

Follow-up Rates and Contraceptive Choices after Medical Abortion in Adolescents at Cook County Hospital



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ABSTRACT

Study Objective: To determine follow-up rates for adolescent patients who underwent medical abortion compared with adult patients, identify patient factors associated with follow-up, and evaluate contraceptive choices at the time of follow-up.

Design, Setting, and Participants: A retrospective cohort study of adolescent patients (ages 15-19 years) who underwent first-trimester medical abortions at John H. Stroger, Jr. Hospital of Cook County from 2014 through 2017.

Interventions: None.

Main Outcome Measures: Rate of follow-up after medical abortion, demographic factors associated with higher follow-up rates, and contraceptive choices by adolescents at follow-up encounters.

Results: During the study period, 8111 medication abortions were performed in our clinic. Adolescents accounted for 446 of these patients (446/8111; 5.5%). Among adolescents, the follow-up rate was 231/446 (51.8%). We determined the follow-up rates among a random sample of patients ages 20-24 years (n = 494) and 25-39 years (n = 397) to be 213/494 (43.1%), and 161/397 (40.5%), respectively. African American adolescents were significantly less likely to follow-up compared with their Hispanic and white counterparts (relative risk, 0.76; 95% confidence interval, 0.66-0.89). Those enrolled in college were significantly more likely to follow-up compared with those who reported lower levels of education (relative risk, 1.4; 95% confidence interval, 1.0-1.9). Only 2.5% of adolescents reported ever using a tier 1 contraception option before presenting for an abortion and among those who did follow-up, only 18% chose a tier 1 option for ongoing pregnancy prevention.

Conclusion: Approximately half of our adolescent study population is at risk for undetected failed medical abortion and subsequent unplanned pregnancy.

Key Words: Adolescent, Early medical abortion, Contraception, Sexually transmitted diseases

Introduction

In the United States, it is estimated that 45% of pregnancies are unplanned and 42% of these end in abortion.¹ Among adolescents (defined as young girls age 15-19 years), at least 82% of pregnancies are unintended.² In 2010 alone there were an estimated 614,410 pregnancies in 15- to 19-year old adolescents, and 26% ended in abortion.³ Although data suggest that unintended pregnancy rates are decreasing, the United States continues to have the highest adolescent pregnancy rates among industrialized countries.⁴ Additionally, minority women of low socioeconomic status continue to bear the burden of unintended pregnancy.⁵

Medical abortion, or the use of mifepristone and misoprostol, is a safe and effective mechanism for pregnancy

termination generally approved up to 63 days of gestation with a reported success rate of 95%-96%.⁶⁻⁸ In contrast to surgical abortion, it is recommended that patients who undergo medical abortion follow-up within 14 days after medication administration to ensure completion of abortion, be assessed for complications, and explore and receive contraception.⁹ Ideal candidates for medical abortion are able to return for evaluation, although many do not. Loss to follow-up rates described in the literature for patients in the United States are limited to small study populations and range from 2% to 19%.^{10,11} Rates of follow-up on the basis of patient age, geographic location, and race are not available.

Adolescent patients face unique barriers with regard to abortion access including parental notification laws present in many states, including Illinois.¹² Although not well documented in the literature, other possible barriers faced by the adolescent population might include lack of transportation, school obligations, and fear of disapproval or punishment from parent or guardian figures. Adolescent patients are also more likely to undergo an abortion at a later gestational age.¹³ Of adolescents who are able to access abortion care, specifically medical abortion, little is known about their rates of follow-up compared with patients of other age groups. Our objective was to determine follow-up rates among adolescent patients who underwent medical abortion in a public hospital, compare that rate with the

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rate of adult patients, and to examine patient factors that are associated with follow-up in the adolescent population. Finally, in patients who did follow-up, we assessed the type of contraceptive method each patient selected.

Materials and Methods

John H. Stroger, Jr. Hospital of Cook County located in Chicago, Illinois provides medical and surgical abortion care to a predominantly minority population, including many adolescents in Cook county and the surrounding area. At our institution, candidates for medical abortion include patients with ultrasonographic evidence of an intrauterine pregnancy less than or equal to 63 days and desire medical abortion over surgical abortion. They must also have a normal hemoglobin level and an expressed ability to follow-up 7–14 days after administration of medication. Patients who meet these criteria are given 200 mg mifepristone under direct observation by a physician and then provided 800 µg misoprostol to be placed buccally 24–48 hours after administration. Of note, within the state of Illinois, patients younger than 18 years old are required to have parental notification before abortion services are provided, which is performed by clinic staff at our institution.

