Identifying a Golden Opportunity: Adolescent Interest in Contraceptive Initiation in a Pediatric Emergency Department

Colleen K. Gutman, MD,¹ David Dorfman, MD,² Halea Meese, MS,³
Patricia Kavanagh, MD,² and Atsuko Koyama, MD, MPH¹

Abstract

Objectives: Contraception use reduces teen pregnancy, and long-acting reversible contraception is recommended as first-line treatment. Since many adolescents use the emergency department (ED) as a primary source of health care, it is a potential site of contraceptive counseling and provision. We surveyed female adolescents to assess desire for contraceptive counseling and initiation/change during an ED visit.

Materials and Methods: This was a cross sectional study of a convenience sample of female ED patients aged 16–21 years in an urban pediatric ED. Participants completed an anonymous questionnaire about sexual health, contraceptive use, and interest in contraceptive counseling. The primary outcome was adolescent interest in starting/changing contraception during an ED visit.

Results: Three hundred eighty-one patients (mean age 19.1 ± 1.6 years) completed the survey. Most (80.5%) had been sexually active with a male partner, and 110 (28.2%) had previously been pregnant. Two-thirds were interested in discussing contraception and 22.5% were likely to start or change contraception during the ED visit. Those who wanted to start or change contraception were more likely to be sexually active with a male partner (93% vs. 82%, $p=0.02$) and to report that they were not satisfied with their current contraception (44% vs. 21%, $p=0.0003$). Fifteen (17%) of the adolescents likely to start or change contraception were interested in progestin implant initiation in the ED.

Conclusions: Adolescents were interested in initiating or changing contraception during the ED visit, providing an important opportunity to discuss and initiate effective contraception.

Keywords: adolescents, emergency department, contraception

Introduction

ALTHOUGH THE RATE of adolescent pregnancy in the United States has declined over the past decade,¹ it is higher than in many similarly developed countries,² and the majority of adolescent births remain unplanned.³ Compared with pregnancy in older women, unintended adolescent pregnancy is associated with worse birth outcomes, decreased rates of high school graduation for the mother and her children,^{4,5} and significant individual and societal financial costs.⁶

The declining rate of unintended adolescent pregnancy is attributed to access to and use of contraception.^{5,6} Oral contraceptive pills (OCPs), contraceptive vaginal rings, transdermal

contraceptive patches, and injectable progestin-only contraception (depot medroxyprogesterone acetate, DMPA) have traditionally been the most commonly used forms of hormonal contraception in adolescents³; however, they have higher rates of discontinuation and pregnancy than long-acting reversible contraception (LARC).⁷ LARCs, such as intrauterine devices (IUDs) and progestin subdermal implants, are now recommended as first-line contraception for adolescents due to their safety, efficacy, and high rates of patient satisfaction.^{3,6,8–10} Progestin implants in particular are easily inserted into the upper arm with minimal training and time, no required gynecologic examination or laboratory testing, and no routine follow-up until removal at 3 to 4 years.¹¹

¹Division of Emergency Medicine, Department of Pediatrics, Emory University School of Medicine, Atlanta, Georgia.

²Division of Emergency Medicine, Department of Pediatrics, Boston University School of Medicine, Boston, Massachusetts.

³University of Colorado School of Medicine, Aurora, Colorado.

In previous pediatric emergency department (PED)-based studies, adolescent sexual activity and pregnancy risk were high, and adolescents reported limited access to contraception as a barrier to contraceptive use.^{12–15} In the United States, adolescents commonly access emergency departments (EDs) instead of their primary care physician for their health care needs.¹⁶ Furthermore, both adolescents and providers have expressed interest in ED-based sexual health education.^{12,13,15,17,18} The ED is a unique practice environment where screening for and addressing public health issues such as suicidality, violence and injuries, and sexually transmitted infections have been shown to be an effective use of clinical resources and are well received by patients.^{19–22} As such, the ED may serve as a potential setting for changing or initiating contraception for adolescents seeking to prevent unintended pregnancy.

