GENERAL GYNECOLOGY

Preventing repeat pregnancy in adolescents: is immediate postpartum insertion of the contraceptive implant cost effective?

Leo Han, MD; Stephanie B. Teal, MD, MPH; Jeanelle Sheeder, MSPH, PhD; Kristina Tocce, MD, MPH

OBJECTIVE: The objective of the study was to determine the cost-effectiveness of a hypothetical state-funded program offering immediate postpartum implant (IPI) insertion for adolescent mothers.

STUDY DESIGN: Participants in an adolescent prenatal-postnatal program were enrolled in a prospective observational study of IPI insertion (IPI group, n = 171) vs standard contraceptive initiation (comparison group, n = 225). Implant discontinuation, repeat pregnancies and pregnancy outcomes were determined. We compared the anticipated public expenditures for IPI recipients and comparisons at 6, 12, 24, and 36 months postpartum using the actual outcomes of this cohort and Colorado Medicaid reimbursement estimates. Costs were normalized to 1000 adolescents in each arm and included 1 year of well-baby care for delivered pregnancies.

RESULTS: At 6 months, the expenditures of the IPI group exceed the comparison group by $73,000. However, at 12, 24, and 36 months, publicly funded IPIs would result in a savings of more than $550,000, $2.5 million, and $4.5 million, respectively. For every dollar spent on the IPI program, $0.79, $3.54, and $6.50 would be saved at 12, 24, and 36 months. Expenditures between the IPI and comparison groups would be equal if the comparison group pregnancy rate was 13.8%, 18.6%, and 30.5% at 12, 24, and 36 months. Actual rates were 20.1%, 46.5%, and 83.7%.

CONCLUSION: Offering IPIs to adolescent mothers is cost effective. Payors that do not currently cover IPI should integrate these data into policy considerations.

Key words: adolescent, cost, implant, immediate contraception, long-acting reversible contraception, Medicaid, postpartum

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Unplanned pregnancies contribute substantial costs to the health care system; each pregnancy is estimated to cost more than $5000.[1] Immediate postpartum initiation of long-acting reversible contraception (LARC) has been shown to decrease rapid repeat pregnancy rates, defined as a pregnancy within 2 years after the index birth.[2,3]

Insertion of intrauterine devices (IUDs) within 10 minutes of placental delivery has also been shown to be cost effective.[4] Although contraceptive implants are easy to administer, highly effective, and well tolerated when placed immediately after delivery, the cost-effectiveness is unknown.[3] Placement of LARC methods at the time of delivery is rarely reimbursed by Medicaid programs. Typically, reimbursement for prenatal, delivery, and postpartum care is bundled into a global fee from which all expenditures are deducted. Because hospitals are not separately reimbursed for providing LARC, or for the cost of the devices, there is a strong disincentive to providing the services in the inpatient setting.[5]

Adolescents are at high risk for rapid repeat pregnancy: 12-49% of adolescent mothers are pregnant again within 1 year of delivery.[6] Rapid repeat adolescent pregnancy has significant costs to the health care system. Medical costs of adolescent pregnancy are estimated to be $1.5 billion per year to US taxpayers.[7] Adolescent pregnancy also has significant social implications.[8,9] Rapid repeat adolescent pregnancy increases the risk of preterm delivery, stillbirth, low birthweight, and low Apgar scores.[10] Furthermore, adolescent mothers who have 2 or more children within 5 years are more likely to rely on welfare, forgo their own education, and bear additional children.[11]

Adolescents are receptive to initiating LARC immediately postpartum,[12-14] but reimbursement policies limit this practice to the outpatient setting. A program attempting outpatient implant insertion within the first 2 weeks postpartum

From the Division of Family Planning, Department of Obstetrics and Gynecology, Anschutz Medical Campus, University of Colorado, Aurora, CO.

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Reprints: Leo Han MD, Division of Family Planning, Department of Obstetrics and Gynecology, Anschutz Medical Campus, University of Colorado, 12631 East 17th Ave., B198-2, Aurora, CO 80045. leo.han@ucdenver.edu.