After receiving their medication, patients are instructed to follow-up within 7–14 days and given walk-in hours where they can present to a designated hospital-based family planning clinic without an appointment for an ultrasound to confirm successful termination of pregnancy defined as absence of a gestational sac. They also meet with a physician for a discussion of contraception options at this visit. Patients who show evidence of ongoing pregnancy in ultrasound examination at their follow-up appointment are then offered a dilation and curettage for pregnancy termination. Patients who do not follow-up within the recommended window receive serial phone calls from staff members and ultimately a certified letter is sent requesting follow-up if they are unable to be contacted or do not present to care within the recommended time period.

We conducted a retrospective chart review to identify adolescent patients who underwent first-trimester medical abortions at John H. Stroger Jr. Hospital of Cook County during a 3-year period from August 2014 through August 2017. Patients who had a termination procedure during the study period were identified using a central billing database. Approval was obtained from the hospital's institutional review board.

Because of our specific interest in adolescent patients, we included all patients in the adolescent age range (15–19 years old) during the study time period. For these patients, we extracted age (years), race/ethnicity (Hispanic, non-Hispanic African American, non-Hispanic white/other), education level (high school or less, high school completion, completion of some college or more), substance use (drugs, alcohol, or cigarettes; yes/no), number of previous pregnancies and abortions, age at sexual debut, body mass index, relationship status (single or partnered), resident of Chicago, Illinois (yes/no), Medicaid insurance status (yes/no), previous contraception use (tier 1: intrauterine device or implant; tier

2: patch, ring, injectable, pills; tier 3: condoms; or none), follow-up (yes/no), sexually transmitted infection testing (yes/no), and among those tested the test results (positive/negative), if the patient attended their follow-up appointment (yes/no), and contraception choice at follow-up using chart review. In addition to this, we used Microsoft Excel to assign random whole numbers between 0 and 50 to the records for all patients between 20 to 24 and 25 to 39 years old who attended clinic on the same day as each adolescent patient. We used a random number table to determine which of these patients to select for our sample for chart review. For each adolescent patient, we randomly selected 1 patient that was aged 20–24 years and 1 patient who was 25–39 years old and reviewed their charts to determine if the older patients attended their follow-up appointments (yes/no). This was performed to compare follow-up rates among adolescents with that of older patients.

Statistical analysis included the calculation of frequencies and percentages to determine follow-up rates, and to describe characteristics of these patients overall and according to follow-up status. We used the χ^2 test for comparisons of follow-up rates and comparisons between groups. Log binomial regression models were used to identify demographic and clinical factors associated with follow-up and to estimate relative risks (RRs) and 95% confidence intervals (CIs). Final models were mutually adjusted for all covariates presented. Analyses were conducted using SAS 9.4 (SAS Institute Inc, Cary, NC).

Results

During the study period, 8111 medication abortions were performed in our clinic. We identified 446/8111 (5.5%) adolescents who underwent medical termination procedures, and we queried follow-up rates for 891 patients aged 20 years and older who had medication termination procedures during the study period for comparison. The total overall follow-up rate among all patients was 606/1337 (45.3%) within 1 month of the procedure. Among adolescents, the follow-up rate was 231/446 (51.8%). The overall follow-up rate among older patients was 374/891 (42.0%), which was lower than the adolescent follow-up rate ($P = .001$). Compared with matched cohort groups of patients according to age group, the follow-up rate among women ages 20–24 years was 213/494 (43.1%), and among women ages 25–39 years the follow-up rate was 161/397 (40.5%). Comparison of the age-specific follow-up rates was consistent with the pooled rate among older patients, and indicated a higher follow-up rate among adolescents compared with patients ages 20–24 years ($P = .008$) and patients ages 25–39 years ($P = .001$).