To understand the potential role of the PED as a source of preventive reproductive health care for adolescents, this study aims to (1) characterize sexual health history and contraceptive use in adolescent women seeking care in an urban PED, (2) assess their desire to discuss and initiate different methods of contraception during the PED visit, and (3) evaluate their knowledge of contraceptive implants, which may be uniquely well-suited to initiation in the ED setting.

Materials and Methods

Design, setting, and participants

This is a cross sectional anonymous questionnaire study of a convenience sample of female adolescents that took place in a single urban, academic PED with 25,000 patient visits per year. Participants were eligible for inclusion if they were 16–21 years of age, female, and able to read English. Exclusion criteria included critical illness on ED presentation, history of developmental delay, and those in the custody of child protective services or juvenile justice system. During the hours of highest ED volumes (3p–11p) from August 2014 to January 2015, eligible patients were identified through the ED electronic tracking board by research staff after their ED care was complete and were approached in the privacy of their room. If there was uncertainty about eligibility, such as whether the potential patient spoke English or if the patient was well enough to participate, the research staff consulted the clinical team before approaching the potential subject. For participants <18 years of age, we obtained a waiver of parental consent since adolescents in Massachusetts give consent for contraception, testing and treatment of sexually transmitted infections, and prenatal care. Parents were asked to leave the room while the research staff met with the adolescent to explain the study, and the participant decided if they wished the parent to remain in the room as they completed the study instruments. This study was approved by the Boston University Medical Campus Institutional Review Board.

Data collection

Participants completed an anonymous, written, self-administered 20-item questionnaire, written at a fifth grade reading level. This questionnaire was developed by an expert multidisciplinary panel based on existing pertinent literature

and was piloted for usability with 10 adolescents before use in this study. The questionnaire included questions on demographics, reason for ED visit, access to a primary care physician, sexual health and obstetric history, current contraceptive use and satisfaction, interest in learning about or starting or changing contraception during the ED visit, and knowledge about implants (Supplementary Appendix SA1). All questions were close-ended, with the exception of reason for ED visit, which was free-text and was later categorized as a genitourinary or gynecological (GU/GYN) concern, a gastrointestinal concern, or other.

To assess respondent interest in starting or changing contraception during the ED visit, a 5-point Likert scale was given in response to the question, “If you could start or change to any type of birth control of your choice here in the emergency department, how likely would you be to start it today?”. Respondents were then asked to identify the form(s) of contraception they currently use and what they would consider starting or changing to during the ED visit. Respondents could select any or all of the following: birth control pills, ring, or patch; injectable contraception (Depo-Provera shot); IUD; and implantable contraception (Implanon/Nexplanon)

Data analysis

Descriptive statistics were used to analyze respondent demographics and sexual health history, including current contraceptive use, using chi-square and Fisher’s exact test. For our primary outcome of interest, starting or changing contraception during the ED visit, Likert scale responses were dichotomized into “unlikely” (if the respondent selected “unlikely” or “very unlikely”) and “likely” (if the respondent selected “likely” or “very likely”). Chi-square tests were used to assess associations between likelihood of change and patient characteristics.

Results

Four hundred twenty-eight adolescents were approached; 390 completed the questionnaire and were included in the final analysis. Thirty-eight adolescents declined to participate or were not eligible due to previous completion of the survey. Baseline demographics for respondents are shown in Table 1. Respondents were mean age of 19 years, half identified themselves as African American, two-thirds had at least a high school degree or GED, and most (83.1%) reported that they intended to complete a college degree or greater. Eighty percent of respondents reported ever having been sexually active with a male partner and 28.2% reported having previously been pregnant.

Three-hundred nineteen (81.6%) adolescents reported having a primary care provider, and 276 (70.6%) had seen them within the past year. Although 70.5% and 43.8% of all respondents reported having discussed contraception with a primary care provider and a parent, respectively, only 39.0% reported that they were currently using hormonal contraception, 31.2% were currently using abstinence, and 25.9% were not using any form of contraception. More than half (57.2%) reported that they were satisfied with their current method of contraception, but two-thirds of all respondents reported that they were interested in learning about contraception during their ED visit.

