are at risk of HIV infection to increase their acceptance of PrEP.

"Our study found that a few aspects of intervention actually did not increase PrEP adherence, even though we thought they should," Allison notes.

For instance, providing free PrEP or in-person counseling visits did not increase adherence. "One could hypothesize that these actions would increase access, but they didn't," Allison notes. "It is important for providers and clinicians to do some background research on their communities that require PrEP to better understand how to increase adherence in these populations. Because we covered a wide variety of populations, our final message is to learn your population and their needs to better help them be adherent to PrEP."

Allison and colleagues concluded that researchers should study various interventions systemically to help increase PrEP adherence.

Another important finding was improved adherence to PrEP with daily dosing regimens. When people use PrEP on demand or because of a certain event, such as taking a dose right after sex, they showed much lower adherence than people who took a daily dose of PrEP.

"What we need to consider for the future is other ways to administer PrEP to increase adherence," Allison says. "We need to look out for FDA-approved long-acting PrEPs like an implant or a vaginal ring that might actually improve adherence in the future."

Reproductive health providers should learn the latest PrEP technology and look for new tactics that will help AYA improve access and adherence to PrEP, she explains. ■

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Results of HIV Vaginal Ring Study Demonstrate Adherence

Adherence highly correlated with time

Adherence to the dapivirine vaginal ring, a topical HIV-1 agent to prevent HIV infection, improved over time, according to the results of a recent study.[1]

The vaginal ring is an investigational pre-exposure prophylactic (PrEP) agent that is inserted in the vagina. The silicone matrix ring is loaded with a microbicidal agent, says **Marla Husnik**, PhD, MS, associate director at The Janssen Pharmaceutical Companies of Johnson & Johnson in Raritan, NJ.

The ring was developed through Janssen and the International Partnership for Microbicides (IPM). It is used only for HIV prevention.

"This particular ring does not have a dual agent [for contraception] in it," Husnik says. "However, IPM is currently working on clinical studies that are incorporating a dual pregnancy prophylactic agent along with the dapivirine ring."

Husnik and colleagues wanted to study correlates to adherence among people using the ring.

"We were really interested in using this clinical trial — a very large one — to evaluate what are the sorts of correlates to some very objective measures of adherence," Husnik explains. "There were other studies that were done on this population of women in Africa that were much more subjective in nature, but we were interested in using objective measures of adherence."

Research participants' plasma measurements were checked quarterly to evaluate dapivirine levels. The vaginal rings were collected at the clinical site and delivered monthly.

"They were instructed to bring the rings back after a one-month period, even though the plasma was only collected quarterly," Husnik explains. "The monthly ring returns allowed us to analyze how much of the dapivirine drug was remaining in the ring."

The Time Effect

Researchers found there was a time effect in the use of the ring. "We found that the time on study and calendar time were highly correlated with adherence," Husnik says.

This suggested women experienced a learning period about how to use the ring. "Then, there was a maintenance period where women became familiar with the ring," Husnik says. "When she became comfortable with it, adherence went up."

The clinical trial continued for more than seven years, and not all women were enrolled at the same time. This enabled investigators to study the calendar effect. The association with calendar time appeared to reflect implementation of a real-time adherence monitoring intervention.[1]

"Beginning with the three- to six-month period, as a reference, researchers compared this period with the nine- to 12-month period of being in the study, and also with 15-33 months," Husnik explains. "What we saw, compared to the reference group of three to six months, was an increase in adherence for those later time periods. The longer they were on the study, the more apt they became to use it."

Another correlate to adherence was whether their primary partner knew they were taking part in the study. If the partner knew about their study participation, they were more likely to use the ring, Husnik says.

The European Medicines Agency issued an opinion supporting the use of the dapivirine ring for PrEP by cisgender women, ages 18 and older, in developing countries.[2]

"I know there will be a submission and a review by the Food and Drug Administration, as well," Husnik says.

The chief benefit of the dapivirine ring is that it is a rare HIV prevention strategy that is designed for women that they can use discreetly. "A woman can use this vaginal ring, and her partner will not know it," she explains. "She will not be subjected to having to carry pills around."

For some women, there is stigma associated with using HIV medication — either for treatment or for PrEP — and the ring avoids that stigma.

"This would be a very discreet way of protecting herself," Husnik says. ■

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