CHANGES IN CONTRACEPTIVE METHOD UPTAKE WITH THE REMOVAL OF COST BARRIERS

by

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ABSTRACT

Unintended pregnancy is a persistent public health problem that has seen a recent decline in prevalence. The decline in unintended pregnancy rates is largely due to the increased use of highly effective reversible contraception (HER-C) methods such as intrauterine devices (IUDs) and implants. With relatively few women selecting HER-C methods in the United States, research has focused on reducing cost barriers to accessing these methods.

The Highly Effective Reversible Contraceptive Initiative (HER Salt Lake) is a prospective cohort study examining the social and economic impact of removing out-of-pocket costs for contraceptive methods provided at federally-funded Title X family planning clinics in Salt Lake County, Utah. This retrospective medical record review assesses changes in contraceptive method uptake between the control period, with standard of care payment schedules, and the intervention period, when all out-of-pocket contraceptive costs were removed for eligible patients.

This analysis focuses on self-pay patients ages 16–45 initiating a new contraceptive method. Demographic information along with service descriptions and prescription information was obtained from the Planned Parenthood electronic medical record system. Contraceptive method distribution and demographics were compared, logistic regression models were used to identify associations with selecting a HER-C method during the intervention period, and multinomial regression models were used to

find the selection probability of different types of HER-C methods available compared to non-HER-C methods.

The unit of analysis is the number of new contraceptive visits (prescriptions refills were excluded). The sample included 6,021 clinic encounters, the control period accounted for 2,922 and the intervention period 3,099. In the control period, 16% chose a HER-C method compared to 26% in the intervention period. During the intervention period, the odds of selecting a HER-C method were 1.8 times more likely compared to non-HER-C methods holding covariates (age, race/ethnicity, pregnancy history, county of residence, and clinic location) constant. The implant saw the largest proportional increase in uptake from 4% to 11%.

This study contributes to knowledge surrounding self-pay patients who present to Title X funded clinics. This analysis has effectively demonstrated a desire for HER-C methods. Continued efforts are needed to promote access to and increase awareness of HER-C methods.

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CHAPTER 1

INTRODUCTION

Unplanned pregnancy research has mostly focused on preventing the negative outcomes associated with such births. Research has shown that women who have unintended pregnancies that result in birth are at an increased risk of physical and mental health problems and initiate prenatal healthcare later than otherwise comparable women having planned births (Kost & Lindberg, 2015). In addition to adverse health outcomes, unplanned pregnancies impose a societal burden as these women are less likely to achieve their economic and educational potential (Darroch, Sedgh, & Ball, 2011). There is also a societal burden associated with unintended pregnancies as public insurance programs pay for a large portion of all births and maternal medical care (Sonfield, Kost, Gold, & Finer, 2011).

The unintended pregnancy rate is a commonly-used public health indicator of the quality of family planning services. For many decades, half of all pregnancies in the United States were unintended, the highest rate among developed countries (Singh, Sedgh, & Hussain, 2010). After many years without progress, there is now evidence of improvement. The rate of unintended pregnancy in the United States declined from 51% in 2008 to 45% in 2011 (Finer & Zolna, 2016).

There are multiple factors associated with why unintended pregnancies rates have

not declined until recently. These include barriers to contraception such as lack of patient and provider knowledge, cost, and fear of pain or side effects (Kavanaugh, Frohwirth, Jerman, Popkin, & Ethier, 2013). In addition to the recent decline in unintended pregnancy rates, there were also developments in newer and more effective contraceptive methods. As barriers to contraceptive methods break down and new methods are developed, providers need continuing education to ensure accurate knowledge and effective communication with patients (Rowlands, 2009).

The decline in unintended pregnancy rates is largely due to the recent increase in use of highly effective, reversible contraception (HER-C) methods, such as intrauterine devides (IUDs) and implants). These contraceptive methods not only have a very low failure rate, but also a high continuation rate (Peipert et al., 2011; Trussell & Guthrie, 2007). The American Congress of Obstetrics and Gynecology recommend the use of IUDs and implants as the first-line option for reducing the unintended pregnancy rate (Committee on Gynecologic Practice Long-Acting Reversible Contraception Working Group, 2015).

Consistent and proper use of contraception is essential to preventing unplanned pregnancies (Sonfield, Hasstedt, & Gold, 2014). Yet, the most commonly used contraceptive method in the United States is the oral contraceptive pill which requires daily use (Mosher & Jones, 2010). Oral contraceptives have a typical-use failure rate of 8% (Hatcher et al., 2007). Most women use a contraceptive method with adherence requirements and the majority of pregnancies result from incorrect or inconsistent method use, with only 5% resulting from method failure (Frost & Darroch, 2008). Over time, IUDs and implants are more than 20 times more effective at preventing pregnancy

compared to combined hormonal methods (e.g., birth control pills, patches, and vaginal rings; Winner et al., 2012). In the United States, use of HER-C methods increased significantly between 2007 (3.7%) and 2009 (8.5%) and continued to grow to 11.6% in 2012 in popularity (Kavanaugh, Jerman, & Finer, 2015). However, there may still be opportunities for growth, particularly in environments with limited insurance coverage where a significant portion of the population is paying out-of-pocket for services.

This study assesses the cost barrier for women obtaining contraception and if removing out-of-pocket costs for all reversible contraceptive methods changes the contraceptive method mix and uptake of the most effective methods.

1.1 Literature Review

Family planning advocates have long recognized an unmet need for more widespread contraception access (Bongaarts & Bruce, 1995). This unmet need for contraception is used as an indicator of maternal health and can be interpreted as a lack of access to contraceptive supplies (Mills, Bos, & Suzuki, 2010). Although access is crucial, it is not always the reason why women do not use contraception to avoid pregnancy. Women have identified many other reasons besides overall access that impede utilization of family planning resources.

Some women cite lack of awareness, concerns about pain of insertion, or side effects of IUDs and implants as reasons why they chose less effective contraceptive methods (Hubacher, Spector, Monteith, Chen, & Hart, 2015). A previous study identified that males are more likely to have stronger views than women that birth control interferes with sexual pleasure, which present a partner-related barrier into contraceptive use (Pesa,

Turner, & Mathews, 2001). Still, the most widely studied barriers to any form of contraception seem to focus on lack of information, limited availability, and cost (Forrest, 1996; Trussell et al., 2009). Combatting these barriers will likely include patient-centered initiatives to make more contraceptive options available. Additionally, improved understanding of method acceptability, better education, and counseling both during and after method selection may also improve patient experience and support reproductive life goals and community health.

While individual and community factors impact women's access to services and contraception, simply making contraceptives available does not ensure that women will use them, as cost associated with contraception is an element that limits overall access (Frost, Singh, & Finer, 2007). Often times, the highest unmet need for contraception is found among women who are poor (Singh & Darroch, 2012). In the United States, the most effective contraceptive methods are also the costliest to access (Kavanaugh et al., 2015). Estimates of the cost of contraception vary, but HER-C methods have a higher up-front cost than traditional contraceptive methods (Trussell et al., 2009). HER-C methods can cost up to $600 out-of-pocket, whereas pills are $18 a month.

HER-C methods have a low failure rate, similar to sterilization (Meirik, Farley, & Sivin, 2001), but the high initial cost and removal cost may be a significant barrier for women to obtain these "set it and forget it" methods, especially among young and/or poor women. Poverty is an important predictor of unintended pregnancy, as women with incomes below the federal poverty level have over a five-fold increased risk of unintended pregnancy relative to women with higher incomes (Finer & Zolna, 2016). Cost of contraceptive methods has been shown to be an important motivator for

low-income women when choosing a method (Secura, Allsworth, Madden, Mullersman, & Peipert, 2010). A survey of 18–30 year old women found that both expense of method and insurance coverage are concerns when choosing a contraceptive method (Spies, Askelson, Gelman, & Losch, 2010).

