

# Fertility Treatment Use

Among Maryland Women Giving Birth 2009-2011

May 2015



*“My regular ob/gyn and nurses did not feel the need to discuss these issues [alcohol, smoking] with me. Quite likely they assumed I’d know all the risks since I was a proactive patient [using fertility treatments], reading and making lists of questions before my appointments.”*

*“This baby was born after 6 years of IVF!”*

PRAMS mothers

According to the World Health Organization, infertility is “a disease of the reproductive system defined by the failure to achieve a clinical pregnancy after 12 months or more of regular unprotected sexual intercourse.” For women over 35 years of age, an infertility evaluation is usually recommended after 6

months of unprotected sex.

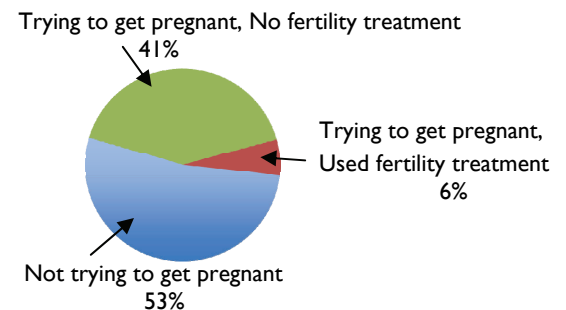
In the U.S., over 440 clinics provide infertility services. Treatment for infertility ranges from medications to medical procedures such as ovulatory enhancing drugs and in vitro fertilization or other Assisted Reproductive Technology (ART).

## Prevalence of Fertility Treatment

The 2009-2011 Maryland PRAMS survey included the following question to women who had planned the pregnancy:

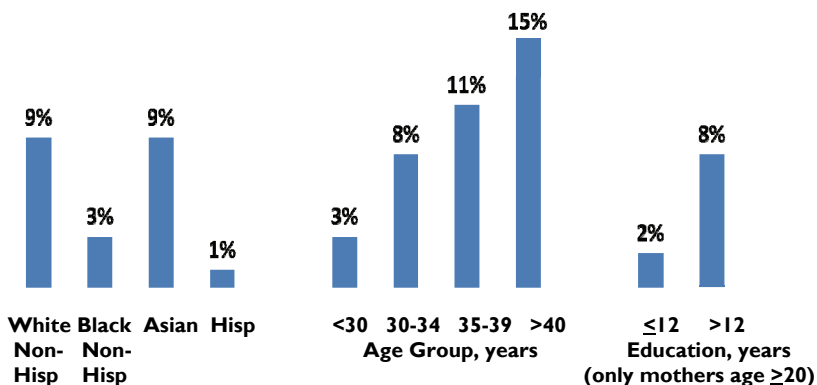
Did you take any fertility drugs or receive any medical procedures from a doctor, nurse, or other health care worker to help you get pregnant with your new baby? (This may include infertility treatments such as fertility-enhancing drugs or assisted reproductive technology.)

**Figure 1. Fertility Treatment Use by Pregnancy Planning, Maryland, 2009-2011**



From 2009-2011, approximately 6% of mothers in Maryland who had recently given birth used fertility treatments to help them get pregnant with their new baby (Figure 1). Of these women, about 51% used fertility drugs, 16% used artificial insemination, and 36% used Assisted Reproductive Technology (data not shown).

**Figure 2. Fertility Treatment Use by Maternal Race/Ethnicity, Age, and Education, Maryland, 2009-2011**



Fertility treatment use was more common among women who were 40 or more years of age at the time of delivery (15%), White non-Hispanic (9%), Asian (9%), and those with more than 12 years of education (8%) (Figure 2).