During the chart review for adolescent patients, 14 of the 446 patients were missing data on covariates of interest, and those patients were excluded from the final analysis of factors related to follow-up among adolescents ($n = 432$). The follow-up rate among these adolescent patients was 226/432 (52.3%), which was not statistically different from all 446 adolescent patients in our study ($P = .88$). As shown in Table 1, most adolescent patients were African American and 18–19 years old.

Table 1
Demographic and Clinical Characteristics of Study Participants (N = 432)

	Overall		Attended Follow-Up (n = 226)		P
	n	(%)	n	(%)	
Age					
15-17 Years	153	35.4	85	55.6	.32
18-19 Years	279	64.6	141	50.5	
Race					
African American, nH	368	85.2	182	49.3	.02
Latina	50	11.6	34	68.0	
White/other, nH	14	3.2	10	71.4	
Education					
Less than high school	253	58.6	136	53.8	.20
High school graduate	153	35.4	73	47.7	
College or more	26	6.0	17	65.4	
Relationship status					
Lives with partner	25	5.8	15	60.0	.43
Single	407	94.2	211	51.8	
BMI					
Underweight	23	5.3	9	39.1	.39
Normal	220	50.9	117	53.2	
Overweight	115	26.6	58	50.4	
Obese	74	17.1	42	56.8	
Gestational age					
Less than 7 weeks	165	38.2	87	52.7	.93
7-8 weeks	139	32.2	71	51.1	
8 or more weeks	128	29.6	68	53.1	
Medicaid insurance					
Yes	274	63.3	147	53.7	.46
No	158	36.7	79	50.0	
Previous abortions					
0	368	85.2	198	53.8	.16
1	55	12.7	24	43.6	
2 or more	9	2.1	4	44.4	
Previous births					
0	360	83.3	196	54.4	.10
1	60	13.9	24	40.0	
2 or more	12	2.8	6	50.0	
Previous contraception use*					
Tier 1	11	2.5	4	36.4	.28
Tier 2	191	44.2	95	49.7	.34
Tier 3	303	70.1	157	51.8	.75
None	55	12.7	30	54.6	.7
Chicago resident					
Yes	321	74.3	172	53.4	.37
No	111	25.7	54	48.7	
Smoke					
Yes	15	3.5	10	66.7	.26
No	417	96.5	216	51.8	
Use alcohol					
Yes	26	6.0	16	61.5	.33
No	406	94.0	210	51.7	
Use drugs					
Yes	78	18.1	36	46.2	.23
No	354	81.9	190	53.7	
Use any alcohol/smoke/drugs					
Yes	101	23.4	50	49.5	.52
No	331	76.6	176	53.2	
Received STI testing					
Yes	342	79.2	182	53.2	.46
No	90	20.8	44	48.9	

BMI, body mass index; nH, non-Hispanic; STI, sexually transmitted infection.
* Not mutually exclusive.

Within this population, 342/432 (79.2%) received routine screening for sexually transmitted infections (STIs) *Chlamydia trachomatis* (CT) and *Neisseria gonorrhoeae* (GC) at the time of their abortion visit. Of those tested, 74/342 (21.6%) were found to have a positive STI test result (n = 63 CT only, n = 7 GC only, n = 4 CT and GC coinfection). Moreover, 43.7% had a body mass index that classified them as overweight or obese. A total of 18.1% reported illicit substance use at the time of nursing intake.

Table 2
Multivariable Log Binomial Regression Models to Identify Factors Associated with Follow-Up Adherence Among Adolescent Patients Ages 15-19 Years (N = 432)

Variable	Follow-Up (n = 226)		
	RR	95% CI	P
Age			
15-17 Years	1.12	0.91-1.38	.30
18-19 Years	1.0	Reference	
Race			
African-American, nH	0.76	0.66-0.89	.0004
Latina	1.10	0.93-1.29	.27
White/other, nH	1.0	Reference	
Education			
Less than high school	1.02	0.80-1.29	.89
High school graduate	1.0	Reference	
College or more	1.43	1.03-1.98	.03
Chicago resident			
Yes	1.07	0.97-1.19	.19
No	1.0	Reference	
Gestational age			
Less than 7 weeks	1.0	Reference	
7-8 weeks	0.95	0.77-1.17	.64
8 weeks or more	1.09	0.87-1.36	.44

CI, confidence interval; nH, non-Hispanic; RR, relative risk.