The Affordable Care Act (ACA) has reduced the cost barriers to access HER-C methods. Under the ACA, private insurance plans are required to include coverage of all Food and Drug Administration-approved contraceptive methods without deductibles or copays (U.S. Department of Health and Human Services, 2012). The federal contraceptive coverage requirement has already initiated a decline on the proportion of women having to pay out-of-pocket for the hormonal IUD (Bearak, Finer, Jerman, & Kavanaugh, 2016). However, women may still be (partially or fully) monetarily responsible as a result of exceptions to the ACA mandate. Specifically, some older insurance plans have been allowed to continue their contraceptive exclusions (Blumenthal & Collins, 2014) and the ACA also exempts contraceptive coverage for health insurance plans provided by religious employers (Melling, 2015). Women wanting an IUD may face a higher financial burden if their insurance plan has deductibles or co-pays for insertion and removal of a HER-C device (Finer, Sonfield, & Jones, 2014). While insurance companies may be adhering to the law, some women with private insurance may still have to pay the full cost for contraception (Bearak et al., 2016). This variance in insurance coverage can create uncertainty and limitations for individuals seeking contraception.

Title X family planning clinics generally provide services to low income, uninsured women. These services help women achieve reproductive goals and also save

public funds. Research has shown that preventing unintended pregnancy is cost-effective. Data from the Guttmacher Institute revealed that prevention of unplanned pregnancies through public funding for contraception yielded a public savings of $10.5 billion for 2010 (Frost, Zolna, & Frohwirth, 2013). Medical costs associated with unintended pregnancies include prenatal care, potential for pregnancy complications, and deliveries. Avoiding unintended pregnancies saves taxpayers $4 for every $1 spent on family planning services (Gold, Sonfield, Richards, & Frost, 2009). In terms of HER-C methods, for every $1 spent, $7 was saved (Foster et al., 2009).

To continue to make progress in family planning services, it is essential to build and expand from previously demonstrated community projects. Evaluations of projects in Missouri, Colorado, and Iowa found that supporting use of HER-C methods through contraceptive counseling and removing cost barriers reduced unintended pregnancy and abortion rates (Biggs, Rocca, Brindis, Hirsch, & Grossman, 2015; Ricketts, Klingler, & Schwalberg, 2014; Secura et al., 2010).

The Iowa Initiative in 2007 involved implementing advocacy, education and reducing cost barriers with the intended goal of increasing family planning services locally. The Iowa Initiative also involved a public marketing campaign and provided free IUDs and implants. Through these efforts, the percentage of Iowa Title X reproductive-aged clients using HER-C methods increased from 1% to 15% (Biggs et al., 2015).

The CHOICE Project in St. Louis, Missouri, provided free contraception, and developed a standard educational script informing women of the most effective methods. The CHOICE project, while offering all methods of contraception, found that 75% of participants chose a HER-C method at enrollment (Birgisson, Zhao, Secura, Madden, &

Peipert, 2015). The rate of unintended teen pregnancy in this study was more than four times lower than the national rate (Secura et al., 2010).

The Colorado Family Planning Initiative (CFPI) was introduced in 2009. This initiative used private funds to provide HER-C methods and the contraceptive ring at local Title X clinics. The CFPI, in addition to covering these device costs, provided staff and provider training for counseling techniques and insertion procedures. The state of Colorado saw an overall decline in teen pregnancies following the start of the CFPI. The teen birth rate for 15–19 year olds declined 26% from 2009 to 2011 (Ricketts et al., 2014). Following these demonstrated health and cost benefits, public health advocates in Colorado urged legislative funding for these initiatives and ultimately received $2.5 million in 2016 (Bower, Japinga, Sabin, & Ward, 2016).

These earlier studies provide some guidance for the current investigation. These previous studies provide evidence that support the hypothesis that a cost barrier does exist and impact method selection. A sampling limitation with the CHOICE project is that partial recruitment was conducted at abortion clinics. Research has shown that women faced with an unplanned pregnancy are more motivated to use more effective forms of contraception than otherwise comparable women who are not facing an unplanned pregnancy (Rose, Cooper, Baker, & Lawton, 2011). Another recruitment drawback for these prior projects was that their community promotion tactics included newspaper reports and flyers. This targeted promotion had the potential to unwittingly attract women with a preconceived interest in HER-C methods; artificially raising the use of HER-C methods among women cared for at participating clinics.

This current observational study will look at a cohort of eligible women seeking

contraception at Title X funded family planning clinics. This study will build on previous research and assess general contraceptive method selection specifically as it relates to the cost barrier in a more natural setting while assessing individual level data from electronic medical records. The protocol used specified that all qualifying women seeking a new contraceptive method at participating clinics would have the ability to receive their desired method for free. While some previous initiatives focused on providing specifically HER-C methods for free, this project allows for selection of all contraceptive methods that are available at the participating clinics. Previous projects assessed HER-C method uptake at enrollment, whereas this project has a quasi-experimental design allowing for analysis of how removal of the cost barrier impacts the contraceptive method selection for uninsured patients.

1.2 Study Aim and Hypothesis

This analysis compares proportions of contraceptive method choices at three Title X funded Planned Parenthood Association of Utah (PPAU) clinics among qualifying uninsured women during two six-month periods; a baseline standard of care period and then during an intervention period, when the cost for all contraceptive methods provided at the participating clinics is removed. When the cost barrier is removed, women are hypothesized to be more likely to choose a highly effective method of birth control, holding other factors constant.

CHAPTER 2

METHODS AND MATERIALS

In states that have not expanded Medicaid coverage under the ACA, women with limited resources still face significant cost obstacles to obtaining these highly effective methods. In 2014, the Utah legislature voted against Medicaid expansion under the ACA. One of the largest providers of contraceptive services in Utah is PPAU. In 2015, PPAU served 46,082 patients, and 86% of those patients were uninsured (Planned Parenthood Association of Utah Annual Report, 2015). PPAU provides reproductive health services and contraception through Title X funding. PPAU is able to use a sliding scale to meet a patient's financial needs within the budgetary limits of the organization (see Appendix A). Due to a high level of need in Utah, PPAU subsidizes reproductive health care in Utah with additional funding. This additional funding is collected through charging patient fees, donations, and private fundraising. In some cases, patients desire methods they are unable to afford and PPAU is unable to provide them at a reduced cost, which has resulted in an unmet demand. The methods that PPAU are unable to provide on a sliding-fee scale are the Mirena IUD and Nexplanon implant (Appendix B), which are some of the most use-effective birth control methods. Due to this limitation in public funds for family planning services, low-income women in Salt Lake County likely face cost barriers to access these most effective forms of contraception.

The Highly Effective Reversible Contraception Initiative Salt Lake (HER Salt Lake) is a collaborative research study between the University of Utah and PPAU in Salt Lake County. This ongoing prospective cohort study examines the social and economic impact of removing cost barriers for all FDA approved reversible methods of contraception. The University of Utah's Institutional Review Board approved the HER Salt Lake study (IRB #65794).

The University of Utah's Family Planning Research Group and PPAU implemented a control period and an intervention period. During the 6-month control period, women who came to the clinics received standard care and faced PPAU's standard costs (with some contraceptive options having a sliding fee based on income while others did not). Cost barriers for all contraceptive methods for clinical care were removed during the intervention period.

2.1 Time Frame for Study Periods

The baseline six month control period was 9/28/2015 to 3/27/2016. The intervention period followed during the next six months from 3/28/2016 to 9/25/2016, when all qualifying women received standard care and the ability to obtain their contraceptive method of choice at no cost (Figure 1).

2.2 Eligibility Requirements

For the purposes of this study, the sample population included qualifying, self-pay contraception visits at any of the three Title X funded PPAU clinics in Salt Lake County. Patients were included in the sample if they were: (a) between the ages of 16–45 during

the study period, (b) a new patient to PPAU or an existing patient initiating a new contraceptive method (as both new patients and contraceptive-focused visits received the client-centered contraceptive counseling), (c) not relying on self or partner sterilization, and (d) were self-pay patients, as this is a proxy measure for having no private insurance or Medicaid coverage.