## Factors Associated with Fertility Treatment Use

**Table 1. Factors Associated with Fertility Treatment Use, Maryland, 2009-2011**

Factor	No fertility treatment use % (n=3963)	+ Fertility treatment use % (n=495)
<b>Before pregnancy</b>		
Body Mass Index (BMI)*		
<18.5, underweight	10	4
18.5-24.9, normal weight	53	59
25-29.9, overweight	16	14
30, obese	21	24
Chronic hypertension	4	5
Chronic diabetes	2	3
Cigarette smoking, 3 months before*	19	9
Alcohol use, 3 months before*	55	68
Binge drinking, 3 months before	22	24
Intended pregnancy*	52	99
Physical abuse, current/former partner*	4	0.5
Preconception counseling, received*	29	80
Folic acid intake, daily, 1 month before*	29	69
<b>During pregnancy</b>		
Initiation of care, 1st trimester*	79	96
HIV test*	73	62
Flu vaccine*	42	58
Gestational diabetes	10	13
Hypertension, preeclampsia or toxemia*	10	17
Cigarette smoking, last 3 months	9	3
Alcohol use, last 3 months*	9	19
Binge drinking, last 3 months	1	0
Teeth cleaning, last 12 months*	58	74
<b>After pregnancy</b>		
Breastfeeding, ever*	82	92
Breastfed $\geq 10$ weeks*	53	68
Infant sleep position, back*	73	84
Co-sleeping, never	36	43
Currently smoking*	13	6

\*Statistically significant ( $p < 0.05$ ) difference between those using fertility treatments and those not using fertility treatments

**Before pregnancy**, women who used fertility treatments were more likely to have received preconception counseling about preparing for a healthy pregnancy (80% vs 29%), taken daily folic acid (69% vs 29%), and used alcohol 3 months before pregnancy (68% vs 55%) compared to women not using fertility treatments. These women were also less likely to have smoked 3 months before pregnancy (9% vs 19%) and had been physically abused by a current partner (0.5% vs 4%). (Table 1).

**During pregnancy**, women using fertility treatments were more likely to have initiated prenatal care during their 1<sup>st</sup> trimester (96% vs 79%), received a flu vaccine (58% vs 42%), had high blood pressure and/or high blood pressure related complications during pregnancy (17% vs 10%), used alcohol in the last 3 months of pregnancy (19% vs 9%), had a teeth cleaning in the last 12 months (74% vs 58%), and were less likely to have had HIV testing (62% vs 73%) than those not using fertility treatments. (Table 1).

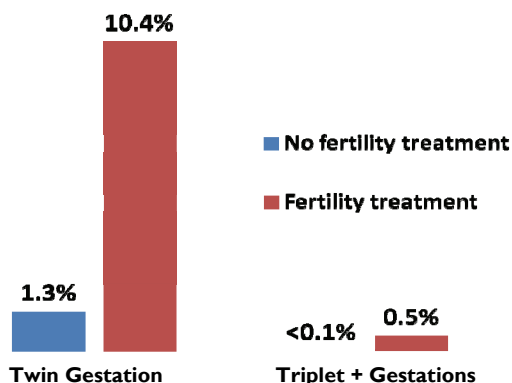
**Postpartum**, women using fertility treatments were more likely to have initiated breastfeeding (92% vs 82%), breastfed  $\geq 10$  weeks (68% vs 53%), put their baby to sleep on his/her back (84% vs 73%), and were less likely to smoke (6% vs 13%) than those not using fertility treatments. (Table 1).

## Pregnancy Outcomes

Multiple gestations were more prevalent among women who used fertility treatments compared to women who did not use fertility treatments with their most recent pregnancy (10.9% vs 1.3%). Women who used fertility treatments were 10 times more likely to have had a twin gestation compared to women who did not use fertility treatments (Figure 3).

Rates of preterm birth and low infant birth weight did not differ significantly for singleton gestations by fertility treatment use (data not shown).

**Figure 3. Multiple Gestations by Fertility Treatment Use, Maryland, 2009-2011**



## Discussion

In Maryland, approximately 6% of mothers who had recently given birth used fertility treatment to help them get pregnant with their new baby. Fertility treatment use was most common among women who were 40 years of age or more at the time of delivery (15%), White non-Hispanic (9%), and those with more than 12 years of education (8%).

Although women who used fertility treatment were more likely to follow certain preconception, prenatal and postpartum guidelines to achieve healthy pregnancies (such as prenatal care initiation during the 1st trimester, breastfeeding initiation, and placing their infants to sleep on their backs), there is still room to improve their likelihood of having healthy pregnancy outcomes.

Although alcohol use during pregnancy is the leading preventable cause of mental retardation in the U.S., 68% of women using fertility treatments consumed alcohol 3 months before pregnancy and 19% consumed alcohol during pregnancy.

Similarly, although smoking during pregnancy is associated with increased risks of hypertension, preterm birth, low infant birth weight, and other pregnancy-related complications, 9% of women using fertility treatments smoked cigarettes 3 months before pregnancy and 3% smoked during pregnancy. Additionally, important health promoting behaviors such as pre-pregnancy folic acid intake, flu vaccination, teeth cleaning, and breastfeeding for longer than 10 weeks were reported by <75% of women using fertility treatments.

