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Contraception Options And Access for Adolescents

The World Health Organization (WHO) reports that adolescents (aged 18 and under) are amongst the most vulnerable to negative outcomes of unintended pregnancy including higher rates of maternal mortality, eclampsia, low birth weight, preterm birth, and systemic infections.[1] Beyond physical risks to mother and baby, there are social and psychological repercussions that an adolescent mother may face including dropping out of high school, social isolation/stigma, family conflict, personal shame and regret. Adolescent pregnancies are costly, and teens usually have few financial resources for termination; these pregnancies cost American taxpayers about $11 billion per year in increased utilization of the health care system, foster care, increased rates of parent incarceration and lost potential wages from lower academic achievement.[2] According to the Global Library of Women's Medicine (GLOWM), adolescents face unique barriers to contraceptive access including transportation, cost, and fear of their parents learning of their sexual activity via seeking treatment. These obstacles foster a population with higher risks of sexually transmitted infections (STIs) and unintended pregnancy.[3] Healthy People 2030 addresses adolescent sexual health with multiple objectives including increasing the number of males and females who used effective birth control the last time they had sex and reducing the number of unintended pregnancies. [4,5] Therefore, it is important to provide education to adolescents about birth control options and safer sexual practices to improve their contraceptive knowledge and reduce the number of unintended pregnancies and STIs.

As a note on gendered language, the terms "girls" or "females" or "women", and in this paper are intending to describe those that were born with a uterus and can become pregnant. Although girl/female/woman are terms that describe a gender identity rather than sex assigned at birth,

this paper will mirror the language used by the CDC and in Healthy People 2030 throughout this paper for simplicity.

To establish a strategy to decrease the number of unintended teen pregnancies and STIs in the US, it is important to first examine the available data to better delineate what the outcomes of these trends are. National teen pregnancy rates in the US have been steadily declining since 1991, most strikingly with an 82% reduction among those 15-17 years old.[6] Studies have demonstrated this is at least in part due to increased education about preventing pregnancy, as well as access to effective birth control.[7] However, the rates of unintended teen pregnancy in the US remain notably higher than many other developed nations including the United Kingdom, New Zealand and Canada.[8] Teen pregnancy rates vary considerably when defining by age (15-17 vs 18-19), ethnicity, and region of the country they reside.[8] Specifically low-income teens tend to struggle the most with access and use of effective contraception options, and as such, carry a disproportionately high percentage of teenage pregnancies.[8] Historically the highest rates of teen pregnancies occurred in women who identified as Hispanic or Black, and although these groups still have higher pregnancy rates than white adolescents, more inclusive data collection has recently identified the highest rates occurring in American Indigenous, Native Alaskan, and Native Hawaiian/Pacific islander populations.[8] Disparities in access to healthcare, differing views regarding family planning, and warranted apprehension to trust the American medical system at large are considered barriers to contraception that marginalized communities face. In addition, there are complex social determinants of health (SDoH) that are well recognized in these at-risk populations but are extremely difficult to remedy on a large scale.

When considering SDoH and how they relate to the sexual practices of adolescents, consider that low-income women tend to have more social risk factors for unplanned pregnancy

that may be largely or entirely out of their control. These include being born to a teen mother, lower levels of education achieved by parents, growing up in in a household without both biologic parents, greater prevalence of community substance use, and higher rates of community violence and hunger.[8,9] Another way of looking at this phenomenon is that the greater number of Adverse Childhood Experiences (ACEs) a teen has, the more likely they are to engage in risky behaviors including unprotected sex and sex with multiple partners.[10] The outcomes associated with a greater number of ACEs can then contribute to a propagated cycle of ongoing disadvantage when adolescents lack the tools or ability to break the cycle. Although many social circumstances cannot be changed easily, providing high quality nation-wide sexual education and accessible resources through the lens of trauma informed care is best practice. Comprehensive sexual education also teaches young people about healthy relationships, setting boundaries, and bodily autonomy – all of which are protective against high-risk sexual behaviors.[11]