2.3 Contraceptive Counseling

Participating health clinics utilized client-centered contraceptive counseling based on the shared-decision making model and qualitative findings of Planned Parenthood Federation of America (Dehlendorf, Diedrich, Drey, Postone, & Steinauer, 2010; Dehlendorf, Krajewski, & Borrero, 2014; Makoul & Clayman, 2006). This counseling approach includes a standardized handout emphasizing method effectiveness (Appendix C) and ease of use, as well as semistructured open-ended questions. This script is designed to educate women about the most effective methods, emphasize accurate use, and educate patients on how best to avoid contraceptive gaps if switching methods (Appendix D). This conversation occurs at all nine PPAU clinics in the state and with all patients seeking contraception. PPAU clinic staff received extensive training for the contraceptive counseling approach in August 2015, prior to the initiation of the study control period. The contraceptive counseling has been incorporated with PPAU's new staff training and orientation to assure all staff members are trained and implementation continues.

2.4 Data Collection Tool: Electronic Medical Records

Patients' charts were reviewed from PPAU's Electronic Patient Management (EPM) and Electronic Health Records (EHR). The EHR system includes demographic information, as well as medical histories, including sexual and reproductive health histories. The EPM system includes billing information applicable to identifying patients' chosen contraception methods. The final data pull occurred after the completion of the intervention period. The dataset used in the current analysis included every visit from participating clinics (excluding emergency contraception visits and birth control supply sales) during the control and intervention period.

2.5 Clinic Encounter Qualification Algorithm

An algorithm was created to identify qualifying clinic encounters for statistical analysis (Figure 2). A report was generated from PPAU's HER and EPM that included all clinic encounters during the study periods (N = 49,588 observations). The clinics used in the analysis are the highest serving clinics in Utah located in Salt Lake County. Clinic encounters were excluded from the sample if the subject was not within the age range, was using insurance, or if the encounter did not have a qualifying service description code (N = 16,684 observations). PPAU clinical staff flagged all subjects in the medical record system during the study periods as either: "Qualified" or "Did Not Qualify." Clinic encounters were included in the sample if prospective marking from clinical staff stated qualification (this was highly correlated with the naive assessment using aforementioned algorithm). In conjunction with the assigned study status for each patient, billing visit codes identified qualifying clinic visits for the analysis as well as

written prescriptions (Appendix E). Due to using billing prescription codes to verify eligibility, condoms were not included in this analysis because PPAU does not document this in the medical billing system. Subjects selecting a diaphragm or emergency contraception and those with no method were excluded from the sample (N = 1,321 observations).

In the case of subjects having multiple contraceptive methods listed at one encounter (e.g., pills and an IUD), preference was defaulted to the most effective method to produce only one primary method for each clinic encounter. For subjects having multiple clinic encounters during the same period, while receiving the same contraceptive method (i.e., refilling pill/patch/ring/DMPA prescription), the method was only counted once per period (N = 9,457 observations). The unit of analysis for method uptake is a new contraceptive visit (prescriptions refills, IUD reinsertions after expulsions, and follow up DMPA injection visits were excluded). Data cleaning was done as a first step to detect missing or invalid variables. PPAU has a number of "dummy" or "test patients" in the medical record system that do not reflect any individual patient; the list of these medical records numbers were obtained from administrative staff prior to analysis and these observations were excluded from the sample.

2.6 Variable Specification

Definitions for the variables and coding used in the empirical work appear in Table 1.

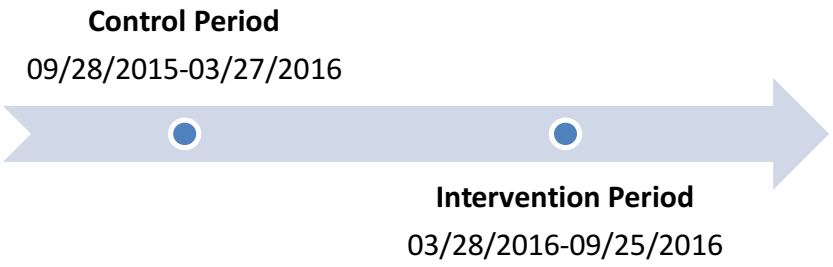

Figure 1: Timeline of Study Periods

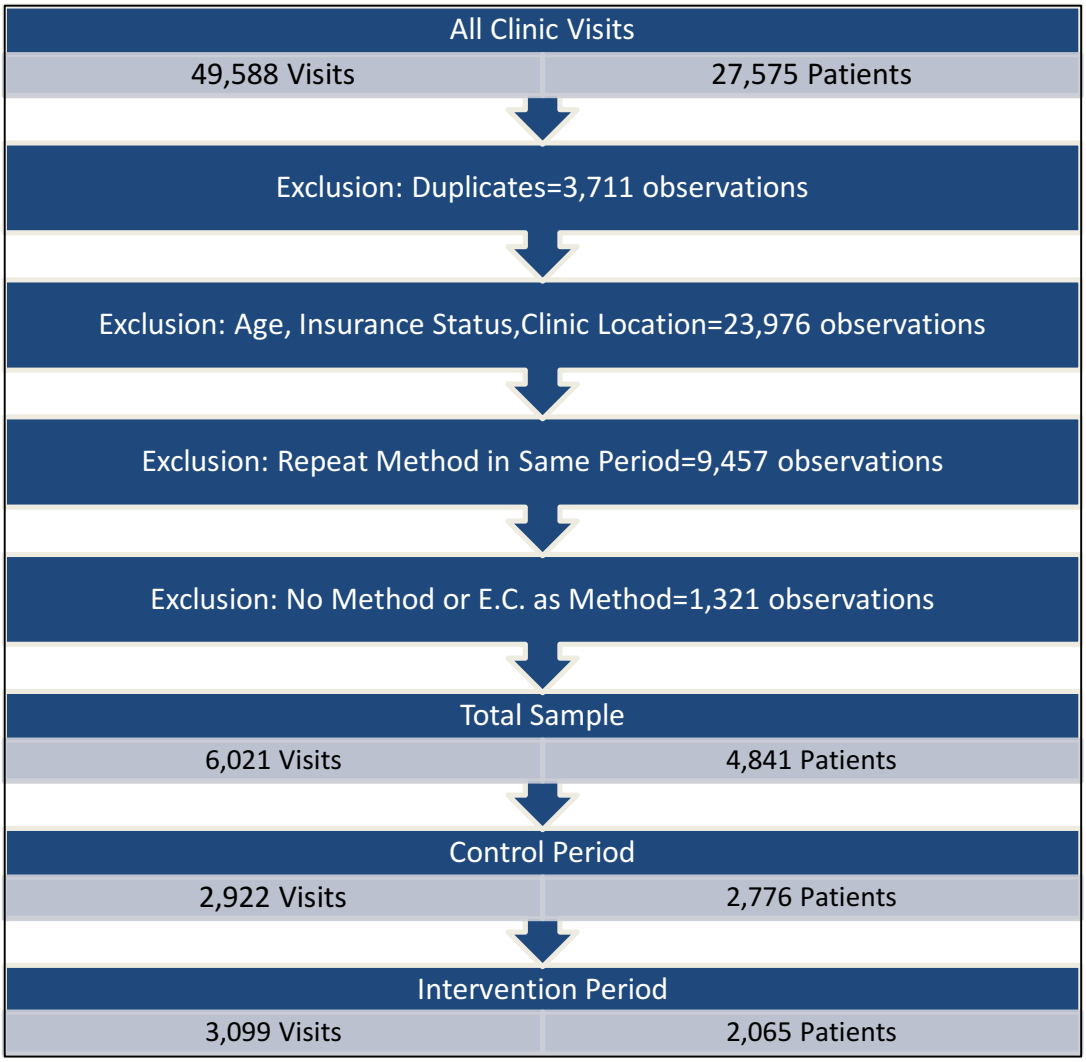

Figure 2. Clinic Encounter Inclusion/Exclusion Flow Chart

Table 1. Variable Definitions and Coding

Variable	Description	Coding
Period	Clinic encounter occurring in either: Control or Intervention period	Control (0); Intervention (1)
Poverty Status	Calculations based on family size and family income in relation to Federal Poverty Status %	< 100% FPL (0); > 100% FPL(1)
Age	Age of subject at time of clinic encounter	< 18(0); 18–24(1); 25–34(2); 35+(3)
Ever Been Pregnant	Subject ever reported a prior pregnancy	No(0) or Yes(1)
Salt Lake County Resident	County of residence	Yes(0) or No(1)
Race/Ethnicity	Ethnicity of subject	White non-Hispanic(1); Hispanic(2) or Other(3)
Clinic Location	Clinic location that the clinic encounter occurred at	West Valley, Salt Lake or South Jordan
Contraceptive Method	Contraceptive method types	Cu IUD: (Copper IUD) DMPA: (Depo Shot) ENG Implant: (Implant) LNG IUD: (Hormonal IUD) Pill/ Patch/Ring
HER-C Method *Dependent Variable	Contraceptive methods grouped into two categories: HER-C (Cu IUD, ENG Implant, LNG IUD) and non-HER-C (Pill, Patch, Ring, Depo shot)	non-HER-C(0); HER-C (1)

CHAPTER 3

ANALYSIS

3.1 Statistical Analyses

First, demographic characteristics are compared by which period the clinic visit fell within (control or intervention).Then, demographics are compared by whether or not subjects selected a HER-C or non-HER-C method of contraception. Comparisons were made on the bivariate level using chi-square and standard y-tests. Demographic differences could occur between the two study periods, as this study lacked random assignment. The regression analysis will include all covariates to control for potential differences in demographics.

