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Annual Mandate Report: Coverage for Fertility Preservation for Iatrogenic Infertility

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Pursuant to Insurance Article §15-1501
Annotated Code of Maryland

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Evaluation of Proposed Mandated Health Insurance Services

Insurance Article § 15-1501, Annotated Code of Maryland, requires that the Maryland Health Care Commission (MHCC) annually assess the impact of proposed mandated health insurance services that failed to pass during the preceding legislative session or that were submitted to MHCC by a legislator before July 1 of each year. The assessment reports are due to the General Assembly annually by December 31.

NovaRest, Inc. and its subcontractors, (collectively called “NovaRest” in this report) have been contracted as the MHCC’s consulting actuary, and have prepared the following evaluation: ***coverage for fertility preservation for iatrogenic infertility.***

This report includes information from several sources to provide more than one perspective on the proposed mandates with the intention of providing a totally unbiased report. As a result, there may be some conflicting information within the contents. Although we only used sources that we considered credible, we do not offer any opinions regarding whether one source is more credible than another, leaving it to the reader to develop his/her own conclusions.

The Affordable Care Act (ACA) describes a broad set of benefits that must be included in any Essential Health Benefits (EHB) package. In its December 2011 bulletin, the Department of Health and Human Services (HHS) provided guidance on the types of health benefit plans each state could consider when determining a benchmark EHB plan for its residents. Each state had the opportunity to update its benchmark plan effective for 2017. The benchmark plan did not change for 2018. Maryland selected the small group CareFirst BlueChoice HMO HSA-HRA \$1,500 plan as its 2017 benchmark plan.¹ It is important to note that the ACA requires states to fund the cost of any mandates that are not included in the state-specific EHBs for policies purchased through the Maryland Health Benefit Exchange.²

¹ Center for Consumer Information & Insurance Oversight. “List of Proposed Essential Health Benefit Benchmark Plans for 2017 and Beyond.” <https://www.cms.gov/CCIIO/Resources/Data-Resources/Downloads/Final-List-of-Proposed-BMP.pdf>. Accessed September 26, 2017.

² Although in vitro fertilization (IVF) is one of Maryland’s current mandates, IVF is a specific exclusion for the small group market. However, IVF is covered for individual plans.



Process

NovaRest was charged with addressing the following questions regarding this proposed mandate:

- The extent to which the coverage will increase or decrease the cost of the service;
- The extent to which the coverage will increase the appropriate use of the service;
- The extent to which the mandated service will be a substitute for a more expensive service;
- The extent to which the coverage will increase or decrease the administrative expenses of carriers, including health maintenance organizations, or other organizations authorized to provide health benefit plans in the State, and the premium and administrative expenses of policyholders and contract holders;
- The impact of this coverage on the total cost of health care; and
- The impact of all mandated health insurance services on employers' ability to purchase health benefits policies meeting their employees' needs.

NovaRest reviewed literature (which included reports completed for other states which were either considering or have passed similar legislation), interviewed providers, gathered statistics from the National Association of Insurance Commissioners (NAIC) Supplemental Health Care Exhibit (SHCE) regarding the 2016 premium levels, the most recently available at the time of this report for the various markets, and developed an independent estimate of the impact on premiums for each market for this proposed mandate.

To provide as complete a picture as possible regarding the proposed impact of this mandate, NovaRest issued a survey to the top five commercial/HMO carriers in the commercial fully insured market in Maryland to ascertain the extent to which the proposed mandate is currently covered in their policies. The survey responses are included in Appendix I. Data requests quantifying use of the services included in the proposed mandate were part of the surveys. The various claim codes included in these requests are shown in Appendix II. The following table shows the major carriers and the degree to which they responded to the surveys.



Commercial Carriers/HMOs Surveyed and the Degree to Which They Responded

Carrier/HMO	Full Response	Partial Response	Did Not Provide Any Answers
Aetna*		X	
CareFirst	X		
CIGNA	X		
United HealthCare	X		
Kaiser	X		

*Aetna responded to our first round of questions, but did not provide a response to our second round of questions.

We were told that Medicaid did not cover the services in the proposed mandate; thus, we did not submit the survey to any Medicaid managed care plans.

NovaRest conducted phone interviews with two providers to understand fertility preservation for iatrogenic infertility. See the *Discussions with Providers* section for more detail on the interviews.

We relied upon the analysis completed by the Department of Legislative Services for quantification of the impact of this proposed mandate on the State Employee and Retiree Health and Welfare Benefits Program.³

Mandated Coverage for Fertility Preservation Procedures for Iatrogenic Infertility

Senate Bill 918 would have required insurers, nonprofit health service plans, and health maintenance organizations (collectively known as carriers) to provide coverage for “standard fertility preservation procedures”, including sperm and oocyte cryopreservation and evaluations, laboratory assessments, medications, and treatments associated with sperm and oocyte cryopreservation, that are (1) performed on a policyholder or subscriber or on the dependent spouse of a policyholder or subscriber and (2) medically necessary to preserve fertility due to a need for medical treatment that may directly or indirectly cause “iatrogenic infertility.” For purposes of this proposed bill, “Iatrogenic Infertility” means medical treatment with a likely side effect of infertility as established by the American Society for Reproductive Medicine, the American College of

³ Department of Legislative Services, Maryland General Assembly 2017 Session. “Health Insurance - Coverage of Fertility Preservation Procedures for Iatrogenic Infertility.” http://mgaleg.maryland.gov/2017RS/fnotes/bil_0008/sb0918.pdf. Accessed October 3, 2017.

Obstetricians and Gynecologists, or the American Society of Clinical Oncology. “Standard fertility preservation procedures” means procedures to preserve fertility that are consistent with established medical practices and professional guidelines published by the American Society for Reproductive Medicine, the American College of Obstetricians and Gynecologists, or the American Society of Clinical Oncology. Note that “standard fertility preservation procedures” does not include the storage of sperm or oocytes.

Background

Condition

An iatrogenic condition is a negative side effect or adverse condition that is caused by the diagnosis, manner, activity, or treatment of a health-care provider.⁴ The American Society of Clinical Oncology defines infertility as the inability to conceive after one (1) year of intercourse without contraception.⁵ According to the American Cancer Institute, radiation therapy and many chemotherapy drugs used to treat patients in their reproductive years carry a high risk of causing damage to eggs or sperm, therefore, carrying a high risk of infertility.⁶ The American Society of Clinical Oncology also points out that infertility may manifest later in women through premature ovarian failure.⁷

Other treatments which carry a high risk of infertility are bone/stem cell transplants which can be used to treat a variety of conditions including erythematosus, lupus, severe aplastic anemia, sickle cell disease, rheumatoid arthritis, etc. Bone marrow and stem cell transplants, which usually involve high doses of chemotherapy and sometimes radiation to the whole body before transplant, can permanently stop a woman’s ovaries from releasing eggs⁸ and

⁴ Campo-Engelstein, Lisa. “For the Sake of Consistency and Fairness: Why Insurance Companies Should Cover Fertility Preservation Treatment for Iatrogenic Infertility.” http://oncofertility.northwestern.edu/sites/oncofertility/files/legacy_files/uploadedfilecontent/chapter_29_word.pdf. Accessed September 26, 2017.

⁵ Journal of Clinical Oncology. “American Society of Clinical Oncology Recommendations on Fertility Preservation in Cancer Patients.” June 2016. <http://ascopubs.org/doi/full/10.1200/jco.2006.06.5888>. Accessed September 26, 2017.

⁶ American Cancer Society. “How Cancer Treatments Can Affect Fertility in Women.” Last Revised June 28, 2017. <https://www.cancer.org/treatment/treatments-and-side-effects/physical-side-effects/fertility-and-sexual-side-effects/fertility-and-women-with-cancer/how-cancer-treatments-affect-fertility.html>. Accessed September 28, 2017.

⁷ Journal of Clinical Oncology. “American Society of Clinical Oncology Recommendations on Fertility Preservation in Cancer Patients.”