When considering what can be done to address teen pregnancy and STI rates in the US, a place to start is with the opinions and recommendations of nationally recognized organizations, such as the American Academy of Pediatrics. They note that ~750,000 adolescents become pregnant each year, and greater than 80% were unplanned events.[11] This indicates an opportunity for earlier engagement and education with teens regarding effective birth control and prevention of unintentional pregnancy. Further, the CDC notes that many adolescents obtain their sexual health education entirely from school-based programs. This is usually because parents/family members are not comfortable enough to conduct these discussions at home, are not qualified to provide enough or unbiased information, or simply do not know when and how they should have these conversations.[12] Although some parents talk to their kids about sex, many adolescents

report they are embarrassed by such discussions, which can lead to a lower yield educational experience and dissuade them from asking specific questions. Further, polling of parents and adolescents performed by Planned Parenthood and published in PLOS ONE demonstrated that there was a discrepancy between what parents believed they had discussed with their children, and what those same teens took away from those interactions.[13] Specifically, teens consistently reported lower rates of discussion on sex-related topics with parents compared to rates that parents reported on the same topics.[13] For example, 41-percent of parents in the study stated they had discussed how to say "no" to sex many times with their teen, whereas only 27-percent of those adolescents stated they had discussed the topic many times.[13] Similar discrepancies between parent and child polling responses were noted regarding conversations around healthy versus unhealthy relationships, as well as birth control methods. [13]

Another group with national guidelines regarding adolescent sexual behaviors is the American College of Obstetrics and Gynecology (ACOG), who support that studies have shown "comprehensive sexuality education programs" beginning in early childhood result in lower rates of sexual activity, high risk sexual activities (unprotected, multiple partners, etc.), STIs and unintended pregnancy amongst adolescents.[14] A minor but important aspect of contraceptive education for young people with a uterus should include knowledge regarding options to manage any negative side effects associated with hormonal fluctuations of the menstrual cycle, irrespective of their sexual activity. All adolescents regardless of sexual orientation or gender identity should be aware of what's available on the market for STI and pregnancy prevention. Males are just as culpable for unintended consequences of risky sexual behaviors as females and as such, should be just as informed.

ACOG has published recommendations for comprehensive sexual education programs, which should begin in early childhood and continue throughout adolescents. They state these programs should discuss abstinence, contraceptive options (including long-acting), and STI prevention as well normal reproductive development, gender and sexual expression, and consent.[14] Exploration of gender and sexuality are important parts of maturation into adulthood, so discussion of these topics should start early and continue consistently over a period of many years. Public school curriculum is an ideal place to implement this structured education plan in attempt to reach the greatest number of US adolescents, where it can better support and empower teens to take charge of their personal health and identity. By steadily providing relevant information about how to have safe sexual habits and prevent pregnancy, amongst other sexual health topics, teens have the best chance at making good choices. And limiting what is taught regarding sexual education can be paradoxically harmful; in one study, abstinence-only school education programs correlated with higher rates of STIs and unplanned pregnancy compared to comprehensive education programs.[16]

Oregon Health Education has standards in place to address adolescent sexual education programs that require comprehensive teachings beginning in elementary school, that are medically accurate and cover curricula from multiple domains of sexual health as ACOG recommends.[14] While it is impossible to reach and educate every adolescent in the nation, structured requirements in public schools provides the best chance of supporting the greatest number of teens. Successful outcomes from sex education programs include delaying sex, using condoms and other effective birth control methods, with correct use every time.[15] Therefore, it's imperative to educate adolescents about the various methods of contraception and how effective they are to effect change and support the health of my community.

For better outcomes regarding adolescent sexual health behaviors, the CDC recommends starting in childhood, by a trained professional and at the appropriate level based on their age and sexual maturity.[15,17] Public schools are an appropriate place to present this information with a structured curriculum where the greatest proportion of teens can be reached. However, there is variation in how and what is taught across states, cities and school districts which means not every teen is getting the same quality of education. The CDC has an excellent website with proposed curriculum, templates and an interactive analytic tool (HECAT) that schools can use to guide and improve their unique lesson plans to better meet CDC recommendations.[15] Further, they recommend using a variety of delivery strategies that are engaging to students including interactive lectures, short videos, role playing and self-reflection exercises.