Logistic regression models are used to find an association between selecting a HER-C method during either the control or the intervention period while controlling for covariates. Unadjusted logistic regression analysis was performed on each of the covariates (age, living in Salt Lake County, race/ethnicity, pregnancy history, clinic location, and study period) and the dependent variable (selecting a HER-C method) prior to estimating the final multivariate model. Poverty status was excluded from the analyses due to 99% of the sample falling <100% Federal Poverty Line (FPL). Robust standard errors were using to account for the fact that individual patients may have multiple clinic visits. These models show no evidence of multicollinearity as all variance inflation factor

values fall within normal range.

Multinomial logistic regression was performed to further analyze the different types of contraceptives available using robust standard errors to adjust for multiple observations from the same patient. HER-C methods were isolated for the analysis; the copper IUD, the hormonal IUD the implant. The comparison group for the model was women choosing the pill/patch/ring or the DMPA shot. All data analysis was performed using STATA version 14, using a significant level of <0.05 and CI of 95% and robust standard errors.

CHAPTER 4

RESULTS

4.1 Descriptive Results

Demographics for the sample were compared across the control and the intervention periods (Table 2). No statistically significant differences were observed for race/ethnicity, poverty status, or county of residence. White, non-Hispanic women compromise the majority of participants (56%), with 99% of subjects being below 100% Federal Poverty Level (FPL) and 79% of the sample residing in Salt Lake County. There were no significant differences by location between the two periods; West Valley remained the highest volume clinic accounting for 49% of all clinic encounters during the two periods. Overall, 52% of the sample was between the ages of 18–24 and 40% reported having at least one prior pregnancy. After the intervention, a statistically significant change in the age composition is observed with a decrease in the percent of subjects under the age of 18 (7% to 4%) and an increase in the percent of subjects between the ages of 18–24 (50% to 54%).

Demographic differences are noted between the control and the intervention cohort, the most significant being age. We could not randomize and create comparable cohorts in this study design. Multivariate models were used to control for numerous potiential confounding variables.

For overall method selection during the control period, 16% of the sample chose a HER-C method compared to 26% in the intervention period ($p = < 0.001$; Table 3). The implant had the largest proportional increase from 4% in the control period to 11% after the intervention when the cost barrier was removed.Although the pill/patch/ring remained popular choices in both periods, there was a decrease from 55% in the control period to 48% after the invention ($p = < 0.001$). Use of the DMPA shot decreased in usage after the cost barrier was removed, 30% to 26% ($p = < 0.001$).

When comparing covariates based on whether or not a woman chose a HER-C method, there was a statistically significant difference for age and pregnancy history (Table 4). Of the clinic encounters where a non-HER-C method was selected, 60% were 24 years of age or younger, whereas 52% selecting a HER-C method were 25 years of age or older ($p = < 0.001$). Clinic location was associated with method selection, as 82% of the women seen at the South Jordan clinic chose a non-HER-C method compared to only 18% selecting a HER-C method over both periods. Pregnancy history also seemed to be associated with selecting a HER-C method, as 53% of women selecting a HER-C method reported at least one prior pregnancy ($p = < 0.001$).

4.2 Analytical Results

The multiple logistics regression model specification was statistically significant (Table 5). The odds of a subject selecting a HER-C method was 1.86 times more likely during the intervention period compared to the control period ($OR = 1.857$ with CI 95% [1.632, 2.112]). Subjects between the ages of 25–34 were 1.19 times more likely to select a HER-C method and subjects under the age of 18 were less likely to select a HER-C

method compared to the referent group (age 18–24). Subjects with at least one reported prior pregnancy were 1.55 times more likely to select a HER-C method compared to subjects who were nulliparous. South Jordan clinic encounters were less likely to select a HER-C method compared to West Valley ($p = < 0.05$). The strongest predictor of selecting a HER-C method was presenting to a clinic during the intervention period compared to the control period.

In the multinomial regression model, the relative risk of selecting an implant was 3.18 times more likely than selecting a pill/patch/ring during the intervention period when all other covariates were held constant (Table 6). Selecting the hormonal IUD or implant was more likely during the intervention period compared to the pill/patch/ring while holding all covariates constant. Subjects aged 25–34 were more likely than referent group (18–24) to select a copper IUD compared to the pill/patch/ring ($p = < 0.001$). Selecting the DMPA shot during the intervention period compared to the pill/patch/ring was not statistically significant. Subjects identifying as Hispanic, non-White were more likely than White, non-Hispanic women to select an implant compared to pill/patch/rings ($p = < 0.05$). Having a prior pregnancy was also a predictor for women selecting all HER-C methods compared to pill/patch/ring.

A sensitivity analysis was conducted for a subcohort. In this analysis, all clinic visit encounters were removed one month before the intervention period, and one month after the initiation to account for potential overlap during the transition of the two study periods. The subcohort demographics were similar to the primary cohort. Confidence intervals were overlapping and there were no significant differences. The effects of this sensitivity analysis are similar in magnitude and effect for the primary analytic cohort,

demonstrating that the analysis was robust, suggesting little, if any, contamination across the control and intervention periods.

Table 2. Individual Patient Demographic Characteristics by Period

(N = 4,481)

	Control Period		Intervention Period		Total	
	N	%	*N*	%	*N*	%
Age (years)						
<18	181	7%	75	4%	256	5%
18–24	1,396	50%	1,119	54%	2,515	52%
25–34	901	32%	643	31%	1,544	32%
35+	298	11%	228	11%	526	11%
χ^2 (3) = 22.8951 Pr = 0.000						
Living in Salt Lake County						
Yes	2,201	79%	1,613	78%	3,814	79%
χ^2 (1) = 0.9787 Pr = 0.323						
Race/Ethnicity						
White, non-Hispanic	1,554	56%	1,167	57%	2,721	56%
Hispanic	948	34%	647	31%	1,595	33%
Other	274	10%	251	12%	525	11%
χ^2 (2) = 8.6135 Pr = 0.013						
Ever Been Pregnant Before						
No	1,687	61%	1,212	59%	2,899	60%
Yes	1,089	39%	853	41%	1,942	40%
χ^2 (2) = 2.1293 Pr = 0.145						

Table 3. Contraceptive Method Distribution by Period

(N = 6,021)

	Control Period		Intervention Period		Total	
	N	%	*N*	%	*N*	%
Clinic Location						
Salt Lake Clinic	1,003	34%	999	32%	2,002	33%
South Jordan Clinic	507	17%	538	17%	1,045	17%
West Valley Clinic	1,412	48%	1,562	50%	2,974	49%
χ^2 (2) = 3.2927 Pr = 0.193						
Contraceptive Method						
Cu IUD	146	5%	173	6%	319	5%
DMPA	867	30%	810	26%	1,677	28%
ENG Implant	120	4%	356	11%	476	8%
LNG IUD	190	7%	269	9%	459	8%
Pill/Patch/Ring	1,599	55%	1,491	48%	3,090	51%
χ^2 (5) = 133.5149 Pr = 0.000						
HER-C Method						
No	2,466	84%	2,301	74%	4,767	79%
Yes	456	16%	798	26%	1,254	21%
χ^2 (1) = 93.8617 Pr = 0.000						
Total	2,922	49%	3,099	51%	6,021	