⁸ American Cancer Society. “How Cancer Treatments Can Affect Fertility in Women.”

can permanently prevent a man from making sperm.⁹ Although there are several conditions where treatment may involve bone marrow and stem cell transplant, the majority of treatments that cause iatrogenic infertility are associated with cancer treatment.¹⁰

Treatment

Fertility preservation services are preventive procedures that may allow patients to preserve their ability to have a child. According to the American Society of Clinical Oncology, the most effective preservation method for males is sperm cryopreservation while females have multiple options for fertility preservation depending on various factors including age, type of treatment, diagnosis, whether she has a partner, the time available and the potential that cancer has metastasized to her ovaries.¹¹ The most common and effective preservation methods are embryo cryopreservation and oocyte (egg) cryopreservation.¹²

Gonadal shielding and ovarian transposition are also methods of preserving fertility by blocking the ovaries; however, there appear to be differences of opinion regarding these methods and their advantages and disadvantages. One physician we interviewed explained that there is still a risk of scattered radiation or full body chemotherapy drugs, which makes these methods less effective. At least one study concludes that the potential consequences of loss of diagnostic information, of retakes and of shielding of automatic exposure-control chambers indicate that gonad shielding might be better discontinued. Reasons cited for this conclusion is that in daily practice, the shields are often not placed correctly, resulting in images that are suboptimal or worse, leading to a need to conduct more x-rays.¹³ Information on Northwestern University's website "the

⁹ American Cancer Society. "How Cancer Treatments Can Affect Fertility in Men." Last Revised June 28, 2017. <https://www.cancer.org/treatment/treatments-and-side-effects/physical-side-effects/fertility-and-sexual-side-effects/fertility-and-men-with-cancer/how-cancer-treatments-affect-fertility.html>. Accessed October 2, 2017.

¹⁰ LiveStrong. "Position Statement: Health Insurance Coverage for Iatrogenic Infertility." <https://d1un1nybq8gi3x.cloudfront.net/sites/default/files/what-we-do/reports/LIVESTRONG-CLRC-Position-Statement-Iatrogenic-Infertility-2011.pdf>. Accessed September 26, 2017.

¹¹ Journal of Clinical Oncology. "American Society of Clinical Oncology Recommendations on Fertility Preservation in Cancer Patients."

¹² Mayo Clinic Staff. "Fertility preservation: Understand your options before cancer treatment." October 26, 2016. <http://www.mayoclinic.org/healthy-lifestyle/getting-pregnant/in-depth/fertility-preservation/art-20047512>. Accessed September 29, 2017.

¹³ Marij J. Frantzen, et.al. "Gonan Shielding in Paediatric Pelvic Radiography: Disadvantages Prevail Over Benefit". Insights Imaging. February 2012. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3292647/>. Accessed October 11, 2017.

Oncofertility Consortium” indicates that gonadal shielding can be used to protect the testes from scatter radiation but the proper shielding technique “should be carefully evaluated on a case by case basis depending on total radiation dose, fractionalization, and the specific mode of delivery of the external beam therapy.”¹⁴ A recent study seems to support gonadal shielding as “best practice” in radiography.¹⁵

Ovarian transposition is usually done after neoadjuvant chemotherapy and prior to radiation. One article indicated that since this procedure does not protect ovaries from damage by cytotoxic drugs, it should be avoided if the patient has to undergo both chemotherapy and radiation therapy.¹⁶ Ovaries are moved to places (depending upon the cancer and treatment) where they will be less subject to radiation field. In 10 – 14 percent of the cases, the procedure failed to protect the ovaries. There have been a few long-term studies which show that normal hormonal function and pregnancies have been reported; however, more studies are required.¹⁷ This procedure does carry certain risks such as increased ovarian cyst formation, postoperative adhesions, chronic pelvic pain, migration of ovaries back to their native position and premature ovarian failure, apart from the risk of surgery. One percent of the patients will have metastatic disease in the ovaries attributed to this procedure.¹⁸ Another study concluded that, “ovarian transposition is associated with significant preservation of ovarian function and negligible risk for metastases to the transposed ovaries despite common incidence of ovarian cysts.”¹⁹

¹⁴ The Oncofertility Consortium, Northwestern University.
<http://oncofertility.northwestern.edu/resources/gonadal-shielding>. Accessed October 12, 2017.

¹⁵ Terri L. Fauber, EdD, R.T (R) (M). “Gonadal Shielding in Radiography: A Best Practice?” American Society of Radiologic Technologist. Accepted February 29, 2016.
<http://www.radiologictechnology.org/content/88/2/127.abstract> Accessed October 12, 2017.

¹⁶ Nalini Mahajan. “Fertility Preservation in Female Cancer Patients: An Overview”, Journal of Human Reproduction. Jan-Mar 2015. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4381379/> Accessed October 12, 2017.

¹⁷ Saine Irtan, MD, et.al. “Ovarian Transposition in Prepubescent and Adolescent Girls with Cancer.” The Lancet Oncology. December 2013.
<https://www.ncbi.nlm.nih.gov/pubmed/24275133>. Accessed October 12, 2017.

¹⁸ Nalini Mahajan. “Fertility Preservation in Female Cancer Patients: An Overview.”

¹⁹ Kumar Gubbala, et.al “Outcomes of Ovarian Transposition in Gynaecological Cancers: A Systematic Review and Meta-Analysis”, Journal of Ovarian Research. June 25, 2014.
<https://ovarianresearch.biomedcentral.com/articles/10.1186/1757-2215-7-69> Accessed October 12, 2017.

Surgical removal of the cervix to preserve the uterus is also an option for early stage cervical cancer.²⁰ However, there is an increased risk of cervical incompetence, preterm delivery, low birth weight, and Cesarean section associated with this procedure.²¹

Embryo cryopreservation requires that a patient undergo the process required for in vitro fertilization (IVF), which requires a sperm and a partner, unless the woman elects to use a donor sperm. This is an established procedure but does require some time before cancer treatment commences. Controlled ovarian stimulation (COS) takes approximately two weeks from the second day of the stimulation period and this could delay cancer treatment. Also, the high estradiol levels required during COS could have an adverse effect on estrogen-sensitive tumors. There are ethical, legal and religious implications regarding disposal of embryos in the event the patient dies before they can be implanted or if the partners separate. This procedure cannot be performed on prepubertal girls.²²

The success rates for frozen embryo transfers are comparable to fresh IVF cycles.²³ According to Shady Grove Fertility, “Women 35 years and younger have over a 60 percent chance of pregnancy per transfer. This rate declines as the maternal age at the time of the freeze increases.” This percentage of success was corroborated by a physician that we interviewed.

Oocyte cryopreservation is an option for women who do not have a partner and do not wish to use frozen sperm.²⁴ The American Society of Reproductive Medicine no longer classifies oocyte cryopreservation as experimental. Consistent with embryo cryopreservation, some time is required before beginning cancer treatment. Published data in egg-donation cycles demonstrated no difference in fertilization and pregnancy rates as compared to fresh donor cycles. In addition, studies of 900 oocyte cryopreservation babies do not demonstrate an increase in the rate of congenital abnormalities compared to naturally conceived infants.²⁵ The live-birth rate per oocyte thawed using the slow-freeze method is

²⁰ Mayo Clinic Staff. “Fertility preservation: Understand your options before cancer treatment.”

²¹ Nalini Mahajan. “Fertility Preservation in Female Cancer Patients: An Overview.”

²² Ibid.

²³ Shady Grove Fertility. “Frequently Asked Questions About Frozen Embryo Transfers.” September 11, 2017. <https://www.shadygrovefertility.com/blog/treatments-and-success/frequently-asked-questions-about-frozen-embryo-transfers/>. Accessed September 29, 2017.

²⁴ Jennifer Mersereau, MD, MSCI. “Chance of Pregnancy After Oocyte Cryopreservation”.