When considering evidence-based recommendations regarding the delivery of sexual education to adolescents, a systematic review by Pazol et al noted a variety of modes of educational interventions have a statistically significant improvement of knowledge around contraception, and that improved earlier use and adherence.[18] Amongst the 15 studies examined, 14 of them demonstrated significant improvement using a range of tools summarized below. Positive outcomes notable for each mode of delivery include: [18]

- Written materials: very significant increases in knowledge (indications for certain types of contraception, pros/cons, correct use of each) & comfort with the decision-making process
- Audio or video: significant increase in general knowledge, positive attitudes about contraception, intentions to use contraception and actual contraceptive compliance
- Interactive computer games: moderate increase in knowledge
- Decision aids/trees: mild increase in knowledge

Many of the studies in the review found a significant positive effect when the materials were introduced by a trained provider rather than just given to the student, regardless of the mode of delivery. The conclusion of the review found that a combination of written materials and video interventions coupled with greater provider-education resulted in the highest overall rates of contraception use after the session.

I've located a High School health class to give a PowerPoint presentation on safer sexual practices and contraceptive options. When considering the curriculum that is effective and understandable by adolescents, it's important to display and communicate information in a meaningful way to the audience members so that they can derive the most benefit. Written information will be provided in a lecture-presentation format, with opportunities for audience engagement and activities weaved into the lecture. Students will obtain a brief overview of the various contraceptive options based on information in Table 1 (appendix A) as well as specific details about each mode of contraception including cost, access, efficacy, duration of protection as well as general pros & cons. I will also utilize an infographic (figure 1) commonly seen in medical offices that visually represents efficacy of various methods out of 100 women, which can impart that critical piece of information in different & digestible way. The goal is to provide an overview of the options that can spur adolescent thinking about contraception and be used in partnership with their personal healthcare professional to determine the best options for them. Notably, I'll emphasize the benefits of long-acting reversible contraceptive (LARC) options that adolescents can expect, including prolonged periods of protection against pregnancy without having to worry about perfect use or user error, as well as regulation of the hormonal cycle. LARC options include the Nexplanon implant, copper and hormonal IUDs. I have a video clip incorporated into my presentation of a teenager explaining their decision process on how they

chose to get a Nexplanon implant, their experience with physical placement and overall satisfaction with the product. Beyond just the information about contraception options, I will discuss accessing contraceptive counseling services within the community (such as their primary doctor or a Planned Parenthood), as well as where to access things like condoms and STI testing at no charge. I will have a collection of hands-on materials as well including handouts of my tables, the infographic, planned parenthood brochures and examples of contraception options such as IUDs and Nexplanon's to pass around.

Curriculum around contraception options for preventing STIs and pregnancy will cover hormonal birth control options including oral contraceptive pills, hormonal implants, the depot shot, birth control patch and vaginal ring. Non-hormonal options will include the copper IUD, barrier methods (male and female condoms), fertility awareness tracking and withdrawal method. A prominent point to drive home will be that only barrier methods are effective at prevention of STIs so regardless of the benefits of hormonal contraception in preventing pregnancy and regulating hormones, both should be used to have safer sex.

Throughout my research and discussed in this paper, early interventions using a variety of modes of education provide the best outcomes regarding knowledge and effective contraceptive use for adolescents to prevent pregnancy and transmission of STIs. This is a vulnerable audience that may make decisions without fully understanding the repercussions of their actions, which is why targeting 9th graders in public school is an ideal audience to disseminate this information while they're already present in the classroom. Individuals need to be presented with the risks and precautions to take associated with sexual behaviors early on, so they can consider their own goals and values before these situations present themselves, particularly when peer pressure is a factor. Encouraging proper contraceptive use and encouraging sexual maturity are important

strategies when it comes to HP2030 objectives regarding use of effective contraception at first sexual experience, as well as avoiding unintended pregnancies. Staring these conversations earlier follows the recommendations of multiple guiding medical bodies including ACOG, the CDC and the WHO which ultimately leads to better informed adolescents equipped with the knowledge to make smarter decisions about their sexual practices.