It is important for clinicians not to assume that women using fertility treatment are all following health guidelines to optimize their pregnancy outcomes. Rather, assessment and intervention for health behaviors should be done continually and as early as possible to optimize maternal and child health.

*“My husband and I worked hard to get this pregnancy. The “before” [fertility treatment] was much harder than the pregnancy, delivery, or postpartum.”*

*“The cute thing about that was when I found I was pregnant I had an appointment to see a fertility specialist, but then I didn't need it!”*

*“Fertility clinic released me at week 9. I saw a doctor weekly until then.”*

*“I spent \$28,000 out of pocket for infertility! I would like to see the cost of treatment and medicines become more affordable.”*

**PRAMS mothers**



## Production Team:

Hoa Vo, MS<sup>1</sup>  
 Kamila Mistry, PhD, MPH<sup>2</sup>  
 Diana Cheng, MD<sup>3</sup>

1. Department of Epidemiology,  
 Johns Hopkins Bloomberg School  
 of Public Health

2. Department of Pediatrics,  
 Johns Hopkins University School  
 of Medicine  
 Office of Extramural Research,  
 Education, and Priority  
 Populations  
 Agency for Healthcare Research  
 and Quality (AHRQ)

3. Maternal and Child Health  
 Bureau  
 Maryland Department of Health  
 and Mental Hygiene (DHMH)

For further information,  
 please contact:

Diana Cheng, M.D.  
 PRAMS Project Director  
 Medical Director, Women's  
 Health  
 Maternal and Child Health Bureau  
 Maryland Department of Health  
 and Mental Hygiene  
 201 W. Preston Street, Rm 309  
 Baltimore, MD 21201

visit:

[www.marylandprams.org](http://www.marylandprams.org)

## PRAMS Methodology

Data included in this report were collected from the Pregnancy Risk Assessment Monitoring System (PRAMS), a surveillance system established by the Centers for Disease Control and Prevention (CDC) to obtain information about maternal behaviors and experiences that may be associated with adverse pregnancy outcomes.

In Maryland, the collection of PRAMS data is a collaborative effort of the Department of Health and Mental

Hygiene and the CDC. Each month, a sample of approximately 200 Maryland women who have recently delivered live born infants are surveyed by mail or by telephone, and responses are weighted to make the results representative of all Maryland births.

This report is based on the responses of 4,548 Maryland mothers who delivered live born infants between January 1, 2009 and December 31, 2011 and were surveyed 2-9 months after delivery.

## Limitations of Report

This report presents only basic associations between maternal factors and fertility treatment. Unexamined inter-relationships among variables are not described and could explain some of the findings in the report.

Maryland PRAMS data are retrospective and therefore subject to recall bias. They are also based on the mother's perception of events and may not be completely accurate.

## Resources

American Fertility Association  
 (path2Parenthood)  
[www.path2parenthood.org](http://www.path2parenthood.org)

Resolve: The National Infertility  
 Association  
[www.resolve.org](http://www.resolve.org)

Assisted Reproductive Technology  
 CDC  
[www.cdc.gov/art/index.html](http://www.cdc.gov/art/index.html)

Society for Assisted Reproductive  
 Technology  
[www.sart.org](http://www.sart.org)



Maryland Department of Health and Mental Hygiene  
 Maternal and Child Health Bureau • Vital Statistics Administration

Larry Hogan, Governor - Boyd Rutherford, Lt. Governor - Van Mitchell, Secretary

The services and facilities of the Maryland Department of Health and Mental Hygiene (DHMH) are operated on a non-discriminatory basis. This policy prohibits discrimination on the basis of race, color, sex, or national origin and applies to the provisions of employment and granting of advantages, privileges, and accommodations.

The Department, in compliance with the Americans With Disabilities Act, ensures that qualified individuals with disabilities are given an opportunity to participate in and benefit from DHMH services, programs, benefits, and employment opportunities.

Funding for the publication was provided by the Maryland Department of Health and Mental Hygiene and by the Centers for Disease Control and Prevention (CDC) Cooperative Agreement # UR6/DP-000542 for Pregnancy Risk Assessment Monitoring System (PRAMS). The contents do not necessarily represent the official views of the CDC.