²⁵ Ibid.

2%, and 4% using the vitrification method. The likelihood of success may be significantly lower in women over the age of 35, but further published studies are needed.²⁶ In a normal ovulation cycle, one egg matures per month.²⁷ However, as part of the process, ovaries are stimulated into producing more eggs. Women may have up to 45 eggs per super ovulation cycle, but the typical number is between 5 and 12.²⁸ A physician that we interviewed indicated freezing eggs has a relatively high probability of success if 20 eggs can be harvested, but the most successful procedure is cryopreservation of embryos.

Some diagnoses, such as leukemia, lymphoma, and myeloma (bone cancer) require treatment as quickly as possible after diagnosis because it can progress very quickly. As described earlier in the report, some fertility preservation methods require a two-week period before treatment begins, which is amenable to most types of cancer; however, treatment for cancers such as leukemia, require immediate treatment. As such, an individual may not have adequate time to undergo more common preservation methods. One recommendation for these situations is cryopreservation of ovarian tissue, although it carries a high risk of reintroduction of cancer cells²⁹ and it is considered experimental at this time. Another option is In Vitro Maturation of Immature Oocytes (IVM). According to an article published in *Clinical and Experimental Reproductive Medicine*, IVM “has been proposed as the method of choice for patients undergoing anticancer treatment, particularly for women who require rapid fertility preservation or face the risk of estrogen-sensitive cancer recurrence.”³⁰ In addition, the cost of IVM is lower than IVF because the drugs required for controlled ovarian stimulation are not required for IVM.³¹ Although it has been proposed as a method of choice for

²⁶ Ibid.

²⁷ Shady Grove Fertility. “ASRM 2016: Retrieval of More Eggs In IVF Leads To More Babies Born Per Cycle.” October 18, 2016. <https://www.shadygrovefertility.com/blog/treatments-and-success/asrm-2016-retrieval-of-more-eggs-in-ivf-leads-to-more-babies-born-per-cycle/>. Accessed September 29, 2017.

²⁸ USC Fertility. “How Many Eggs should I Freeze?” December 8, 2015. <http://uscfertility.org/how-many-eggs-should-i-freeze/>. Accessed September 29, 2017.

²⁹ ISFP Practice Committee et al. “Recommendations for Fertility Preservation in Patients with Lymphoma, Leukemia, and Breast Cancer.” *Journal of Assisted Reproduction and Genetics* 29.6 (2012): 465–468. <https://www.ncbi.nlm.nih.gov/pubmed/22648282>. Accessed September 27, 2017.

³⁰ Eun Mi Chang, et al. “In Vitro Maturation of Human Oocytes: Its Role in Infertility Treatment and New Possibilities.” *Clinical and Experimental Reproductive Medicine* 41.2 (2014): 41–46. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4102689/>. Accessed September 27, 2017.

³¹ Ibid.

certain patients, it is still considered experimental and, according to a recent study, the retrieval of only immature oocytes was associated with a significant decrease in the fertilization rate.³²

The Leukemia and Lymphoma Society expects new cases of leukemia, lymphoma, and myeloma to account for 10.2 percent of new cancer cases.³³ Because the recommended fertility preservation methods might not work for patients diagnosed with leukemia, lymphoma, and myeloma, we will not consider new cases with these diagnoses in our analysis.

Cancer treatments can adversely impact male fertility as well. The most common form of fertility preservation for men is sperm cryopreservation prior to any treatment. Generally, sperm collection is achieved via masturbation and the sperm is then frozen. If the patient is unable to ejaculate, other techniques such as testicular sperm extraction (the process of removing a small portion of tissue from the testicle under local anesthesia and extracting the few viable sperm cells present) or electro-ejaculation^{34,35} can be used in an effort to achieve ejaculation.³⁶

The Journal of Clinical Oncology issued the following recommendation: “As part of education and informed consent before cancer therapy, health care providers (including medical oncologists, radiation oncologists, gynecologic oncologists, urologists, hematologists, pediatric oncologists, and surgeons) should address the possibility of infertility with patients treated during their reproductive years (or with parents or guardians of children) and be prepared to discuss fertility

³² Duck Sung Ko, et al. “Pregnancy and Fertilization Potential of Immature Oocytes Retrieved in Intracytoplasmic Sperm Injection Cycles.” *Clinical and Experimental Reproductive Medicine* 42.3 (2015): 118 – 125. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4604295/>. Accessed September 27, 2017.

³³ Leukemia and Lymphoma Society. “Facts and Statistics.” <https://www.lls.org/http%3A//lls.org.prod.acquia-sites.com/facts-and-statistics/facts-and-statistics-overview/facts-and-statistics>. Accessed September 27, 2017.

³⁴ Electroejaculation is achieved by using an electric probe that is inserted in the rectum to stimulation ejaculation. Anesthesia is required for men who have sensation at or below the abdomen.

³⁵ Johns Hopkins Medicine. “Penile Vibratory Stimulation and Electroejaculation.” http://www.hopkinsmedicine.org/healthlibrary/test_procedures/urology/_22_PenileVibratoryStimulationandElectroejaculation Accessed October 12, 2017.

³⁶ Nalini Mahajan. “Fertility Preservation in Female Cancer Patients: An Overview.”

preservation options and/or to refer all potential patients to appropriate reproductive specialists”.³⁷

Incidence

The American Cancer Society (ACS) conducted a study in which 49 of the 50 states and the District of Columbia provided incidence data. Based on these data, the ACS estimates 140,000 people under 45 will be diagnosed with cancer and would subsequently be at risk for iatrogenic infertility from treatments such as chemotherapy, radiation, and surgery, based on incidence data from 1999 to 2013.³⁸ According to a report from the ACS, the estimated number of new cases for all ages in Maryland for 2017 is shown in the following table.³⁹

Estimated Number of New Cases for Selected Cancers, Maryland, 2017	
All Sites	31,820
Female Breast	5,250
Colon & Rectum	2,430
Leukemia	1,000
Lung & Bronchus	4,020
Melanoma of the Skin	1,700
Non-Hodgkin Lymphoma	1,260
Prostate	3,400
Urinary Bladder	1,390
Uterine Cervix	220
Uterine Corpus	1,200

³⁷ Journal of Clinical Oncology. “Fertility Preservation for Patients with Cancer: American Society of Clinical Oncology Clinical Practice Guideline Update.” May 2013.
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5321083/>. Accessed September 26, 2017.

³⁸ American Cancer Society. “Estimated Number of New Cases for the Four Major Cancers by Sex and Age Group, 2017.” <https://www.cancer.org/content/dam/cancer-org/research/cancer-facts-and-statistics/annual-cancer-facts-and-figures/2017/estimated-new-cases-for-the-four-major-cancers-by-sex-and-age-group-2017.pdf>. Accessed September 26, 2017.

³⁹ American Cancer Society. “Estimated Number of New Cases for Selected Cancers by State, US, 2017.” <https://www.cancer.org/content/dam/cancer-org/research/cancer-facts-and-statistics/annual-cancer-facts-and-figures/2017/estimated-number-of-new-cases-for-selected-cancers-by-state-us-2017.pdf>. Accessed September 26, 2017.

The table below provides the U.S. cancer incidence rates by age at diagnosis by sex for all race/ethnicities, with incidence rates for leukemia, lymphoma, and myeloma removed.⁴⁰

Cancer Incidence Rates Excluding Leukemia, Lymphoma, and Myeloma		
	Female	Male
Age at Diagnosis	Rate per 100,000	Rate per 100,000
10-14	12.2	13.0
15-19	19.4	21.0
20-24	33.3	31.5
25-29	60.6	44.3
30-34	103.4	60.2
35-39	162.5	80.9
40-44	260.3	128.6

According to a 2010 Maryland census, the breakdown of the Maryland population by age and sex is provided below.⁴¹

Maryland Population by Age and Sex				
Age Tier	Total Population	% of Total Population	Female Population	% Female
10-14	379,029	6.6%	185,961	49.1%
15-19	406,241	7.0%	197,992	48.7%
20-24	393,698	6.8%	193,775	49.2%
25-29	393,548	6.8%	199,325	50.6%
30-34	368,494	6.4%	189,215	51.3%
35-39	377,409	6.5%	195,866	51.9%
40-44	418,163	7.2%	217,229	51.9%
10 to 44	2,736,582	47.4%	1,379,363	50.4%
All Ages	5,773,552	100.0%	2,981,790	51.6%

⁴⁰ National Cancer Institute. "SEER Explorer". May 18, 2017.
<https://seer.cancer.gov/explorer/application.php>. Accessed September 27, 2017.