TABLE 1. PARTICIPANT CHARACTERISTICS

	Response (n = 390)
Mean age years $\pm$ SD	19.1 $\pm$ 1.6
Race, n (%)	
African American	200 (51.3)
White	55 (14.1)
Other/mixed	118 (30.2)
No response	17 (4.4)
Ethnicity, n (%)	
Hispanic, Latina, or of Spanish origin	97 (24.9)
Highest education intended to complete (adolescent), n (%)	
High school grad or GED	27 (6.9)
2-Year college degree	39 (10.0)
4-Year college degree	170 (43.6)
Graduate or professional school	115 (29.5)
Don't know	35 (9.0)
No response	4 (1.0)
ED visit chief complaint, n (%)	
GYN/GU	61 (15.6)
GI	88 (22.6)
Other/unknown	241 (61.8)
Has talked about contraception with..., n (%) ^a	
Parent	171 (43.8)
Primary care physician	275 (70.5)
Has ever been sexually active with boys, n (%)	314 (80.5)
Has ever been pregnant, n (%)	110 (28.2)
One prior pregnancy	60/110 (54.5)
Two or more prior pregnancies	50/110 (45.5)
Has ever been diagnosed with a STD, n (%)	105 (26.9)

^aOption for participant to select more than one response.
ED, emergency department; GI, gastrointestinal; GYN/GU, gynecological/genitourinary; STD, sexually transmitted disease.

The median response to the question about starting or changing contraception during the ED visit was neutral (not likely or unlikely). However, nearly one-quarter (88/390, 22.6%) of participants reported that they were likely or very likely to start or change contraception at that time. Compared to those who were unlikely to start or change contraception, those who were likely to do so were more likely to have been sexually active with a male partner (93.1% vs. 82.4%, $p=0.02$) and to report that they were not satisfied with their current form of contraception (44.9% vs. 21.3%, $p<0.001$; Table 2). Although not statistically significant, those who were likely to want to start or change contraception in the ED were less likely to have seen their primary care provider within the past year (74.0% vs. 85.1%, $p=0.06$). There was no significant difference in baseline demographics (including age, race, ethnicity, or completed education of adolescent) between those interested in starting or changing contraception in the ED and those who were not. Among the 88 respondents who would consider starting or changing their contraception during the current ED visit, 46.6% were interested in hormonal pills, ring, or patch; 17.0% were interested in implantable contraception; and 20.5% were interested in starting an IUD (Table 3).

Sixty percent (234/390) of all respondents reported hearing about the progestin implant, 48.3% (113/234) of whom had

TABLE 2. INTEREST IN STARTING OR CHANGING CONTRACEPTION DURING THIS EMERGENCY DEPARTMENT VISIT

	Unlikely or very unlikely (n = 170) ^a	Likely or very likely (n = 88) ^a	p
ED visit chief complaint, n (%)			
GYN/GU	22 (12.9)	16 (18.2)	0.73
GI	42 (24.7)	20 (22.7)	
Other	94 (55.3)	46 (52.3)	
Unknown	12 (7.1)	6 (6.8)	
Has a primary care provider, n (%)			
Yes	138 (84.1)	71 (83.5)	0.9
No	26 (15.9)	14 (16.5)	
Last saw primary care provider, n (%)			
Within the last year	126 (85.1)	57 (74)	0.06
More than 1 year ago	22 (14.9)	20 (26)	
Has ever been sexually active with boys, n (%)			
Yes	140 (82.4)	81 (93.1)	0.02
No	30 (17.6)	6 (6.9)	
Satisfied with current contraception, n (%)			
Yes	107 (78.7)	44 (55.7)	0.0003
No	29 (21.3)	35 (44.3)	
Has ever been pregnant, n (%)			
Yes	52 (31.3)	21 (24.4)	0.25
No	114 (68.7)	65 (75.6)	
Has ever been diagnosed with an STD, n (%)			
Yes	42 (25.6)	26 (29.9)	0.47
No	122 (74.4)	61 (70.1)	

^aExcludes 84 participants who selected "neutral" and 39 participants who did not respond to this question.

talked with a medical professional about it. Compared with respondents not using a progestin implant, those adolescents currently using one were more likely to report that they had learned about the progestin implant from a medical professional (76.2% vs. 47.9%, $p=0.02$).