Table 4. Individual Patient Demographic Characteristics by Selecting non-HER-C versus HER-C Method

(N = 4,841)

	Non HER-C		HER-C		Total	
	N	%	*N*	%	*N*	%
Age (years)						
<18	234	6%	22	2%	256	5%
18–24	2,106	54%	409	45%	2,515	52%
25–34	1,192	30%	352	38%	1,544	32%
35+	394	10%	132	14%	526	11%
χ^2 (3) = 57.6276 Pr = 0.000						
Living in Salt Lake County						
Yes	3,119	79%	695	76%	3,814	79%
χ^2 (1) = 6.8892 Pr = 0.032						
Race/Ethnicity						
White, non-Hispanic	2,242	57%	479	52%	2,721	56%
Hispanic	1,269	32%	326	36%	1,595	33%
Other	415	11%	110	12%	525	11%
χ^2 (2) = 6.8892 Pr = 0.032						
Ever Been Pregnant Before						
No	2,467	63%	432	47%	2,899	60%
Yes	1,459	37%	483	53%	1,942	40%
χ^2 (1) = 75.4075 Pr = 0.000						

Table 5. Logistic Regression Model Table

(N = 6,021)

	Model 1 Unadjusted	CI 95%	Model 2 Adjusted	CI 95%
Age				
<18	0.452***	[0.301,0.679]	0.550**	[0.363,0.831]
18–24	1	[1,1]	1	[1,1]
25–34	1.398***	[1.219,1.603]	1.191*	[1.021,1.288]
35+	1.479***	[1.221,1.804]	1.142	[0.915,1.426]
Race/Ethnicity				
White, non-Hispanic	1	[1,1]	1	[1,1]
Hispanic	1.61*	[1.015,1.327]	0.976	[0.844,1.128]
Other	1.101	[0.895,1.355]	0.998	[0.807,1.235]
Living in Salt Lake County				
No	1	[1,1]	1	[1,1]
Yes	0.848*	[0.729,0.985]	0.834**	[0.715,0.974]
Ever Been Pregnant Before				
No	1	[1,1]	1	[1,1]
Yes	1.725***	[1.522,1.956]	1.548***	[1.327,1.806]
Period				
Control	1	[1,1]	1	[1,1]
Intervention	1.875***	[1.650,2.132]	1.857***	[1.632,2.112]
Clinic Location				
West Valley	1	[1,1]	1	[1,1]
Salt Lake	0.904	[0.787,1.038]	1.053	[0.906,1.224]
South Jordan	0.709***	[0.519,0.852]	0.788*	[0.651,0.953]

Notes: * $p < 0.05$
** $p < 0.01$
***$p < 0.001$

Table 6. Multinomial Logistic Regression Table

(N = 6,021)

a. DMPA Shot

	Model 1 Unadjusted	CI 95%	Model 2 Adjusted	CI 95%
Age				
<18	0.938	[0.718,1.225]	0.995	[0.758,1.307]
18–24	1	[1,1]	1	[1,1]
25–34	0.760***	[0.663,0.872]	0.658***	[0.568,0.764]
35+	1.243*	[1.019,1.515]	0.944	[0.757,1.178]
Race/Ethnicity				
White, non-Hispanic	1	[1,1]	1	[1,1]
Hispanic	1.668***	[1.467,1.897]	1.529***	[1.328,1.761]
Other	1.333**	[1.093,1.627]	1.334**	[1.092,1.630]
Ever Been Pregnant				
No	1	[1,1]	1	[1,1]
Yes	1.270***	[1.125,1.435]	1.225***	[1.055,1.422]
Living in Salt Lake County				
Yes	1.187*	[1.020,1.382]	1.118	[0.958,1.305]
Period				
Control	1	[1,1]	1	[1,1]
Intervention	1.002	[0.890,1.129]	0.983	[0.871,1.109]
Clinic Location				
West Valley	1	[1,1]	1	[1,1]
Salt Lake	0.754***	[0.652,0.872]	0.755***	[0.653,0.873]
South Jordan	1.013	[0.855,1.200]	1.011	[0.853,1.197]

Notes: * $p < 0.05$
** $p < 0.01$
***$p < 0.001$

Table 6 Continued

b. Copper IUD

	Model 1 Unadjusted	CI 95%	Model 2 Adjusted	CI 95%
Age				
<18	0.527	[0.228,1.216]	0.637	[0.276,1.473]
18–24	1	[1,1]	1	[1,1]
25–34	2.226***	[1.722,2.878]	1.683***	[1.269,2.232]
35+	2.580***	[1.801,3.698]	1.655*	[1.121,1.2.443]
Race/Ethnicity				
White, non-Hispanic	1	[1,1]	1	[1,1]
Hispanic	1.612***	[1.259,2.064]	1.230	[0.952,1.590]
Other	1.339	[0.914,1.961]	1.219	[0.831,1.786]
Ever Been Pregnant				
No	1	[1,1]	1	[1,1]
Yes	2.631***	[2.079,3.329]	1.937***	[1.475,2.545]
Living in Salt Lake County				
Yes	0.894	[0.678,1.179]	0.874	[0.659,1.160]
Period				
Control	1	[1,1]	1	[1,1]
Intervention	1.271*	[1.008,1.601]	1.257	[0.997,1.586]
Clinic Location				
West Valley	1	[1,1]	1	[1,1]
Salt Lake	1.122	[0.850,1.480]	1.124	[0.852,1.483]
South Jordan	0.853	[0.597,1.128]	0.842	[0.590,1.202]

Notes: * $p < 0.05$
** $p < 0.01$
***$p < 0.001$

Table 6 Continued

c. Hormonal IUD

	Model 1 Unadjusted	CI 95%	Model 2 Adjusted	CI 95%
Age				
<18	0.557	[0.305,1.018]	0.618	[0.337,1.131]
18–24	1	[1,1]	1	[1,1]
25–34	1.254*	[1.007,1.561]	1.125	[0.881,1.438]
35+	2.089***	[1.558,2.800]	1.740**	[1.250,2.423]
Race/Ethnicity				
White, non-Hispanic	1	[1,1]	1	[1,1]
Hispanic	1.022	[0.824,1.268]	0.877	[0.692,1.112]
Other	0.770	[0.535,1.107]	0.736	[0.508,1.065]
Ever Been Pregnant				
No	1	[1,1]	1	[1,1]
Yes	1.630***	[1.338,1.986]	1.392**	[1.088,1.781]
Living in Salt Lake County				
Yes	0.798	[0.635,1.004]	0.796	[0.631,1.004]
Period				
Control	1	[1,1]	1	[1,1]
Intervention	1.518***	[1.245,1.852]	1.509***	[1.235,1.843]
Clinic Location				
West Valley	1	[1.1]	1	[1,1]
Salt Lake	0.992	[0.785,1.254]	0.994	[0.786,1.255]
South Jordan	1.063	[0.804,1.405]	1.056	[0.799,1.396]

Notes: * $p < 0.05$
** $p < 0.01$
***$p < 0.001$

Table 6 Continued

d. Implant

	Model 1 Unadjusted	CI 95%	Model 2 Adjusted	CI 95%
Age				
<18	0.319**	[0.161,0.632]	0.451*	[0.226,0.901]
18–24	1	[1,1]	1	[1,1]
25–34	0.906	[0.733,1.120]	0.690**	[0.541,0.880]
35+	0.852	[0.597,1.215]	0.528**	[0.359,0.777]
Race/Ethnicity				
White, non-Hispanic	1	[1,1]	1	[1,1]
Hispanic	1.720***	[1.396,2.120]	1.397**	[1.120,1.743]
Other	1.685***	[1.244,2.280]	1.461*	[1.071,1.994]
Ever Been Pregnant				
No	1	[1,1]	1	[1,1]
Yes	1.727***	[1.422,2.097]	1.766***	[1.387,2.249]
Living in Salt Lake County				
Yes	1.019	[0.802.1.294]	0.944	[0.737,1.208]
Period				
Control	1	[1,1]	1	[1,1]
Intervention	3.182***	[2.557,3.959]	3.077***	[2.470,3.832]
Clinic Location				
West Valley	1	[1,1]	1	[1,1]
Salt Lake	0.837	[0.665,1.053]	0.837	[0.665,1.053]
South Jordan	0.519***	[0.373,0.724]	0.518***	[0.372,0.723]

Notes: * $p < 0.05$
** $p < 0.01$
*** $p < 0.001$

CHAPTER 5

DISCUSSION

With no-cost access to all methods of contraception, women increased uptake of HER-C by 50%. The largest increase occurred with implant use, which increased from 4% of women in the control period to 11% with free care. These data contribute to policy implications about women in Salt Lake County and method choice selection when contraception is free. With the uncertain political climate and future of Title X funding, this data can be supportive of the importance to keep contraceptive options available and accessible. This local demonstrated desire for HER-C methods will allow for policymakers to make informed decisions on behalf of their constituents.