⁴¹ Maryland Census 2010. "State of Maryland Age Profile 1: Age by Sex for Persons in Households and Persons in Group." 2011.
http://planning.maryland.gov/msdc/census/cen2010/SF1/AgeProf/age_MDST.pdf. Accessed September 26, 2017.

Applying the incidence rates to the census information, the expected cases in Maryland where treatment may result in iatrogenic infertility are below:

Maryland Total Expected Cases		
Age Tier	Female	Male
10-14	23	25
15-19	38	44
20-24	65	63
25-29	121	86
30-34	196	108
35-39	318	147
40-44	566	258

Cost

The cost of fertility preservation services could cause patients not to pursue fertility preservation, thereby losing the ability to have children. The following table shows the typical costs, based on nationwide information, for various options.

Typical Costs Fertility Preservation Options⁴²

Options for Women	Service Cost Range	Storage Cost Range*
Egg (Oocyte) Freezing	\$10,000 - \$15,000 per cycle	\$300 - \$500 per year
Embryo Freezing	\$11,000 - \$15,000 per cycle	\$400 - \$600 per year
Ovarian Tissue Freezing	\$10,000 - \$12,000 per cycle	\$300 - \$500 per year
Ovarian Transposition	Cost Unknown	N/A
Ovarian Supression	\$350 - \$500 Monthly	N/A
Options for Men	Service Cost Range	Storage Cost Range*
Sperm Banking	\$500 - \$1,000 per cycle	\$150 - \$400 per year
Testicular Sperm Extraction	\$7,500 - \$10,000 per cycle	\$300 - \$500 per year
Electroejaculation	\$10,000 - \$12,000 per cycle	\$300 - \$500 per year

* The proposed bill does not cover storage costs; we show these ranges to demonstrate that, even if the initial fertility preservation costs are covered, there are still on-going costs that affected insureds would need to fund.

⁴² Alliance for Fertility Preservation. "Paying for Treatments." <http://www.allianceforfertilitypreservation.org/costs/paying-for-treaments>. Accessed October 3, 2017.



The following table shows additional cost information for three specific Maryland providers, as shown on their websites:

Maryland-Specific Provider Costs

Provider	Oocyte Preservation	Embryo Preservation
Fertility Center of Maryland ^{43,44}	\$10,000 - \$11,500 per cycle	
Johns Hopkins ⁴⁵		\$8,000 - \$10,000 per cycle
Shady Grove Fertility ^{46,47}	\$12,500 - \$18,000 per cycle	

According to a Maryland provider we interviewed, the cost of sperm cryopreservation is relatively inexpensive, at approximately \$200 per cycle. This is less than the amount shown for national averages, but could reflect different services. According to the same provider, the cost of oocyte preservation can be around \$11,000 per cycle and the cost of embryo preservation can be around \$15,000 per cycle, which is consistent with our internet research on Maryland costs and similar to the nationwide costs. For some qualified individuals, the Livestrong Foundation provides subsidies that would lower the cost of oocyte preservation to \$4,000 per cycle and embryo preservation to \$5,000 per cycle. This does not include the cost of storage or the cost of IVF. Maryland is already one of 15 states that requires health insurance plans to offer coverage or provide coverage for fertility treatment costs and includes IVF procedures for couples that

⁴³ Costs shown are for 15 - 20 mature eggs.

⁴⁴ Fertility Center of Maryland. "Egg Freezing Costs." <http://www.fertilitycentermd.com/egg-freezing-pricing-maryland-fertility.html#.Weeh82iPLIU>. Accessed October 13, 2017.

⁴⁵ Johns Hopkins Medicine. "Options for Women Before Treatment." http://www.hopkinsmedicine.org/gynecology_obstetrics/specialty_areas/fertility_services/fertility_reservation/options_for_women_before_treatment.html. Accessed October 3, 2017.

⁴⁶ Costs shown are for 20 - 30 eggs.

⁴⁷ Shady Grove Fertility. "Cost of Freezing Eggs." <https://www.shadygrovefertility.com/affording-care/egg-freezing-cost/cost-freezing-eggs>. Accessed October 12, 2017.



have a two-year history of infertility⁴⁸ for the individual market⁴⁹ and large group market (for carriers that cover pregnancy related benefits).⁵⁰ IVF is excluded for the small group market.⁵¹

In our survey to Maryland carriers, we asked for information regarding costs of these services. Some carriers indicated the information was not available, either because they do not currently cover these services or their systems did not readily capture the information. There were an insufficient number of services to generate credible statistics for the carriers.

The data above show that fertility preservation can be a substantial cost for many, especially for patients that will be facing other costs due to the cancer or other medical conditions that require treatment. A study conducted in 2011 - 2012 showed that 90 percent of the women who elected not to undergo fertility preservation cited cost and lack of insurance coverage as the reason. This study was small, representing ninety-four women facing treatments that could reasonably result in infertility, of which 52 percent elected not to undergo fertility preservation.⁵² The study does show that cost can be a barrier and can represent a material percentage of household income, as shown by the following analysis.

⁴⁸ Fertility Authority. "Maryland Infertility Insurance Mandate."
<https://www.fertilityauthority.com/costs/insurance-coverage/maryland-infertility-insurance-mandate>. Accessed September 27, 2017.

⁴⁹ Maryland Insurance Administration. "Essential Health Benefits Chart." 2015.
<http://insurance.maryland.gov/Consumer/Documents/publicnew/essentialbenefitschart.pdf> . Accessed November 3, 2017.

⁵⁰ Maryland Insurance Administration. "Maryland's Mandated Benefits."
<http://insurance.maryland.gov/Consumer/Documents/publicnew/mandatedbenefits.pdf> . Accessed November 3, 2017.

⁵¹ Maryland Insurance Administration. "Essential Health Benefits Chart."

⁵² Brittany Raposa, "Maria's Law: Extending Insurance Coverage for Fertility Preservation to Cancer Patients in Massachusetts." UMass Law Review, 2014.
<http://scholarship.law.umassd.edu/umlr/vol9/iss2/5/>. Accessed October 3, 2017.

According to the website point2homes.com, with demographic information powered by Onboard Informatics, the household income and median income in Maryland, by age, is shown in the following table:⁵³

Maryland Median Income by Age Range	
Median Income Under 25	\$39,126
Median Income 25-44	\$63,361
Median Income 45-64	\$89,845
Median Income Over 65	\$64,372

The median household income by county in Maryland, with the state of Maryland as well as the entire United States as a reference, is shown below:⁵⁴

Median Household Income (in \$000s) by County			
Howard	\$109.9	Baltimore County	\$66.5
Montgomery	\$98.2	Talbot	\$61.6
Calvert	\$95.5	Caroline	\$58.6
Charles	\$93.2	Worcester	\$58.0
Anne Arundel	\$87.4	Kent	\$56.3
Queen Anne's	\$87.3	Washington	\$55.6
St. Mary's	\$85.7	United States	\$53.0
Carroll	\$84.8	Wicomico	\$51.1
Frederick	\$84.6	Dorchester	\$46.4
Harford	\$80.6	Garrett	\$45.2
Prince George's	\$73.6	Baltimore City	\$41.4
Maryland	\$73.5	Allegany	\$39.3
Cecil	\$66.7	Somerset	\$38.4

⁵³ Point2Homes. "Maryland Demographics."
<https://www.point2homes.com/US/Neighborhood/MD-Demographics.html#IncomeFinancial>.
Accessed September 26, 2017.

