



# Economic Analysis of LARC Programs

## The AMCHP Role

*The Association of Maternal & Child Health Programs (AMCHP) is a national resource, partner and advocate for state public health leaders and others working to improve the health of women, children, youth and families, including those with special health care needs.*

*AMCHP supports state maternal and child health (MCH) programs and provides national leadership on issues affecting women and children. We work with partners at the national, state and local levels to expand medical homes; provide and promote family-centered, community-based, coordinated care for children with special health care needs; and facilitate the development of community-based systems of services for children and their families.*



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## Introduction

Close to half of all pregnancies in the United States are unintended, which contribute significant costs to the health care system.<sup>1,2</sup> Extensive research has shown long-acting reversible contraception (LARC) can effectively reduce rates of unintended pregnancy, both for nulliparous women and women avoiding repeat pregnancy.<sup>1,3</sup> LARC typically has high upfront costs for the device and insertion, which can be a disincentive for Medicaid and private insurers to provide coverage, but several studies have shown cost savings can be seen early on to programs receiving reimbursement for LARC insertion expenses.<sup>1</sup> This brief attempts to summarize the types of cost analyses, previous study methodology, and the important steps associated with evaluating LARC programs that demonstrate a valuable return on investment (ROI).

## Comparing ROI and Cost Effective Analyses

Much of the current literature on LARC studies evaluate the cost effectiveness of interventions instead of the ROI to the programs. The articles referenced below evaluate the cost effectiveness of LARC programs by determining the costs to a hospital or organization for each unit of effectiveness accomplished through the implementation of a program. An ROI analysis shares common variables with a cost effective analysis, but an ROI analysis determines the amount of financial gain a hospital or organization can obtain from the investments it makes in a program. The differences are demonstrated by their ratio calculations.<sup>4</sup>

**ROI = Financial Gains/Improvement Investment Costs**

**CEA = Improvement Investment Costs/Effectiveness**

### Preventing Repeat Pregnancy in Adolescents: Is Immediate Postpartum Insertion of the Contraceptive Implant Cost Effective?<sup>1</sup>

**Methods:** This prospective observational study aimed to determine the cost effectiveness of immediate postpartum implant (IPI) insertion for a hypothetical state-funded program serving adolescent mothers. Study participants included adolescent women enrolled in the Colorado Adolescent Maternity Program (CAMP) who delivered within an 18-month period. Cost effectiveness was determined by calculating Medicaid expenditures associated with IPI services and the direct costs of repeat pregnancy.

**Results:** Repeat pregnancy rates were observed at six, 12, 24 and 36 months for the IPI and comparison groups and were significantly higher in the comparison group at each time period. Upfront costs to Medicaid are seen during the initial IPI insertion and six months after, but Medicaid cost savings is shown at 12 months and continuously increases thereafter. For every dollar spent on IPI insertion at 12, 24, and 36 months, \$0.78, \$3.54, and \$6.50 were saved.

**Considerations:** Costs of obstetrical complications, alternative contraceptive methods used by the comparison group, and the overall cost of CAMP services were not included. Potential bias is present through self-selection and the lower loss to follow-up rate in the comparison group over time. Generalizability may be limited to CAMP participants, and the cost-effectiveness of IPI programs may be less in an adult population.

## Economic Analysis of Contraceptives for Women.<sup>2</sup>

**Methods:** This study estimated the cost effectiveness of nine different contraceptives methods for women in the United States over a five-year period. Probability estimates and health outcomes for each contraceptive method were gathered from a comprehensive literature review, while prescription, device, procedure, and physician services costs were gathered from pharmaceutical and medical codebooks.

**Results:** The different contraceptive methods ranged in success rates from 84.5 percent to 99.7 percent. Over the five-year period, the three least costly methods were identified as the levonorgestrel (LNG)-20 intrauterine system, copper T 380A intrauterine device, and three-month injectable. The cost-effectiveness rankings did not change for levonorgestrel-containing intrauterine system (LNG-IUS) and copper T 380A IUD when failure rates were altered to exhibit perfect use.