In the multinomial regression model, selecting the copper IUD was not significantly different from selecting DMPA or the contraceptive pill, patch, or ring. But the odds ratio of selecting the hormonal IUD and the implant relative to the non-HER-C methods were significantly different after the cost barrier was removed. The insignificant difference with the copper IUD and the non-HER-C methods may have occurred because prior to the free intervention, patients were able to obtain this method on a sliding-fee-scale, whereas that was not available for the hormonal IUD and implant.

Previous research states that in the United States the greatest proportion of HER-C users are between the ages 25–35 and parous (Branum & Jones, 2015). The findings of

this current analysis were similar, in that 51% of women selecting a HER-C method were 25 years of age or older. Of the women who chose a HER-C method, 53% had reported at least one prior pregnancy compared to 63% selecting a non-HER-C method who were nulliparous.

Although the proportion of women selecting HER-C methods in this study may not be as high as other similar projects (CHOICE HER-C selection = 76%), it is worth mentioning a recent survey that asked clinicians what percentage of contracepting women would use a HER-C method if barriers (including cost) were removed. This group of 100 experts estimated that 25–29% of women would select a HER-C method if barriers were removed (Foster et al., 2015). This study's current findings more closely approximate this estimate as the proportion of women initiating HER-C usage increased from 16% during the baseline control period to 26% after the no-cost intervention.

The usage increase of HER-C methods was overall significant, yet still a large portion of the sample selected non-HER-C methods after the intervention. In addressing why the removal of cost barriers did not lead to larger gains in HER-C usage, it is important to think of social and cultural contexts for individuals. There are other factors that can affect a woman's contraceptive decisions besides cost. Public opinion on contraceptive methods may affect method selection. Women may select a more commonly known method, as HER-C methods are relatively new and potentially unknown. Social relations can be a part of contraceptive decision making, as family or friends' perceptions and own experiences can create positive or negative assoaciations with different contraceptive methods.

This study assessed the impact of a cost reduction intervention on the uptake of

HER-C methods. Going forward, life course theory could be used to reveal the multiple forces that shape contraceptive decision making. This perspective highlights that the individuals's own characteristics and life experiences influence choice, within limitations of what is available to them. HER-C method selection can vary depending on an individual's past experiences, life timing or age and relationship status. Economic factors and method effectiveness are important factors for contraceptive method selection, but further investigation of other life course factors should be considered if we are to gain a more complete understanding of the circumstances that influence women's contraception choices.

5.1 Strengths

The innovative features of this project were that the clinics observed are established family planning clinics that prior to the interventions, already implemented standardized, client-centered contraceptive counseling and same-day device insertion. With the contraceptive counseling in place, this project tackles another barrier to contraceptive access: cost. While similar projects used concentrated recruitment tactics, this project was observational in nature and includes both a control group from the same population served at the same clinics and an intervention group where the only change in clinical service was removal of the cost barrier. The relatively large sample and prospective nature are notable strengths. The observational nature of this study translates into practical practice of protocols for Planned Parenthood Federation of America, and makes these findings generalizable to national clinics. The qualification algorithm created is highly reproducible and can be used for future electronic medical record data research

to look at contraceptive method mix uptake. This study looked at both odds ratios and relative risk calculations, which supports strong implications for causation.

5.2 Limitations

This project had some noteworthy limitations. First, the demographics available for the sample were derived from PPAU's clinical patient management system that lacks certain demographics that would be helpful to control for including education level and religious affiliation. A second limitation falls within the qualifying criteria for this study. This project limited participation to women initiating a new contraceptive method, whereas women continuing their same method of contraception were excluded from this sample. Distribution of method selection may look different if these "continued use" women were included in the sample. Another limitation within the qualifying criteria is the inclusion of only self-pay patients in the sample. Though the majority of PPAU's patients are uninsured (86% for 2015), the proportions may have varied if women with insurance were included in this sample. As the intervention was not randomized, it limits our ability to determine a definitive conclusion about causality. Another uncontrollable influence could have been patients using word-of-mouth to spread knowledge of the study and the ability to acquire free contraception to friends.

Some external factors could not be controlled for in the analysis. For example, 2016 was an election year with Planned Parenthood and women's health often in the media. Locally, in August of 2015, Utah's Governor Gary Herbert gave a verbal directive to the state to cut funding to PPAU. It is not possible to estimate how this historical event may have impacted women's contraceptive choice. During the study period it is also

possible that favorable and unfavorable media coverage of IUDs and implants could have also affected HER-C use. Included in this could have been introduction and coverage of the Liletta IUD. PPAU clinics incorporated use of Liletta into care at the participating clinics prior to onset of the study. We are not in a position to control for these potential influences.

While we did not include cost-savings analysis in this study, these findings suggest meaningful potential savings for Medicaid. Overall public funding for births has increased with recent Medicaid eligibility expansions. With 99% of the sample earning less than 100% of the FPL, these results demonstrate a need for widely available contraceptive services, particularly for lower income women as a potential cost savings benefit to the State.

5.3 Future Direction

This project provides insights regarding future best practices for family planning. Research and literature has shown that there are other barriers to accessing contraception besides cost. In a recent analysis of peer-reviewed papers published on HER-C methods, the most common barrier identified was cost, followed by women's knowledge of safety, method acceptability and use, and provider training (Foster et al., 2015). Future directions for research should bring attention to removing other barriers in order to continue to reduce rates of unintended pregnancy.

By effectively demonstrating a desire for HER-C methods in this project, continued efforts are needed to promote access to and increase awareness for HER-C methods. While there was an uptake in all HER-C methods, demand for the implant

exceeded that for both the hormonal and copper IUD. This could have important implications for overall access and preference of patients going forward.