⁵⁴ Statistical Atlas. "Household Income in Maryland."
<https://statisticalatlas.com/state/Maryland/Household-Income>. Accessed September 26, 2017.

Prevalence of Coverage

Maryland Commercial Carriers and HMOs

Three carriers indicated that they do not provide coverage for fertility preservation procedures for iatrogenic infertility in the fully insured individual, small group, and large group markets.

Another carrier stated that fertility preservation due to iatrogenic causes of infertility is covered under all plans since they provide IVF benefits, if members have a planned course of treatment that will result in infertility and meet the medical necessity criteria for services.

Also, a carrier stated infertility coverage is highly plan dependent and for clients that offer infertility coverage, they cover cryopreservation, storage, and thawing of either of the following:

- Embryos while the individual is under covered active infertility treatment.
- Mature oocytes for an individual under active infertility treatment when, during a covered IVF cycle, there is inability to obtain viable sperm at the time of oocyte retrieval.

A carrier also indicated that cryopreservation of immature oocytes is considered experimental/investigational/unproven. Cryopreservation, storage, and thawing of embryos when not undergoing active infertility treatment, sperm, and oocytes for any other indication is considered not medically necessary. This carrier also noted that clinics do preserve eggs and sperm for short-term periods (a few months) during the middle of infertility treatment cycles, but this is not specifically billed and is covered as a cost of doing business in the context of rendering infertility treatment. Currently, there are no situations where fertility preservation services are covered.

Limitations

Limitations and/or exclusions for fertility procedures provided by carriers include the following:

One carrier stated the following limitations:

- Members and their partners must not have undergone a previous elective sterilization (vasectomy, tubal sterilization), with or without reversal, and

- Female members must demonstrate ovarian function adequate to result in IVF success, as measured by ovarian hormone measurements

Another carrier stated the standard benefit plan language across market segments specifically identifies cryopreservation for donor sperm and eggs as excluded. Harvesting reproductive material requires an infertility diagnosis. Cryopreservation and storage of reproductive material is not covered.

A third carrier stated this service is a contract exclusion in all fully-insured individual, small group, and large group market accounts.

Two carriers said there is no coverage for fertility preservation procedures for iatrogenic infertility for fully insured business for any market.

State Employee and Retiree Health and Welfare Benefits Program

The Department of Legislative Services provided a Fiscal and Policy Note on the impact this bill would have on the State Plan. With the exception of the one fully insured integrated health model medical plan (Kaiser), the State Plan is largely a self-funded plan; therefore, it would not be subject to this mandate. Historically, the State Plan has generally provided coverage for mandated health insurance benefits. The benefits described in the proposed mandate are not currently covered under the State Plan, including Kaiser. The Department of Budget and Management (DBM) advised the Department of Legislative Services that the increase in costs attributable to the proposed benefits is “indeterminate.” A “conservative actuarial estimate” of \$0.23 per member per month was provided by CareFirst elsewhere in the Note.⁵⁵

Self-Funded Plans

As one might expect, there is some variation among self-funded plans in the coverage of fertility preservation services. One carrier stated they do have self-insured plans that offer extended fertility preservation benefits beyond those provided in the individual, small group, and large group markets.

Another carrier stated they have only identified one self-insured account coded for this benefit.

⁵⁵ Maryland Department of Legislative Services, “Fiscal and Policy Note.” Senate Bill 918. http://mgaleg.maryland.gov/2017RS/fnotes/bil_0008/sb0918.pdf. Accessed October 3, 2017.

Two other carriers stated that most of their self-insured plans cover fertility preservation for iatrogenic reasons. One further explained, “While the types of services covered and excluded are mostly the same, self-funding clients rarely limit the services to those with diagnosed infertility. This allows the benefit to be applied as offered to same sex couples and single women.”

Medicaid

The Maryland Department of Health (MDH) indicated that fertility and fertility preservation services are not currently covered under the Medicaid program.

Other States

California has proposed SB172 that would require individual or group health care service plans or policies issued, amended, or renewed on and after January 1, 2018, that cover hospital, medical, or surgical expenses, to include coverage for standard fertility preservation services when a necessary medical treatment may cause iatrogenic infertility. As amended (March 7, 2017), the bill would require coverage for evaluation and treatment of iatrogenic infertility including, but not limited to, standard fertility preservation services.⁵⁶ This bill is currently in Senate Suspense File, where it will be held until consideration before moving to the Senate floor.⁵⁷

Connecticut has passed a bill H.B. 5644, which takes effect January 2018, which provides health insurance coverage for fertility preservation services for insureds who face likely infertility as a result of a necessary medical procedure for the treatment of cancer or other medical conditions.⁵⁸

⁵⁶ California Health Benefits Review Program. “Analysis of California Senate Bill 172 Fertility Preservation.” April 13, 2017.
http://chbrp.ucop.edu/index.php?action=read&bill_id=233&doc_type=1000. Accessed September 26, 2017.

⁵⁷ Alliance for Fertility Preservation. “State Legislation: California.”
<http://www.allianceforfertilitypreservation.org/advocacy/state-legislation/california>. Accessed September 26, 2017.

⁵⁸ UCONN Center for Public Health and Health Policy. “Review and Evaluation of Certain Health Benefit Mandates in Connecticut 2013.” December 31, 2013.
http://www.allianceforfertilitypreservation.org/assets/pdf/2013_ct_review.pdf. Accessed September 26, 2017.

New York has a pending bill that seeks to update the state's infertility insurance mandate to include up-to-date treatments, including IVF, which is currently excluded. The bill adds coverage for standard fertility preservation treatments for those facing iatrogenic infertility.⁵⁹

Rhode Island has passed legislation requiring that, "Any health insurance contract, plan, or policy delivered or issued for delivery or renewed in this state, except contracts providing supplemental coverage to Medicare or other governmental programs, which includes pregnancy related benefits, shall provide coverage for medically necessary expenses of diagnosis and treatment of infertility for women between the ages of twenty-five (25) and forty-two (42) years and for standard fertility preservation services when a medically necessary medical treatment may directly or indirectly cause iatrogenic infertility to a covered person."⁶⁰

Discussions with Providers

We interviewed two providers who either specialized in fertility preservation or iatrogenic infertility. Some observations from those discussions are below.

Provider #1:

One provider we interviewed is a doctor of obstetrics and gynecology (OBGYN) and did a three-year fellowship in endocrinology and fertility with Johns Hopkins Reproductive Health, where the provider continues to practice. This provider confirmed that individuals who had cancer treatments or treatments for other illnesses that jeopardize fertility have a high long-term success rate in freezing embryos. Fertility preservation and IVF also do not seem to increase the risk of birth defects as IVF utilizing mature oocytes has a 3-4% incidence rate of birth defects, versus 1-2% in general population. There are no direct data that freezing is the cause of the defects; Johns Hopkins Reproductive Health only freezes mature oocytes, and therefore has no comment on the effectiveness of freezing immature oocytes.

⁵⁹ Alliance for Fertility Preservation. "State Legislation: New York." <http://www.allianceforfertilitypreservation.org/advocacy/state-legislation/new-york>. Accessed September 26, 2017.

⁶⁰ State of Rhode Island. "2017 – S 0821 Substitute A." April 26, 2017. <http://webserver.rilin.state.ri.us/BillText/BillText17/SenateText17/S0821A.pdf>. Accessed September 26, 2017.

Radiation can be more damaging than chemotherapy. Ovarian shielding is a method where a protective cover is used to block the ovaries from damage from radiation therapy; however, there is an issue with “scatter radiation” meaning the ovaries may still be damaged by exposure to radiation. Testicular shielding is similar to ovarian shielding.