After statistical analysis, it was determined that African American female adolescents, who represented 85% of our population, were significantly less likely to follow-up compared with their Hispanic and non-Hispanic white counterparts (RR, 0.76; 95% CI, 0.66-0.89; Table 2). Additionally, those in college were significantly more likely to follow-up compared with those who reported lower levels of education (RR, 1.43; 95% CI, 1.03-1.98; Table 2). Of patients who did present for follow-up, failed medical abortion defined as documented persistent intrauterine pregnancy confirmed using ultrasound was 14/226 (3.2%).

When queried, only 2.5% reported ever using a tier 1 contraception option before presenting for an abortion and the average sexual debut reported by this patient population was 15.4 (SD, 1.3) years old. Among the adolescents who attended a follow-up appointment, 40/226 (18%) chose a tier 1 option for ongoing pregnancy prevention, and another 40/226 (18%) selected no contraception method at the time of their follow-up appointment (Fig. 1).

Discussion

Medical abortion is considered a safe method of early pregnancy termination. Compared with surgical abortion it can be a preferred option for patients who would like to avoid a surgical procedure; however, there is an increased risk of failure, which necessitates close follow-up, ideally within 1-2 weeks of medication administration.⁹ Failure to follow-up after a medical abortion in the case of failed medical abortion can lead to an ongoing, undesired pregnancy. Additionally, failure to follow-up can potentially prevent initiation of contraception after a completed pregnancy termination.

Although all patients receive counselling before medical abortion on the importance of follow-up after medical abortion, only 52% of adolescents in our study population followed-up within 1 month of their procedure. Compared with our older patients, adolescent patients had close to a 10% higher follow-up rate. In our clinical setting, women

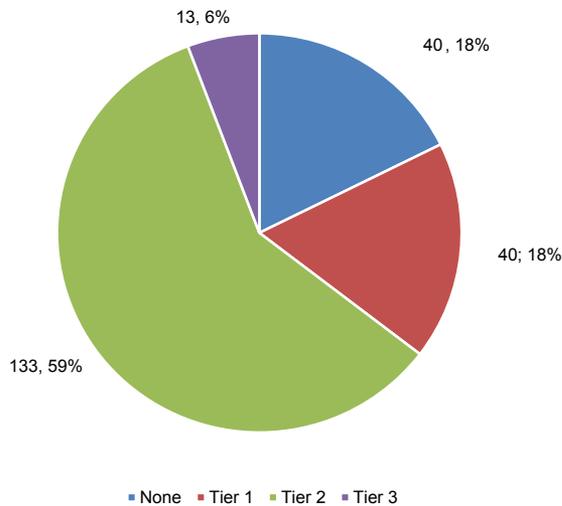


Fig. 1. Distribution (n, %) of contraceptive choices among 226 adolescent patients who attended follow-up appointments.

ages 25–39 had the lowest follow-up rate of 40.5%, indicating that evaluation of barriers related to follow-up care might be valuable for all patients, not just adolescents. African American adolescents, who represent most of our patient population, were significantly less likely to follow-up than their non-Hispanic white and Hispanic counterparts. Additionally, college students who underwent medical abortion were more likely to follow-up relative to adolescents who were still in high school. However, college students represented only 6% of our study population. Although both findings help understand patients who are more likely to follow-up, they represent a small percentage of our patient population, which limits clinical application.

The documented failure rate for medical abortion is between 2 and 6%.⁸ The failure rate documented in our population on the basis of chart review was 3.2%, which falls within the expected range. It must be acknowledged that this percentage could be falsely elevated if patients were more likely to follow-up when concerned that they did not successfully terminate their pregnancy. Additionally, our reported follow-up rate does not include patients who received follow-up with a different provider outside of the Cook County system. Almost 50% of our population was lost to follow-up and therefore their true rate of failure is unknown. Regardless, one must consider that if the group that did not follow-up had a similar rate of failed medical abortions, up to 14 patients could have unidentified ongoing pregnancies in the time period studied.