Discussion

In this sample of adolescents presenting to a pediatric ED, we found high interest in ED-based contraception education

TABLE 3. CONTRACEPTION WILLING TO BE CONSIDERED FOR INITIATION DURING EMERGENCY DEPARTMENT VISIT

Contraceptive method, n (%) ^a	Likely to start/ change contraception in ED (N = 88) ^b
OCP, ring, or patch	41 (46.6)
Injectable progestin-only	24 (27.3)
IUD	18 (20.5)
Progestin implant	15 (17.0)
Other	6 (6.8)
None	5 (5.7)
Happy with current contraception and would not want to change	13 (14.8)

^aOption for participant to select more than one response.

^bIncludes only those respondents who were likely or very likely to be willing to start or change their contraception during the ED visit.
IUD, intrauterine devices; OCP, oral contraceptive pill.

and initiation among respondents with high rates of pregnancy and no current contraceptive use. Despite the high rate of recent visits to a primary care provider, adolescents in our sample were interested in receiving contraceptive education and initiation while in the ED, suggesting that ED-based contraceptive counseling and initiation may address barriers to contraceptive use other than primary care access. Our results support previous findings that adolescents are interested in receiving contraceptive education and initiation during an ED visit^{12,13,15,23}; our findings add geographic diversity to the existing literature and expand upon prior work as we sampled an older group of adolescents. Our sample had a mean age of 19 years, making it more generalizable to community EDs, which see a greater proportion of older adolescents than freestanding children's hospitals, which tend to serve a younger population.²⁴ Respondents in our sample also demonstrated strong interest in completing higher education, which is an important positive motivator that can support healthy sexual behavior decision-making.

The majority of the adolescents in our sample who were interested in ED-based contraception preferred short-acting hormonal contraception. The American College of Obstetricians and Gynecologists (ACOG) has advocated for over-the-counter OCP provision to improve access to and use of contraception as the benefit of easy access greatly outweighs the risks of hormonal contraception.^{25–27} Given the safety and efficacy of these short-acting methods, a prescription for OCPs, the vaginal ring, and the transdermal patch can easily be provided at discharge, or the progestin-only injectable can be administered during the ED visit.

There was significant interest in LARC among our study sample and higher rates of use than the national average.⁹ These findings may be explained by the high rate of access to and recent visits to a primary care provider, which may be due to near-universal health insurance coverage in Massachusetts. However, our findings are similar to Miller et al.,²³ who surveyed adolescents with high rates of public or no insurance and poor access to publicly funded clinics and found that two-thirds of sexually active females seen in the ED were interested in contraceptive initiation with significant interest in LARC. Although interest in LARC has increased among adolescents, the overall use remains low despite being the recommended first-line form of contraception for young women desiring to avoid pregnancy.⁹ However, in settings where common barriers to contraceptive initiation are removed (including education, access, and cost), use of LARC increased and was associated with high satisfaction and efficacy among adolescent women.^{6,28} An ED visit represents an important point of contact with an adolescent and can address many of those barriers; we found higher use of LARC in respondents who had received LARC counseling from a medical provider, highlighting the ED visit as a golden opportunity for a medical provider to interact with an adolescent. Hoehn et al.¹⁸ demonstrated a high rate of subsequent outpatient LARC initiation in adolescents following dedicated PED contraception counseling, indicating that PED-based interventions can be effective and adolescent intent for contraceptive initiation is not necessarily transient. Since a substantial number of adolescents may not show for a referral appointment for LARC placement,^{18,29} an ED-based LARC initiation program could fulfill a key access gap to these effective devices to decrease unintended pregnancy risk in this receptive and vulnerable population.