Most people undergoing radiation also receive chemotherapy. The typical cost for fertility preservation for females is \$11,000 to harvest and freeze eggs but that does not include medication. The cost to harvest and freeze embryos is \$15,000. The medication will cost the patient, on average, \$6,000. There are subsidies from LIVESTRONG for the medication; the patient costs are \$4,000 per cycle to freeze eggs, and \$5,000 per cycle to freeze embryos. LIVESTRONG does have income limitations for subsidies.

This provider also pointed out that the potential for infertility can add additional stress to a patient when they are dealing with cancer. Becoming aware that fertility preservation can cost them thousands on top of the costs to treat cancer, (and may not be covered by insurance) only further aggravates an already very stressful situation.

Provider #2:

In addition, we spoke to the president and general manager of an organization that provides preimplantation genetic screening solutions. If and when there is IVF, their laboratory screens the embryos for abnormalities.

The provider has had personal and professional experience with people who were diagnosed with conditions where treatment rendered them infertile. This provider indicated that providing benefits that would allow patients to retain their ability to have children has the possibility of reducing treatment costs for depression and anxiety, as well as reducing other support for individuals facing possible iatrogenic infertility.

The provider also noted that the bill would essentially add fertility preservation to a larger group of iatrogenic costs, which are already covered, including reconstructive breast surgery after mastectomy and wigs for chemotherapy patients.

The provider stated that carriers might have originally refused coverage for fertility preservation because it is considered experimental, which may

have been true a few years ago, but with technology increasing, several organizations no longer consider embryo and oocyte cryopreservation experimental. Carriers also noted that there may be difficulty in determining the coding for infertility, as many codes require a diagnosis of infertile; however, the provider noted that, with an 80 - 90% probability of a patient becoming infertile, the patient can be essentially diagnosed as infertile. The provider presented several interesting questions such as: When will frozen eggs and embryos be used and what if the eggs or embryos are not used? Also, will the mandate benefit all classes or a specific class of people? If the mandate is too broad it may be too expensive but, if it is too narrow, it may not be useful.

Questions Concerning Mandated Coverage for Fertility Preservation for Iatrogenic Infertility

The extent to which the coverage will increase or decrease the cost of the service.

Mandating a service or product increases the demand for that service and product, which typically increases the cost of the service, where allowed. Carriers can offset this upward pressure on price by contracting with providers. We have not been able to find follow-up studies performed by states that have implemented coverage for iatrogenic infertility. For some states, coverage has only recently been approved and has not been implemented at this time. Potential increases in cost are not expected to have a significant impact on per member per month (PMPM) costs or percentage of premium estimates.

The extent to which the coverage will increase the appropriate use of the service.

There is anecdotal evidence that individuals who are at risk of experiencing iatrogenic infertility are not using fertility preservation methods due to lack of coverage. We cited a small study earlier in this report that indicated over 90% of women who elected not to pursue fertility preservation cited cost as the reason. This mandate would increase the appropriate use of fertility preservation for iatrogenic infertility to the extent that it is currently not covered and people are not willing or able to pay the additional cost.

One carrier did express concern that the definition of iatrogenic infertility was too broad as it includes impairment of fertility caused directly or indirectly by “surgery” which could include voluntary male or female sterilization.

The extent to which the mandated service will be a substitute for a more expensive service.

For patients that experience iatrogenic infertility, there is no substitute service. Fertility preservation is important to many people diagnosed with cancer and the resulting infertility could be associated with psychosocial distress, according to a study performed by the American Society of Clinical Oncology.⁶¹ One provider also noted that a cancer diagnosis paired with a diagnosis of infertility may lead to psychological and psychosocial distress which may lead to an increased risk of depression and anxiety, which would produce additional support costs. However, we do not have data on the level of cost that would be incurred in these situations. Infertility does not only impact the patient, but parents lose the opportunity to be grandparents and significant others lose the opportunity to be parents. These other individuals could incur mental health costs that may be avoided if fertility is preserved.

The extent to which the coverage will increase or decrease the administrative expenses of carriers, including health maintenance organizations, or other organizations authorized to provide health benefit plans in the State, and the premium and administrative expenses of policyholders and contract holders.

The carriers did not provide information on the extent to which the mandate will increase or decrease their administrative expenses although one carrier recommended against this mandate because it “exceeds the industry standard and would impose significant cost and burden on the insurance industry.” However, this carrier did not provide an estimate of these costs.

Total administrative costs are typically 25% or less of claims costs, but a new benefit would not increase many of the administrative costs. It would increase claim payment costs and claim adjudication costs.

Financial Impact on Premiums: Analyses in Other States

California

The California Health Benefits Review Program estimates utilization to increase by 30% and would increase annual expenditures by \$6,001,000 or 0.041% for enrollees with Department of Managed Health Care (DMHC) -regulated plans

⁶¹ Journal of Clinical Oncology. “American Society of Clinical Oncology Recommendations on Fertility Preservation in Cancer Patients.”



and California Department of Insurance (CDI)-regulated policies, under the amended language.⁶²

Connecticut

Connecticut estimated a 10 - 15 percent increase in use of procedures per year and a premium increase of \$0.062 PMPM for individual policies and \$0.059 PMPM for fully insured group plans.⁶³ Using the 2016 SHCE member months and health premiums earned for the Connecticut market, this amounts to about 0.01% for individual policies and for fully insured group plans.

Carriers' Estimates

Four out of the five Maryland carriers that responded to our surveys provided cost estimates which were: \$0.00 PMPM (one carrier already provided coverage), \$0.03 PMPM, \$0.23 PMPM and \$1.50 PMPM, which translates to an impact on premiums from 0.0% to 0.4%.

One carrier expressed concern that many carriers predicate their payment of reproductive services on the presence of an infertility diagnosis. When a person is diagnosed with a condition where treatment will likely lead to infertility, technically, the person is not infertile at the time of harvesting which leads to uncertainty about whether proper billing practices allow the use of an infertility diagnosis or if there would be a cancer or other illness diagnosis that can be used to identify claims. Because there is not enough claim experience among the clinics, providers, and insurance carriers to know what valid diagnosis codes will be used to bill, there is a risk for overpayment, claims paid upon appeal, and more costly medical reviews.

Another carrier expressed concern about the chain of control for reproductive materials if a member does not survive treatments, and/or long-term maintenance costs to preserve the reproductive material for long periods of time. However, our reading of the bill specifically excludes annual storage costs.

As noted earlier in the report, one carrier indicated that the definition of "iatrogenic infertility" was too broad as it includes impairment of fertility caused directly or indirectly by "surgery", which could ultimately include voluntary male or female sterilization.

⁶² Alliance for Fertility Preservation. "State Legislation: California."

⁶³ UCONN Center for Public Health and Health Policy. "Review and Evaluation of Certain Health Benefit Mandates in Connecticut 2013."



NovaRest Estimate

If a carrier or plan currently covers infertility preservation services for iatrogenic infertility, there would be no impact on its premium. From our survey, all but one carrier does not cover these services.

NovaRest independently developed a range of estimates based on the following assumptions:

- Cancer incidence rates were national incidence rates taken from the National Cancer Institute Surveillance, Epidemiology, and End Results Program 2010-2014 SEER Incidence Rates, less 10.2 percent, which represent leukemia, lymphoma and myeloma, according to the Leukemia and Lymphoma Society.⁶⁴
- Insured population was based on member months by age provided by the carriers.
- For males, we assume 100% of members who pursue fertility preservation will use sperm cryopreservation. For females who pursue fertility preservation, we assume 50% will choose embryo cryopreservation and 50% will choose oocyte preservation, based on a study by the National Center for Biotechnology Information.⁶⁵
- Allowed costs for fertility preservation for iatrogenic infertility was based on the nationwide data,⁶⁶ which was consistent with costs provided from Maryland specific providers. For sperm collection, we selected the low end of the national range, \$500, because a provider we interviewed stated a lower amount. For embryo and oocyte collection, we selected the midpoint of the national range, \$13,000 and \$12,500, respectively.
- Paid to allowed ratios for fertility preservation for iatrogenic infertility is based on information provided by carriers weighted by member months provided in the 2016 SHCE, as follows: 69% for the individual market; 77% for the small group market; and 86% for the large group market.
- The non-benefit expenses were based on target loss ratios of 85% for the individual and small group markets, and 90% for the large group market. We used higher target loss ratios than for all benefits since the only additional costs associated with this benefit are the marginal costs for claim adjudication and expenses that are a function of premium.