Because of the suspected high risk for unidentified ongoing pregnancy, efforts to improve follow-up, either in person or remotely, must be considered to improve abortion care, for all of our patients, including adults and adolescents. From our experience in talking to adolescent patients in the clinic setting regarding post-medication abortion follow-up care, barriers to follow-up in this population might include lack of transportation to the clinic in addition to the inability to miss work or school. Although ultrasound evaluation is considered the standard method for evaluation of completed pregnancy termination after medical termination, multiple studies have proven other

methods might have similar sensitivity. Self-assessment tools, telephone evaluation, and low-sensitivity urine pregnancy tests are other proposed methods. These do not require in-person follow-up, which can increase the rate of postabortion assessment for adults and adolescents.^{14,15} Alternative options for follow-up that does not require a clinic visit for every patient could be useful in populations such as these for whom follow-up rates are low. Future research to identify and systematically document barriers to follow-up care might also be warranted in clinical settings like our health system.

Another benefit of close follow-up is the ability to provide contraception to patients. In a secondary analysis of the National Survey of Family Growth, Haider et al showed that 6 months after medical abortion, only 6.6% of adolescents were using a long-acting reversible contraceptive method for contraception and 21.3% reported no contraception at all.¹⁶ Low contraception uptake after adolescent pregnancy, regardless of outcome, can contribute to high rates of rapid repeat pregnancy in this population.¹⁶

In our facility, contraception education and condoms are provided at the time of medical abortion at our facility, but contraceptive methods that require a prescription cannot be provided until the follow-up appointment. In our setting, contraception cannot be prescribed over the phone, requiring the patient to present to clinic to receive contraception methods. Despite the young average age of our study population, 15% reported at least 1 previous pregnancy, underscoring the importance of contraceptive management. Our low follow-up rate suggests that this patient population is also at risk for subsequent unplanned pregnancy because of poor initiation of effective contraception.

Existing data suggest patients who undergo medical abortion are less likely to receive a long-acting reversible contraceptive method for postabortion contraception, and also less likely to initiate contraception overall.¹⁷ Evidence published by Raymond et al suggests that insertion of etonogestrel implants with mifepristone did not increase medical abortion failure risk in patients randomized to immediate insertion compared with delayed insertion.¹⁸ Conversely, immediate administration of depot medroxyprogesterone acetate was associated with an increased risk for ongoing pregnancy.¹⁹ If methods for follow-up were adopted that did not require in-person evaluation, provision of contraception at the time of mifepristone administration, or over the phone when pregnancy completion is confirmed could increase the overall uptake of contraception.

Our data suggest a high rate of concurrent shared risk factors for other poor health outcomes exhibited in our population. Universal screening for sexually transmitted infections is part of abortion care at our institution. Within our study population, 18.4% of patients had CT, 2.0% had GC, and 1% were coinfecting with both, as diagnosed using polymerase chain reaction. In 2016, the Centers for Disease Control and Prevention reported that female adolescents age 5–19 years had a reported prevalence of CT and GC of 3.07% and 0.48%, respectively, reflecting the notably increased rate in our population.²⁰ Patients are notified of their test results via the phone if positive, however, many patients are not reached successfully and therefore might not complete

treatment or receive partner treatment. Importantly, although some patients might not return to our institution for medical abortion follow-up, they might present to other outside medical facilities for complications, STI partner treatment, contraception management, or routine post-abortion care, which was not captured in our chart review.

A large percentage of our study population also met criteria for overweight or obese body mass index. The prevalence of overweight or obese adolescent girls (defined as ages 12–19 years) was reported at 20.9% between 2015 and 2016 on the basis of data from the National Health and Nutrition Examination Survey.²¹ In our population who presented for medical abortion, 43.7% were classified as overweight or obese, more than double the reported percentage in the United States. In light of these shared risk factors, interventions to improve or modify health outcomes are indicated within this high-risk population. Patients who undergo medical abortion have less procedural time spent in our facility compared with surgical abortion patients, and therefore could be available for health promotion activities and education.

Although rates of adolescent pregnancy continue to decrease in the United States, the burden of unplanned pregnancy falls on minority women from low socioeconomic backgrounds such as this study population at Cook County Hospital. Abortion care might be one of the only times high-risk adolescents interface with the health care system. Understanding factors associated with adherence to follow-up can help promote the development of innovative and targeted strategies to ensure provision of safe and comprehensive abortion care to adolescent patients. These data suggest this population is at risk for complications of sexually transmitted infections and downstream consequences of obesity that is above the national average. In populations such as these, interventions aimed to modify health behaviors should be considered.

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