APPENDIX A

PLANNED PARENTHOOD ASSOCIATION OF UTAH FEDERAL

POVERTY INCOME GUIDELINES 01/2016

PLANNED PARENTHOOD ASSOCIATION OF UTAH
FEDERAL POVERTY INCOME GUIDELINES
Jan-16

FAMILY	STANDARD	Below 100%	100% to 150%	150% to 200%	200% to 250%	FULL FEE
		E	D	C	B	A
	YEARLY	0 - 11,880	11,881 - 17,820	17,821 - 23,760	23,761 - 29,700	29,701 OR MORE
1	MONTHLY	0 - 990	991 - 1,485	1,486 - 1,980	1,981 - 2,475	2,476 OR MORE
	WEEKLY	0 - 228	229 - 343	344 - 457	458 - 571	572 OR MORE
	YEARLY	0 - 16,020	16,021 - 24,030	24,031 - 32,040	32,041 - 40,050	40,051 OR MORE
2	MONTHLY	0 - 1,335	1,336 - 2,003	2,004 - 2,670	2,671 - 3,338	3,339 OR MORE
	WEEKLY	0 - 308	309 - 462	463 - 616	617 - 770	771 OR MORE
	YEARLY	0 - 20,160	20,161 - 30,240	30,241 - 40,320	40,321 - 50,400	50,401 OR MORE
3	MONTHLY	0 - 1,680	1,681 - 2,520	2,521 - 3,360	3,361 - 4,200	4,201 OR MORE
	WEEKLY	0 - 388	389 - 582	583 - 775	776 - 969	970 OR MORE
	YEARLY	0 - 24,300	24,301 - 36,450	36,451 - 48,600	48,601 - 60,750	60,751 OR MORE
4	MONTHLY	0 - 2,025	2,026 - 3,038	3,039 - 4,050	4,051 - 5,063	5,064 OR MORE
	WEEKLY	0 - 467	468 - 701	702 - 935	936 - 1,168	1,169 OR MORE
	YEARLY	0 - 28,440	28,441 - 42,660	42,661 - 56,880	56,881 - 71,100	71,101 OR MORE
5	MONTHLY	0 - 2,370	2,371 - 3,555	3,556 - 4,740	4,741 - 5,925	5,926 OR MORE
	WEEKLY	0 - 547	548 - 820	821 - 1,094	1,095 - 1,367	1,368 OR MORE
	YEARLY	0 - 32,580	32,581 - 48,870	48,871 - 65,160	65,161 - 81,450	81,451 OR MORE
6	MONTHLY	0 - 2,715	2,716 - 4,073	4,074 - 5,430	5,431 - 6,788	6,789 OR MORE
	WEEKLY	0 - 627	628 - 940	941 - 1,253	1,254 - 1,566	1,567 OR MORE
	YEARLY	0 - 36,730	36,731 - 49,905	49,906 - 73,460	73,461 - 91,825	91,826 OR MORE
7	MONTHLY	0 - 3,061	3,062 - 4,159	4,160 - 6,122	6,123 - 7,652	7,653 OR MORE
	WEEKLY	0 - 706	707 - 960	961 - 1,413	1,414 - 1,766	1,767 OR MORE
8	YEARLY	0 - 40,890	40,891 - 61,335	61,336 - 81,780	81,781 - 102,225	102,226 OR MORE
9	YEARLY	0 - 45,050	45,051 - 67,575	67,576 - 90,100	90,101 - 112,625	112,626 OR MORE
10	YEARLY	0 - 49,210	49,211 - 73,815	73,816 - 98,420	98,421 - 123,025	123,026 OR MORE
11	YEARLY	0 - 53,370	53,371 - 80,055	80,056 - 106,740	106,741 - 133,425	133,426 OR MORE
12	YEARLY	0 - 57,530	57,531 - 86,295	86,296 - 115,060	115,061 - 143,825	143,826 OR MORE
13	YEARLY	0 - 61,690	61,691 - 92,535	92,536 - 123,380	123,381 - 154,225	154,226 OR MORE
14	YEARLY	0 - 65,850	65,851 - 98,775	98,776 - 131,700	131,701 - 164,625	164,626 OR MORE
15	YEARLY	0 - 70,010	70,011 - 105,015	105,016 - 140,020	140,021 - 175,025	175,026 OR MORE

FOR FAMILY UNITS WITH MORE THAN 15 MEMBERS ADD $4,160 FOR EACH ADDITIONAL FAMILY MEMBER.
SOURCE: ***FEDERAL REGISTER, Jan. 25, 2016***

APPENDIX B

PLANNED PARENTHOOD ASSOCIATION OF UTAH COST OF CONTRACEPTIVE METHODS FOR INSURED, SELF-PAY AND SLIDING FEE SCALE

Contraceptive Method	Dollar Amount Billed to Insurance	Dollar Amount for Self-Pay	Lowest Sliding Fee Amount (based on FPL)
Paragard IUD	950	460	0
Mirena IUD	1010	560	*Does not slide*
Liletta IUD	1010	460	0
Implant	915	610	*Does not slide*
Depo Injection (every 3 months)	50	50	0
Pills (every month)	*Not Billed*	18	0
Ring (every month)	*Not Billed*	20	0

APPENDIX C

PLANNED PARENTHOOD ASSOCIATION OF UTAH TIERED CONTRACEPTIVE METHOD EFFECTIVENESS CHART

Choosing a Method of Birth Control

Group A (provider sets it and you forget it)	Implants IUD (Hormonal) IUD (Non-hormonal)	★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★
Group B (once every 3 months, monthly, weekly, daily)	Shot (DMPA) Vaginal Ring Patch Pill	★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★
Group C (must use every single intercourse)	Diaphragm Sponge Male Condom Cervical Cap Female Condom Rhythm Method Withdrawal Spermicides	★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★

Approximate effectiveness: ★ ★ ★ ★ = 99% ★ ★ ★ = 91% ★ ★ = 85% ★ = 75%
(Sterilization is not included in the chart as it is only for women who completely rule out the possibility of ever wanted to have (more) children in the future

APPENDIX D

PLANNED PARENTHOOD ASSOCIATIOIN OF UTAH

CONTRACEPTIVE CONVERSATIONS SCRIPT

Planned Parenthood's Contraceptive Conversations Script

Staff Name: _____ Clinic: _____

Date: _____

Checklist

		Hi my name is _____ and I am a Clinical Assistant. We are experts & we are here for you.
		We want to help you make the best decision for you.
		GIVE CARD: Call us anytime and I or one of my teammates will be happy to help. Here's a card with our phone number & my name on it. Give card with your first name written on it.
		CHART: Group A methods are the best at preventing pregnancy and easiest to use - our provider puts in place for you & then you don't do anything until or if you want to be pregnant. Group B are also very good at preventing pregnancy when used correctly and you have to do something daily, weekly, or monthly to make them work. Group C are things you have to do every time you have sex and are not as good at preventing pregnancy. -What questions do you have about the methods chart? Wait 7 seconds -What thoughts do you have about a possible method?
		CONVERSATION: 1. What do you like about this method? What do you dislike? 2. How would people important to you, like your partner, family or friends feel a method? 3. How does this method fit with who you are-your lifestyle? How does this met yourself? 4. If you decided to use this method, how easy or hard would be to use it correctl 5. What feelings do you have about this method?
		INFO SHEETS: Show patient info sheet & point "*These are the side effects. Most side effects are temporary, usually lasting 2-3 months. Which of these side effects might be hard for you personally to deal with? What would you do to deal with that?"* Patient makes the plan
		ACCURATE USE: Group B or C only -What is your plan to be sure you take your pill every day? (or put in your ring on time or come back in for your next shot or change your patch). -What would your back-up plan be, like if you miss a pill/ring/shot? Discuss EC. -How are you going to get refills? How will you remember to get them?

APPENDIX E

PLANNED PARENTHOOD ASSOCIATION OF UTAH

EPM/HER CLINIC ENCOUNTER DESCRIPTIONS

PPAU EPM/EHR Clinic encounter descriptions that automatically qualify:

New Contraceptive Visit
New Teen Contraceptive Visit
IUD or CI insertion
Method Change

The following clinic encounter descriptions are reviewed for and included in the sample if the patient received a new method of contraception:

Office Visit, New or New Office Visit
Preventive visit, New
IUD or CI removal
Emergency Contraceptive visit
STD Screening/Treatment
Pregnancy test walk-in
Established Contraceptive Visit
Established Teen Contraceptive Visit
IUD Failed Insert
Deferred Exam

APPENDIX F

SENSITIVITY ANALYSIS TABLES

Table 7. Demographics by Period of Subcohort

(N = 3,392)

	Control Period		**Intervention Period**			**Total**
	N	%	*N*	%	*N*	%
Age (years)						
<18	133	6%	53	4%	186	5%
18-24	1,045	51%	723	54%	1,768	52%
25-34	649	32%	417	31%	1,066	31%
35+	220	11%	152	11%	372	11%
χ^2 (3) = 11.1693 Pr = 0.011						
Living in Salt Lake County						
Yes	1,163	61%	1,032	77%	2,645	78%
χ^2 (1) = 2.0246 Pr = 0.155						
Race/Ethnicity						
White, non-Hispanic	1,160	57%	769	57%	1,929	57%
Hispanic	691	34%	409	30%	1,100	32%
Other	196	10%	167	12%	363	11%
χ^2 (2) = 8.9652 Pr = 0.011						
Ever Been Pregnant Before						
No	1,241	61%	801	60%	2,042	60%
Yes	806	39%	544	40%	1,350	40%
χ^2 (2) = 0.3889 Pr = 0.533						
(N = 3,392)						
Total	2,047	60%	1,345	40%	3,392	

Table 8. Demographics non-HER-C versus HER-C Methods of Subcohort

(*N* = 3,392)