⁶⁴ Leukemia and Lymphoma Society. "Facts and Statistics."

⁶⁵ Carla M. Bann, et al. "Cancer Survivors' Use of Fertility Preservation." *Journal of Women's Health*. December 2015, 24(12): 1030 - 1037. <https://doi.org/10.1089/jwh.2014.5160>. Accessed October 5, 2017.

⁶⁶ Alliance for Fertility Preservation. "Paying for Treatments."

- Most efforts for requiring mandated fertility preservation are focused on young adults, defined as ages 15 to 39. This proposed mandate does not have an age requirement. From our research, it is unlikely that a material number of individuals under age 15 or over age 39 would use these services and that the outcomes for these groups is less successful. Therefore, we based our incidence rate on the 15-39 population.
- For the number of patients who will pursue fertility preservation, we have assumed 2 scenarios: 25% and 33% for the population age 15 to 39.
 - The 25% scenario was based on a California Health Benefits Review Program analysis⁶⁷.
 - The 33% scenario was based on a study by the National Center for Biotechnology Information ⁶⁸.

Below we illustrate the gross PMPM impact on premiums for plans that currently do not cover fertility preservation services for iatrogenic infertility:

Total PMPM (Both Genders)	Individual	Small Group	Large Group
Scenario #1: 25%	\$0.14	\$0.18	\$0.18
Scenario #2: 33%	\$0.18	\$0.24	\$0.24

Only one carrier in the Maryland market covers fertility preservation for iatrogenic infertility; however, they do not sell policies in the individual market and only hold a market share of four percent in the small group and large group markets. Removing this carrier from our estimate produces our marginal cost estimate. Because their market share is so small, it does not impact our PMPM cost estimate. Therefore, our total cost estimate PMPM is equal to our marginal cost estimate PMPM.

The 2016 average premium by market shown below was determined from the total premium and member months in the 2016 SHCE for the 5 carriers involved in the study:

	Individual	Small Group	Large Group
Average 2016 Premium	\$271.88	\$371.04	\$457.70

⁶⁷ California Health Benefits Review Program. "Analysis of California Senate Bill 172 Fertility Preservation."

⁶⁸ Carla M. Bann, et al. "Cancer Survivors' Use of Fertility Preservation."



Using these average premiums, we calculated the percentage of premium increases as shown below:

Total Percentage of Premium (Both Genders)	Individual	Small Group	Large Group
Scenario #1: 25%	0.05%	0.05%	0.04%
Scenario #2: 33%	0.06%	0.06%	0.05%

Removing the only carrier which covers fertility preservation for iatrogenic infertility also does not impact our percent of premium estimate, and our estimate of the total cost as a percent of premium is equal to our estimate of the marginal cost as a percent of premium.

The impact of this coverage on the total cost of health care.

The total cost of health care would only change to the extent that the cost of the service would change or the utilization of the service would change. We do not anticipate any significant change in the cost, but utilization of the service would increase. Because there is currently little fertility preservation coverage for iatrogenic infertility, more utilization of services could put upward pressure on the total cost of health care. In addition, because of the broad definition of iatrogenic infertility, improper utilization of the benefits is possible, which would also put upward pressure on the total cost of health care. In the long run, there would be more expenses associated with pregnancies and children resulting from fertility preservation. However, the mandate might lead to lower rates of depression, lower rates of anxiety, and lower support costs for patients facing iatrogenic infertility, which could put downward pressure on health care costs.

It is important to note, however, that the mandate does not include the storage of sperm or oocytes, which could represent long-term maintenance costs for the patient of about \$500 per year according to a provider we interviewed, as well as the national cost estimates we have obtained, which would contribute to an increase in the total cost of health care. These costs would be borne by the members and some may not be willing or able to fund these costs. The mandate also does not cover IVF, which is already covered in Maryland in the individual market and in the large group market for plans that cover pregnancy related benefits, and was not considered in our estimate of the mandate costs.

The impact of all mandated health insurance services on employers' ability to purchase health benefits policies meeting their employees' needs.

Any mandate or regulation that results in the increase of costs and administrative complexity to the fully-insured premiums will serve as another incentive for employers to consider self-insuring. The Employee Benefit Research Institute (EBRI) released the results of a study it completed examining the trends from 1996 - 2015 in self-insured health plans among private-sector employers. The key findings were:⁶⁹

- The percentage of private-sector employers offering health plans of which at least one was self-insured increased from 28.5% in 1996 to 49% in 2015, representing a 36.8% increase.
- Between 2013 and 2015, the percentage of employers offering health plans with at least one self-insured plan increased for employers with 100 - 999 employees (mid-size employers) from 25.3% to 30.1%; for small employers (25 - 99 employees) the percent increased from 13.3% to 14.2%, and decreased for large employers (>1,000 employees) from 83.9% to 80.4%.
- The percentage of health-covered employees enrolled in self-insured plans increased from 58.2% to 60.0% from 2013 - 2015, with the largest increases occurring with small and mid-size employers.

It is not the cost of any single mandate that drives employers to self-insure, but rather an accumulation of multiple mandates. The ACA already has several components that appear to incent employers away from fully insured plans including EHBs, the health insurance tax and, in the case of employers with fifty or fewer employees, benchmark plans, and metal-level plans.

NovaRest estimates the percentage impact on premiums ranges from 0.04% to 0.06% on a percentage of premium basis, and \$0.1 to \$0.24 on a PMPM basis. Given the low-cost impact of the proposed mandate, it is unlikely that its passage alone would cause a major shift to self-insurance.

⁶⁹ Paul Fronstin. "Self-Insured Health Plans: Recent Trends by Firm Size, 1996 - 2015". EBRI.org Notes. July 2016. Vol. 37, No. 7. https://www.ebri.org/pdf/notespdf/EBRI_Notes_07-no7-July16.Self-Ins.pdf Accessed October 3, 2017.

Appendix I: Carrier Survey Responses⁷⁰

1. Please describe the current coverage for fertility preservation procedures for iatrogenic infertility. Please describe any coverage differences by market [individual, small group, large group].

	Response
Carrier #1	<p>The current coverage policy does not specifically mention iatrogenic infertility or fertility preservation. There is no coverage policy to address this specifically. However, the standard benefit plan language does specifically identify cryopreservation for donor sperm and eggs as excluded (under infertility section of SPD: OAP ASO 2016). Infertility benefits are highly plan dependent. For clients that offer infertility coverage, we cover cryopreservation, storage and thawing of either of the following:</p> <ul style="list-style-type: none"> • Embryos while the individual is under covered active infertility treatment • Mature oocytes for an individual under active infertility treatment when during a covered IVF cycle there is inability to obtain viable sperm at the time of oocyte retrieval <p>Cryopreservation of immature oocytes is considered experimental/ investigational/ unproven. Cryopreservation, storage, and thawing of embryos when not undergoing active infertility treatment, sperm, and oocytes for any other indication is considered not medically necessary.</p> <p>We do have self-insured plans that offer extended cryopreservation benefits beyond those listed above to their employees and dependents.</p>
Carrier #2	<ul style="list-style-type: none"> • We do not sell individual plans in Maryland. • Fertility preservation due to iatrogenic causes of infertility (such as cancer diagnoses that require treatment the will render the member infertile) is covered under all plans since they provide in vitro fertilization benefits. • In order to use these benefits, members must have a planned course of treatment that will result in infertility. • Members must meet medical necessity criteria for services described in the company's Clinical Policy Bulletin.
Carrier #3	<p>This is not a covered service in our fully-insured individual, small group, and large group market accounts.</p>
Carrier #4	<p>For the company's Fully Insured business, all market sizes, there is no benefit for fertility preservation procedures for iatrogenic infertility.</p>
Carrier #5	<p>"Health Plan" does not provide coverage for fertility preservation procedures for iatrogenic infertility in the individual, small and large group markets. Health Plan covers services or supplies for the diagnosis and treatment of involuntary infertility for females and males. Involuntary infertility, as defined by Health Plan, means the inability to conceive after one (1) year of unprotected vaginal intercourse. Any charges associated with acquiring donor eggs, donor sperm or donor embryos, and the freezing, storage and thawing of fertilized eggs ("embryos") are excluded from coverage in the individual, small and large group markets.</p>

⁷⁰ To preserve confidentiality, the numbering for the carriers is inconsistent throughout the Appendix. For example, the carrier labelled #1 in question #1 will not necessarily be labelled carrier #1 in question #2.