To the best of our knowledge, at this time, there are no EDs that routinely offer LARC placement. However, LARC placement in the ED is theoretically feasible. In particular, placement of a progestin implant requires minimal training and time, can be done without additional examinations or tests in women who are otherwise healthy,¹¹ and the device failure rate is 0.05%.³⁰ IUDs also have low device failure rates³⁰ but sexually transmitted infection screening is advised,¹¹ which may preclude same-day placement. However, there are a number of important barriers to an ED-based contraception program, including the time required to provide adequate counseling on contraceptive options during an ED visit, the ability to arrange for appropriate follow-up with an outpatient provider to address any side effects, and the lack of reimbursement, especially for costly LARC devices. These barriers have been addressed in other settings¹⁸; for example, policy changes to ensure reimbursement for postpartum LARC services have been successfully implemented in many states.³¹ Payment models will need to be changed before implementation of a widespread ED-based LARC initiation program for young women.

There were several limitations to this present study. First, we utilized a convenience sample of respondents. Second, it is possible that those adolescents who were not enrolled or who declined to enroll have different characteristics than those who were sampled. Since we had a low refusal rate (9%), we do not believe this had a significant impact on results. Third, this was a questionnaire study reliant on participant self-report and participants had the option to leave questions blank. Therefore, we have variable response rates across questions, which is a common phenomenon with this method. Finally, our study assessed adolescent interest in various methods of contraception and in starting or changing contraception during the ED visit, but did not examine actual behaviors related to contraceptive use.

In conclusion, many adolescents are interested in starting or changing contraception, and would be willing to do so during the ED visit. Adolescent ED visits have the potential to serve as an important opportunity to discuss and initiate effective contraception, particularly LARCs, as they significantly reduce unintended pregnancy and are recommended as first-line in this population. Future work is needed to explore adolescent behavior change following ED-based contraceptive education, reimbursement for EDs to provide training, counseling, and access to LARC devices, continuation of ED-based contraceptive initiation, and the effect of these interventions on unintended adolescent pregnancy.

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Supplementary Material

Supplementary Appendix SA1

References

1. Martin JA, Hamilton BE, Osterman MJK, Driscoll AK, Drake P. Births: Final Data for 2016. Natl Vital Stat Rep 2018;67:1–55.