	Non HER-C		**HER-C**		**Total**	
	N	%	*N*	%	*N*	%
Age (years)						
<18	173	6%	13	2%	186	5%
18-24	1,505	54%	263	45%	1,768	52%
25-34	836	30%	230	39%	1,066	31%
35+	288	10%	84	14%	372	11%
χ^2 (3) = 41.7585 Pr = 0.000						
Living in Salt Lake County						
Yes	2,203	79%	442	75%	2,645	78%
χ^2 (1) = 3.9004 Pr = 0.048						
Race/Ethnicity						
White, Non-Hispanic	1,631	58%	298	51%	1,929	57%
Hispanic	879	31%	221	37%	1,100	32%
Other	292	10%	71	12%	363	11%
χ^2 (2) = 11.8345 Pr = 0.003						
Ever Been Pregnant Before						
No	1,779	63%	263	45%	2,042	60%
Yes	1,023	37%	327	55%	1,350	40%
χ^2 (1) = 72.7709 Pr = 0.000						

Table 9. Logistic Regression of Subcohort

(N = 4,992)

	Model 1 Unadjusted	CI 95%	**Model 2** Adjusted	CI 95%
Age				
<18	0.450***	[0.287,0.705]	0.559*	[0.353,0.884]
18-24	1	[1,1]	1	[1,1]
25-34	1.424***	[1.225,1.654]	1.166	[0.984,1.381]
35+	1.484***	[1.196,1.834]	1.073	[0.834,1.356]
Race/Ethnicity				
White, Non-Hispanic	1	[1,1]	1	[1,1]
Hispanic	1.270*	[1.097,1.470]	1.052	[0.898,1.231]
Other	1.187	[0.948,1.486]	1.061	[0.842,1.336]
Living in Salt Lake County				
No	1	[1,1]	1	[1,1]
Yes	0.866	[0.734,1.023]	0.851	[0.718,1.010]
Ever Been Pregnant Before				
No	1	[1,1]	1	[1,1]
Yes	1.851***	[1.614,2.124]	1.653***	[1.395,1.958]
Period				
Control	1	[1,1]	1	[1,1]
Intervention	1.815***	[1.578,2.087]	1.789***	[1.554,2.059]
Clinic Location				
West Valley	1	[1,1]	1	[1,1]
Salt Lake	0.863	[0.742,1.005]	1.035	[0.906,1.224]
South Jordan	0.660***	[0.538,0.809]	0.750**	[0.607,0.926]

Table 10. Multinomial Regression of Subcohort

(N = 4,992)

a. DMPA Shot

	Model 1		**Model 2**	
	Unadjusted	CI 95%	Adjusted	CI 95%
Age				
<18	0.970	[0.722,1.302]	1.022	[0.757,1.379]
18-24	1	[1,1]	1	[1,1]
25-34	0.731***	[0.628,0.851]	0.628***	[0.532,0.740]
35+	1.251*	[1.008,1.554]	0.947	[0.743,1.206]
Race/Ethnicity				
White, Non-Hispanic	1	[1,1]	1	[1,1]
Hispanic	1.641***	[1.424,1.891]	1.495***	[1.280,1.745]
Other	1.378**	[1.108,1.713]	1.371**	[1.101,1.706]
Ever Been Pregnant				
No	1	[1,1]	1	[1,1]
Yes	1.272***	[1.112,1.454]	1.260**	[1.068,1.488]
Living in Salt Lake County				
Yes	1.236*	[1.044,1.462]	1.174	[0.989,1.393]
Period				
Control	1	[1,1]	1	[1,1]
Intervention	0.981	[0.861,1.119]	0.965	[0.845,1.103]
Clinic Location				
West Valley	1	[1,1]	1	[1,1]
Salt Lake	0.769***	[0.656,0.902]	0.770**	[0.656,0.903]
South Jordan	1.003	[0.832,1.208]	1.000	[0.830,1.204]

Notes:
*$p < 0.05$
** $p < 0.01$
***$p < 0.001$

Table 10 Continued

b. Copper IUD

	Model 1		**Model 2**	
	Unadjusted	CI 95%	Adjusted	CI 95%
Age				
<18	0.654	[0.281,1.522]	0.797	[0.342,1.856]
18-24	1	[1,1]	1	[1,1]
25-34	2.400***	[1.817,3.170]	1.770***	[1.309,2.392]
35+	2.767***	[1.883,4.608]	1.717*	[1.137,1.2.592]
Race/Ethnicity				
White, Non-Hispanic	1	[1,1]	1	[1,1]
Hispanic	1.685***	[1.293,2.197]	1.289	[0.981,1.694]
Other	1.410	[0.938,2.120]	1.286	[0.854,1.937]
Ever Been Pregnant				
No	1	[1,1]	1	[1,1]
Yes	2.806***	[2.177,3.618]	2.047***	[1.538,2.726]
Living in Salt Lake County				
Yes	0.955	[0.706,1.290]	0.937	[0.688,1277]
Period				
Control	1	[1,1]	1	[1,1]
Intervention	1.205	[0.940,1.543]	1.189	[0.927,1.525]
Clinic Location				
West Valley	1	[1,1]	1	[1,1]
Salt Lake	1.176	[0.875,1.580]	1.179	[0.877,1.583]
South Jordan	0.878	[0.601,1.281]	0.868	[0.595,1.266]

Notes:
* $p < 0.05$
** $p < 0.01$
*** $p < 0.001$

Table 10 Continued

c. Hormonal IUD

	Model 1 Unadjusted	CI 95%	**Model 2** Adjusted	CI 95%
Age				
<18	0.451*	[0.217,0.936]	0.506	[0.244,1.049]
18-24	1	[1,1]	1	[1,1]
25-34	1.149	[0.900,1.467]	0.980	[0.745,1.291]
35+	2.048***	[1.488,2.818]	1.568*	[1.093,2.251]
Race/Ethnicity				
White, Non-Hispanic	1	[1,1]	1	[1,1]
Hispanic	1.119	[0.883,1.417]	0.939	[0.729,1.214]
Other	0.854	[0.576,1.266]	0.807	[0.539,1.208]
Ever Been Pregnant				
No	1	[1,1]	1	[1,1]
Yes	1.725***	[1.387,2.145]	1.485**	[1.128,1.955]
Living in Salt Lake County				
Yes	0.785	[0.610,1.011]	0.783	[0.607,1.011]
Period				
Control	1	[1,1]	1	[1,1]
Intervention	1.479***	[1.188,1.842]	1.452***	[1.165,1.809]
Clinic Location				
West Valley	1	[1.1]	1	[1,1]
Salt Lake	0.887	[0.684,1.150]	0.889	[0.686,1.152]
South Jordan	1.001	[0.735,1.362]	0.992	[0.729,1.349]

Notes:
* $p < 0.05$
** $p < 0.01$
*** $p < 0.001$

Table 10 Continued

d. Implant

	Model 1		**Model 2**	
	Unadjusted	CI 95%	Adjusted	CI 95%
Age				
<18	0.355**	[0.172,0.735]	0.521	[0.249,1.092]
18-24	1	[1,1]	1	[1,1]
25-34	0.934	[0.740,1.178]	0.681**	[0.519,0.893]
35+	0.819	[0.552,1.217]	0.472***	[0.308,0.724]
Race/Ethnicity				
White, Non-Hispanic	1	[1,1]	1	[1,1]
Hispanic	1.895***	[1.507,2.383]	1.505***	[1.181,1.918]
Other	1.849***	[1.328,2.574]	1.561**	[1.114,2.188]
Ever Been Pregnant				
No	1	[1,1]	1	[1,1]
Yes	1.866***	[1.508,2.308]	1.942***	[1.481,2.546]
Living in Salt Lake County				
Yes	1.088	[0.834.1.421]	1.014	[0.769,1.336]
Period				
Control	1	[1,1]	1	[1,1]
Intervention	3.058***	[2.413,3.875]	2.965***	[2.36,3.763]
Clinic Location				
West Valley	1	[1,1]	1	[1,1]
Salt Lake	0.863	[0.742,1.005]	0.867	[0.674,1.115]
South Jordan	0.660**	[0.538,0.809]	0.447***	[0.303,0.660]

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