**Considerations:** Costs for potential long-term adverse events were not included in the analysis. Estimates from previous literature were used to determine rates used in the analysis, which can decrease the accuracy and introduce bias. Efforts to address bias were made by consulting with experts to review the evidence tables and verify the accuracy of estimates chosen.

## Estimated Economic Impact of the Levonorgestrel Intrauterine System on Unintended Pregnancy in Active Duty Women.<sup>3</sup>

**Methods:** This study evaluated the effects of the LNG-IUS, a form of long-acting reversible contraception (LARC), on unintended pregnancy rates and their related costs among active duty U.S. military women. The number of active duty women and unintended pregnancy rates were gathered from U.S. Department of Defense reports and published literature. A range of the LNG-IUS usage rates and failure rates were used to calculate various cost savings. Direct costs for unintended pregnancies through vaginal delivery and cesarean delivery were estimated from a Marketscan analysis of delivery charges.

**Results:** The study used a combination of LNG-IUS failure rates (2.2 percent, 3.5 percent, and 5 percent) and usage rates (5 percent, 10 percent, and 25 percent) when calculating decreases in unintended pregnancy. Significant cost savings were demonstrated even at the highest failure and lowest usage rates. The LNG-IUS was found to be cost-effective across all usage rates even when the cost of the device was doubled as a way to account for additional costs like educational and counseling visits.

**Considerations:** Estimates from previous literature were used to determine the number of active duty women and the rates of failure and utilization of the LNG-IUS, which can decrease the accuracy of any statistical modeling study. Costs for insertion of the LNG-IUS were not included in the analysis. This study could potentially serve as a model for state Medicaid covered LARC insertion since U.S. military active duty women have access to no-cost contraception.

Current research literature for the economic evaluation of LARC programs lacks specific examples of return on investment analyses that calculate net financial gain from the provider perspective. In an effort to encourage the implementation of LARC program ROI analyses, AMCHP compiled the following steps to consider that can facilitate the process.

## Steps to Consider for a LARC ROI Analysis<sup>1,2,3,4</sup>

<b>Define the perspective and timeframe:</b>	The analysis should evaluate costs and a return from the payer perspective. A shorter timeframe, between 1 and 5 years, is typical for measuring costs and outcomes.
<b>Identify costs to include:</b>	Program costs like counseling, contraceptive methods, staff time, etc. and averted costs like miscarriages, ectopic pregnancies, deliveries, and infant medical care should be included.
<b>Identify outcomes to include:</b>	The number of unintended pregnancies for women with LARC as well as unintended pregnancies for women using other contraceptive methods should be included.
<b>Identify data sources and estimated rates:</b>	Use program data to determine population distributions for women with LARC and other contraceptive methods. Identify standard and adjusted failure rates for LARC and other contraceptive methods from scientific literature. Identify pregnancy outcome rates for miscarriages, ectopic pregnancies, and delivery methods.
<b>Calculate results:</b>	ROI = returns / program costs. Returns include the difference in averted costs based on failure and pregnancy outcome rates minus the program costs. Program costs include all associated costs for implementing the program.
<b>Message findings:</b>	Results should be shared with stakeholders, partners, administrators, board members, policy makers, community members, and others to advocate for or impact the coverage of LARC programs.

## References

- Han L, Teal SB, Sheeder J, et al. Preventing repeat pregnancy in adolescents: is immediate postpartum insertion of the contraceptive implant cost effective? *Am J Obstet Gynecol* 2014; 211:24.e1-7.
- Chiou C, Trussell J, Reyes E, Knight K, Wallace J, Udani J, Oda K, Borenstein J. Economic analysis of contraceptives for women. *Contraception* 2003; 68:3-10.
- Heitmann R, Mumford S, Hill M, Armstrong A. Estimated Economic Impact of the Levonorgestrel Intrauterine System on Unintended Pregnancy in Active Duty Women. *Military Medicine* 2014; 179, 10:1127.
- AHRQ Quality Indicators Toolkit for Hospitals: Improving Performance on the AHRQ Quality Indicators. November 2014. Agency for Healthcare Research and Quality, Rockville, MD. <http://www.ahrq.gov/professionals/systems/hospital/qitoolkit/index.html>.

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