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resulted in fewer adolescent patients receiving implant insertions than anticipated.[14] When implants were offered prior to discharge home from labor and delivery as part of a grant-funded initiative, the rate of repeat pregnancies at 12 months decreased more than 7-fold compared with any other contraceptive strategy, including outpatient placement of IUDs or implants.[3] Mean time to repeat pregnancy in adolescents was also decreased in Australian adolescents when immediate postpartum implant (IPI) insertion was provided.[13] One year continuation rates of the implant in this population are high (86-100%).[3,12]

Although IPIs reduce the risk of another pregnancy in the first year postpartum, the up-front cost of such a program is high. The aim of this study was to determine the cost-effectiveness of offering IPI insertion to adolescent mothers at 6, 12, 24, and 36 months postpartum. We hypothesized that despite high up-front costs, a Medicaid-funded IPI program would be cost effective and that cost savings would be recognized early in the program. To determine these costs, we examined reproductive outcomes of adolescents in a prenatal-postpartum care program who received postpartum subdermal contraception prior to hospital discharge vs adolescents who chose other contraceptive strategies after delivery.

Materials and Methods

In this prospective observational study, all adolescents who were attending the Colorado Adolescent Maternity Program (CAMP) and who delivered at the University of Colorado Hospital over the 18 month period of June 1, 2008, to Nov. 30, 2009, were eligible for inclusion in the study cohort. All of the patients expressed the desire to prevent pregnancy for at least 1 year after delivery.

Exclusion criteria included contraindications to etonogestrel use, relinquishing the child for adoption, stillbirth, being delivered at a different hospital, and having no postpartum visits at the CAMP. We chose to exclude women who did not take home infants because they are likely to experience different motivators to prevent or obtain another pregnancy than those who do.

CAMP is a comprehensive, multidisciplinary, adolescent-oriented program that provides prenatal, delivery, postnatal, and infant care to young women aged 13-22 years. The program emphasizes consistent contraceptive use and goal-oriented future planning regarding school completion, job training, and parenting. The importance of consistent contraceptive use is emphasized at prenatal and postpartum visits. Contraceptive counseling begins at the first prenatal visit and is discussed at most subsequent visits by the midwife and the case manager. Counseling occurs in both individual and group settings and is supported by printed materials. During the period of this study, providers emphasized that the subdermal implant could be received immediately after delivery as part of a grant-funded initiative.

Each patient in CAMP is encouraged to have a firm contraceptive plan by 32 weeks' gestation; however, group assignment was determined by whether the patient had an implant placed before hospital discharge. After delivery, patients continue care in the CAMP clinic at which the mothers and children receive follow-up care together. Adolescent mothers thus are seen more frequently than in traditional care models and have many opportunities to initiate contraception. Participants in CAMP provide informed consent for noninvasive procedures that include medical record review, surveys, and phone contact under an institutional review board–approved protocol that allows minors to consent for themselves.

During the period of this study, young women who were enrolled in CAMP who elected to have an immediate subdermal implant and who received this implant before hospital discharge were included in the IPI group. A few participants elected immediate placement but were unable to receive it because of a lack of provider availability; those participants had placement within 4 weeks after delivery and were included in the IPI group. Those who initiated any other contraceptive method according to standard clinical protocols were included in the comparison group.

The comparison group consisted of participants who chose no contraception, condoms, depot medroxyprogesterone acetate, and progestin-only pills initiated at any time after delivery, combined hormonal contraception (pills, patch, ring) started at any time 4 or more weeks after delivery, implant insertion at 4 or more weeks after delivery, and levonorgestrel-intrauterine system or copper-T 380A (IUD) insertion any time 6 or more weeks after delivery. Depot medroxyprogesterone acetate and IUDs were not available prior to hospital discharge during the study period. All participants remained in their initially assigned study groups, regardless of future contraceptive method discontinuation or change.

The manufacturer currently recommends insertion of the etonogestrel implant in lactating women after the fourth postpartum week.[15] All participants who elected to follow the immediate etonogestrel implant protocol were informed that this practice differs from the package insert recommendations.

All participant demographic and encounter-related variables are maintained in the Electronic Report on Adolescent Pregnancy.[16] Participants' electronic medical records were reviewed to determine contraceptive use, discontinuation of contraceptive methods, and pregnancy at various time points of interest. Participants with incomplete data were contacted by telephone. Up to 3 attempts were made. Participants who were reached by phone were administered a standard questionnaire that assesses birth control method continuation, pregnancy occurrences, and outcomes. All pregnancies that occurred within the 36-month follow-up period were included.

Cost-effectiveness was determined by calculating expenditures that would be encountered by a Colorado Medicaid-supported IPI program in the following way. For the IPI group, we included the cost of implant insertion, removal, and gynecological/obstetrical outcomes. For the comparison group, we included the cost of gynecological/obstetrical