2. Sedgh G, Finer LB, Bankole A, Eilers MA, Singh S. Adolescent pregnancy, birth, and abortion rates across countries: Levels and recent trends. *J Adolesc Health* 2015; 56:223–230.
3. Committee on Adolescence. Contraception for adolescents. *Pediatrics* 2014;134:e1244–e1256.
4. Kawakita T, Wilson K, Grantz KL, Landy HJ, Huang CC, Gomez-Lobo V. Adverse maternal and neonatal outcomes in adolescent pregnancy. *J Pediatr Adolesc Gynecol* 2016; 29:130–136.
5. Centers for Disease Control and Prevention. Vital signs: Teen pregnancy—United States, 1991–2009. *MMWR Morb Mortal Wkly Rep* 2011;60:414–420.
6. Secura GM, Madden T, McNicholas C, et al. Provision of no-cost, long-acting contraception and teenage pregnancy. *N Engl J Med* 2014;371:1316–1323.
7. Maslyanskaya S, Coupey SM, Chhabra R, Khan UI. Predictors of early discontinuation of effective contraception by teens at high risk of pregnancy. *J Pediatr Adolesc Gynecol* 2016;29:269–275.
8. Dodson NA, Gray SH, Burke PJ. Teen pregnancy prevention on a LARC: An update on long-acting reversible contraception for the primary care provider. *Curr Opin Pediatr* 2012;24:439–445.
9. ACOG Committee Opinion No. 735: Adolescents and long-acting reversible contraception: Implants and intrauterine devices. *Obstet Gynecol* 2018;131:e130–e139.
10. Koyama A, Dorfman DH, Forcier MM. Long-acting reversible contraception in the pediatric emergency department: Clinical implications and common challenges. *Pediatric Emerg Care* 2015;31:286–292; quiz 93–95.
11. Curtis KM, Jatlaoui TC, Tepper NK, et al. U.S. Selected Practice Recommendations for Contraceptive Use, 2016. *MMWR Recomm Rep* 2016;65:1–66.
12. Chernick LS, Schnall R, Higgins T, et al. Barriers to and enablers of contraceptive use among adolescent females and their interest in an emergency department based intervention. *Contraception* 2015;91:217–225.
13. Fine LC, Mollen CJ. A pilot study to assess candidacy for emergency contraception and interest in sexual health education in a pediatric emergency department population. *Pediatr Emerg Care* 2010;26:413–416.
14. Miller MK, Pickett M, Leisner K, Sherman AK, Humiston SG. Sexual health behaviors, preferences for care, and use of health services among adolescents in pediatric emergency departments. *Pediatr Emerg Care* 2013;29:907–911.
15. Solomon M, Badolato GM, Chernick LS, Trent ME, Chamberlain JM, Goyal MK. Examining the role of the pediatric emergency department in reducing unintended adolescent pregnancy. *J Pediatr* 2017;189:196–200.
16. Weiss AL, D'Angelo LJ, Rucker AC. Adolescent use of the emergency department instead of the primary care provider: Who, why, and how urgent? *J Adolesc Health* 2014;54: 416–420.
17. Miller MK, Mollen CJ, O'Malley D, et al. Providing adolescent sexual health care in the pediatric emergency department: Views of health care providers. *Pediatr Emerg Care* 2014;30:84–90.
18. Hoehn EF, Hoefgen H, Chernick LS, et al. A pediatric emergency department intervention to increase contraception initiation among adolescents. *Acad Emerg Med* 2019; 26:761–769.
19. Wei HG, Camargo CA, Jr. Patient education in the emergency department. *Acad Emerg Med* 2000;7:710–717.
20. Runyan CW, Becker A, Brandspiegel S, Barber C, Trudeau A, Novins D. Lethal means counseling for parents of youth seeking emergency care for suicidality. *West J Emerg Med* 2016;17:8–14.
21. Mehta SD, Hall J, Lyss SB, Skolnik PR, Pealer LN, Kharasch S. Adult and pediatric emergency department sexually transmitted disease and HIV screening: Programmatic overview and outcomes. *Acad Emerg Med* 2007;14: 250–258.
22. Snider C, Lee J. Youth violence secondary prevention initiatives in emergency departments: A systematic review. *CJEM* 2009;11:161–168.
23. Miller MK, Randell KA, Barral R, Sherman AK, Miller E. Factors associated with interest in same-day contraception initiation among females in the pediatric emergency department. *J Adolesc Health* 2016;58:154–159.
24. Hudgins JD, Monuteaux MC, Bourgeois FT, et al. Complexity and severity of pediatric patients treated at United States emergency departments. *J Pediatr* 2017;186:145–149.e1.
25. Committee Opinion No. 544: Over-the-counter access to oral contraceptives. *Obstet Gynecol* 2012;120:1527–1531.
26. Committee Opinion No. 615: Access to contraception. *Obstet Gynecol* 2015;125:250–255.
27. Grossman D. Over-the-counter access to oral contraceptives. *Obstet Gynecol Clin North Am* 2015;42:619–629.
28. Mestad R, Secura G, Allsworth JE, Madden T, Zhao Q, Peipert JF. Acceptance of long-acting reversible contraceptive methods by adolescent participants in the Contraceptive CHOICE Project. *Contraception* 2011;84:493–498.
29. Chernick LS, Westhoff C, Ray M, et al. Enhancing referral of sexually active adolescent females from the emergency department to family planning. *J Women's Health* (2002) 2015;24:324–328.
30. Allen S, Barlow E. Long-acting reversible contraception: An essential guide for pediatric primary care providers. *Pediatr Clin North Am* 2017;64:359–369.
31. Medicaid Reimbursement for Postpartum LARC by State. 2019. Available at: www.acog.org/About-ACOG/ACOG-Departments/Long-Acting-Reversible-Contraception/Immediate-Postpartum-LARC-Medicaid-Reimbursement Accessed August 12, 2019.

Address correspondence to:
 Colleen K. Gutman, MD
 Division of Emergency Medicine
 Department of Pediatrics
 Emory University School of Medicine
 1645 Tullie Circle Northeast
 Atlanta, GA 30329

E-mail: ckays@emory.edu