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Appendix A

Table 1: basic information, including pros and cons, of various forms of contraception. [19,20,21,22]

Intrauterine devices (IUDs)			
These are long acting reversible forms of contraception that are extremely effective (over 99%) at preventing pregnancy. These are tiny T-shaped devices placed inside the uterus by a trained medical professional and can cost up to $1000 but are often much cheaper/free with insurance, including on OHP. Once in place you can't feel them, they are effective immediately and can last up to 12 years before needing to be replaced. You can have them removed by a medical professional at any time if you change your mind or want to become pregnant, which can be achieved shortly after removal. IUDs are great for someone looking for a very effective and low maintenance form of contraception that you don't have to think about using. There are various types on the US market			
Type	FYI	Pros	Cons
Copper IUD (Paragard)	-Nonhormonal; copper wire is wrapped around the IUD and prevents sperm from reaching and fertilizing the egg -lasts up to 12 years -can have removed and immediately get pregnant -**Also works as emergency contraception**	-convenient, no maintenance -great option for someone who does not want exogenous hormones to be part of their contraception	-requires a medical professional and pelvic exam -potentially painful placement -potential cost -often people will have heavier periods
Hormonal IUDs **-Mirena: lasts up to 8 years** **-Kyleena: lasts up to 5 years** **-Skyla: lasts up to 3 years**	-these IUDs use the hormone progestin, similar to the body's own progesterone, which is secreted to the uterus in tiny amounts. This prevents pregnancy by thickening the cervical mucous (making it hard for sperm to get past) and also suppress ovulation. There are a few brands of hormonal IUDs that differ in how much progestin they release, and	-convenient, no maintenance -decreased or absent menstrual bleeding -regulation of hormone natural cycles	-requires a medical professional and pelvic exam -potentially painful placement -potential cost

	therefore how long they are effective

Birth control Implant (Nexplanon):		
Tiny plastic rod about the size of a matchstick that is inserted into the upper arm by a trained professional and prevents 99% of pregnancy for up to 5 years		
FYI	Pros	Cons
Uses progestin like an IUD to suppress ovulation	Same efficacy as IUD without needing a pelvic exam	-Cost ($0-$1000), covered by OHP -some people have issues with spotting -requires a minor procedure for removal

Birth control shot (Depo-provera)		
This is a shot you get in your arm or buttocks every 3 months and also contains progestin		
FYI	Pros	Cons
-96% effective when given on time	Not as invasive as getting an IUD or Nexplanon placed	-Cost ($0-$150), covered by OHP -some people have issues with spotting, weight gain, mood changes -requires an office visit and new shot every 3 months

Oral contraceptive pills (OCPs)		
MANY formulations, a pill you take orally every day at the same time that contains some combination of estrogen and progestin and is up to 93% effective it taken perfectly		
FYI	Pros	Cons
-93% effective if taken perfectly (same time every day) **-can get 12 month supply prescribed in Oregon**	-noninvasive -Can help with hormonal acne as well as regulation of your natural hormone levels -typically costs $0	-have to take a pill daily at the same time -some people have issues with weight gain, mood changes -different formulations might work better for some than others so you may need to try a few

Birth control patch (ortho-evra)		
A sticky topical form of birth control you wear on certain parts of your body for 7 days and change weekly. It contains estrogen and progestin that thicken cervical mucous and suppress ovulation		
FYI	Pros	Cons
-93% effective when used correctly	-noninvasive -can take off at any time	-Cost ($0-$150), covered by OHP -some people have issues with spotting, weight gain, mood changes -requires an office visit and new shot every 3 months

Vaginal Ring (Nuva ring):		
Similar to the patch and pill, contains estrogen and progesterone to prevent pregnancy. Used by placing ring in the vagina and changed monthly, and are 93% effective when used correctly		
FYI	Pros	Cons

-93% effective when used correctly	-noninvasive -can take out at any time	-have to place inside vagina each month -some people are more sensitive to hormonal effects than others

Barrier methods (condoms, diaphragms)

These provide a physical barrier during sex to prevent fertilization of the egg but must be used every time. A big benefit to these is they also prevent STIs, but typical use is not perfect, so they are around 87% effective at best. Can always combine with other forms of contraception for STI protection

FYI	Pros	Cons
-almost 90% effective when used correctly -help prevent spread of STIs	-noninvasive	-have to use every time you have sex -can break and no longer be effective -typical use is not the same as perfect

Fertility awareness methods (FAMs)

Tracking your menstrual cycle on a calendar so that you know when you're ovulating and most likely to get pregnant with unprotected sex. Tons of variability here including how well the individual tracks their cycle & if their cycle is regular or not.

FYI	Pros	Cons
Effective anywhere from 75-95% effective if used perfectly	-free -noninvasive -non-hormonal	-highly variable reliability -must have a predictable cycle

Emergency Contraception (Oral pills)

Used to prevent a pregnancy after an unprotected/underprotected sexual encounter. Examples include sex without using any type of contraception, imperfect use of birth control, broken/slipped condoms, or in cases of sexual assault. Note this method has no protection against STIs which should be tested for separately after a high risk sexual encounter.

FYI	Pros	Cons
Take as soon as possible after sex, ideally within 72 hours of the event	-Can purchase without a prescription -Well tolerated, minimal side effects	- cost prohibitive, up to $50 - some pharmacies may still instate their own age restriction on their purchase - Less effective if patient has BMI >35

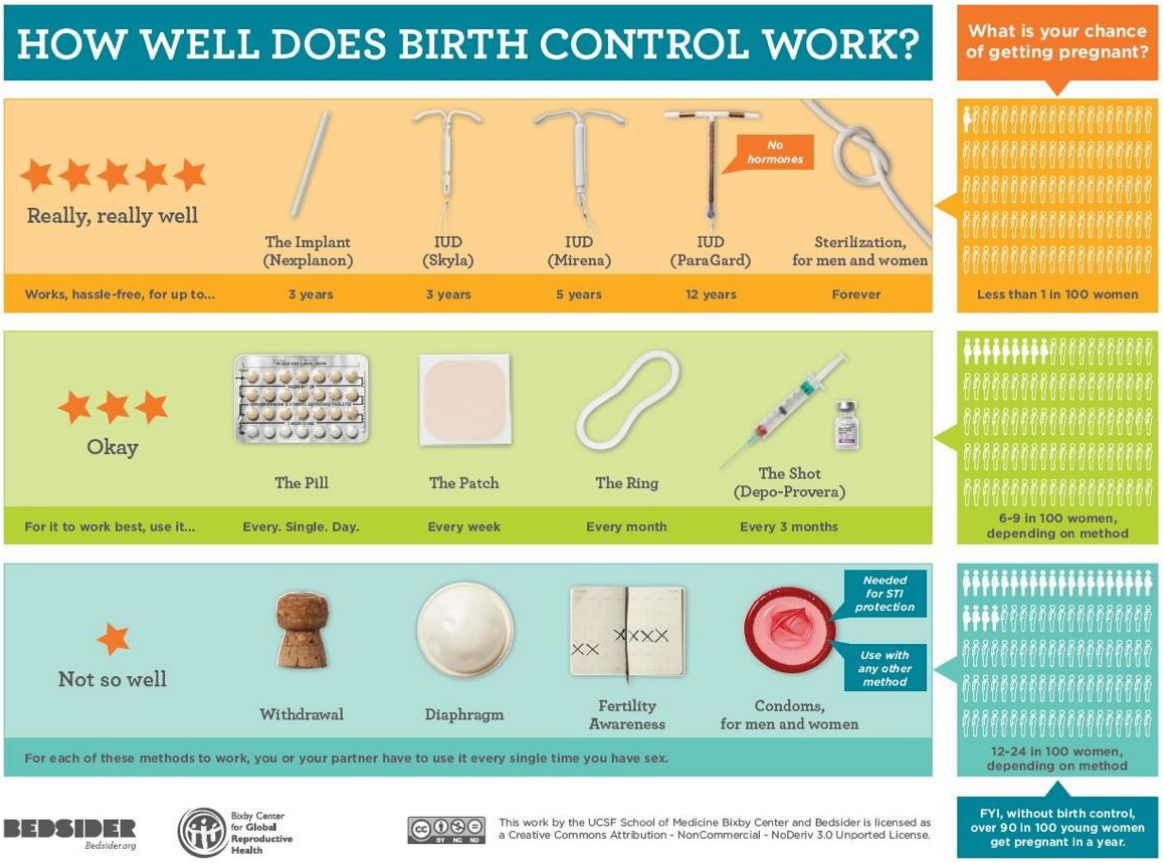

Figure 1: a common visual aide used in medical offices regarding contraceptive efficacy used with patients during consultation.[18]