2. If you do not cover fertility preservation procedures for iatrogenic infertility, are there any situations where you do provide fertility preservation procedures? If so, please describe.

	Response
Carrier #1	N/A
Carrier #2	For the company's Fully Insured business, all market sizes, there is no benefit for fertility preservation procedures.
Carrier #3	No, currently there are no situations where fertility preservation services are covered. Clinics do preserve eggs and sperm for short term periods (a few months) while in the middle of infertility treatment cycles, but this is not specifically billed and is covered as a cost of doing business in the context of rendering infertility treatment.
Carrier #4	Health Plan does not provide any services or coverage for acquiring donor eggs, donor sperm or donor embryos, neither does Health Plan provide coverage for any charges associated with freezing, storage and thawing of fertilized eggs (embryos), female eggs and/or male sperm for future conception attempts.
Carrier #5	No.

3. Please describe any limitations and/or exclusions for fertility preservation procedures by market [individual, small group, large group].

	Response
Carrier #1	This service is a contract exclusion in our fully-insured individual, small group, and large group market accounts.
Carrier #2	Fertility preservation procedures are not covered in the individual, small and large group markets.
Carrier #3	The standard benefit plan language across market segments specifically identifies cryopreservation for donor sperm and eggs as excluded (under infertility section of SPD: OAP ASO 2016). Harvesting reproductive material requires an infertility diagnosis. Cryopreservation and storage of reproductive material is not covered.
Carrier #4	For the company's Fully Insured business, all market sizes, there is no benefit for fertility preservation procedures for iatrogenic infertility.
Carrier #5	<ul style="list-style-type: none"> • Members and their partners must not have undergone a previous elective sterilization (vasectomy, tubal sterilization), with or without reversal. • Females members must demonstrate ovarian function adequate to result in IVF success as measured by ovarian hormone measurement (day 3 FSH).



4. Please complete the following tables, for each market separately, for calendar year 2016: individual, small group and large group: [Table requests information on the incidence of cancer using treatments likely to result in iatrogenic infertility].

	Response
Carrier #1	Based on the primary and secondary codes provided by NovaRest for calendar year 2016, we had no data matching the criteria for individual or large group. Please note we have no Maryland small group policies.
Carrier #2	The specific data below is not available; however, the medical conditions listed are the types of cancers the company typically sees and approves for fertility preservation.

Carrier #3 Response

Cancer Type	Total Female Member Years	Female Member Years aged 10-44	Total Male Member Years	Male Member Years aged 10-44	Members with Diagnosis of Cancer
<u>Individual Market</u>					
Breast	1597	84	10	0	1607
Cervix uteri	97	44	0	0	97
Corpus uteri	159	6	0	0	159
Ovarian	142	15	0	0	142
Male genital	0	0	693	16	693
Colon and rectum	200	13	228	6	428
Hodgkin Lymphoma	31	9	22	10	53
Non-Hodgkin Lymphoma	31	9	22	10	53
Leukemia	117	13	134	18	251
Brain/CNS	33	7	49	13	82
<u>Individual Market Total</u>	<u>2407</u>	<u>200</u>	<u>1158</u>	<u>73</u>	<u>3565</u>
<u>Small Group Market</u>					
Breast	1058	136	6	0	1064
Cervix uteri	138	95	0	0	138
Corpus uteri	102	7	0	0	102
Ovarian	84	15	0	0	84
Male genital	0	0	423	29	423
Colon and rectum	108	11	136	15	244
Hodgkin Lymphoma	24	18	33	21	57
Non-Hodgkin Lymphoma	43	10	54	6	97
Leukemia	86	25	102	30	188
Brain/CNS	52	24	53	21	105
<u>Small Group Market Total</u>	<u>1695</u>	<u>341</u>	<u>807</u>	<u>122</u>	<u>2502</u>
<u>Large Group Market</u>					
Breast	3687	195	27	1	3714
Cervix uteri	219	114	0	0	219
Corpus uteri	364	16	0	0	364
Ovarian	252	21	0	0	252
Male genital	0	0	1717	60	1717
Colon and rectum	348	16	388	19	736
Hodgkin Lymphoma	60	29	54	35	114
Non-Hodgkin Lymphoma	207	16	211	23	418
Leukemia	249	44	301	69	550
Brain/CNS	101	27	109	40	210
<u>Large Group Market Total</u>	<u>5487</u>	<u>478</u>	<u>2807</u>	<u>247</u>	<u>8294</u>

Carrier #4 Response

Cancer Type	Total Female Member Years	Female Member Years aged 10-44	Total Male Member Years	Male Member Years aged 10-44	Members with Diagnosis of Cancer
<u>Individual Market</u>					
Breast	81	10	0	0	81
Cervix uteri	82	56	0	0	82
Corpus uteri	9	0	0	0	9
Ovarian	3	2	0	0	3
Male genital	0	0	2	1	2
Colon and rectum	9	2	15	0	24
Hodgkin Lymphoma	4	2	3	2	7
Non-Hodgkin Lymphoma	6	1	11	3	17
Leukemia	5	3	2	0	7
Brain/CNS	5	1	3	1	8
<u>Individual Market Total</u>	<u>204</u>	<u>77</u>	<u>36</u>	<u>7</u>	<u>240</u>
<u>Small Group Market</u>					
Breast	285	43	7	0	292
Cervix uteri	266	208	0	0	266
Corpus uteri	20	3	0	0	20
Ovarian	17	2	0	0	17
Male genital	0	0	17	11	17
Colon and rectum	39	7	40	6	79
Hodgkin Lymphoma	8	7	10	8	18
Non-Hodgkin Lymphoma	18	2	33	6	51
Leukemia	12	3	19	6	31
Brain/CNS	9	3	17	7	26
<u>Small Group Market Total</u>	<u>674</u>	<u>278</u>	<u>143</u>	<u>44</u>	<u>817</u>
<u>Large Group Market</u>					
Breast	531	63	7	1	538
Cervix uteri	538	405	0	0	538
Corpus uteri	40	3	0	0	40
Ovarian	27	10	0	0	27
Male genital	0	0	29	21	29
Colon and rectum	75	15	71	17	146
Hodgkin Lymphoma	8	4	11	7	19
Non-Hodgkin Lymphoma	33	3	43	8	76
Leukemia	27	9	36	10	63
Brain/CNS	24	10	26	8	50
<u>Large Group Market Total</u>	<u>1303</u>	<u>522</u>	<u>223</u>	<u>72</u>	<u>1526</u>

Carrier #5 Response

Cancer Type	Total Female Member Years	Female Member Years aged 10-44	Total Male Member Years	Male Member Years aged 10-44	Members with Diagnosis of Cancer
<u>Individual Market</u>					
Breast	109	9	2	1	110
Cervix uteri	1	0	0	0	1
Corpus uteri	1	0	0	0	1
Ovarian	0	0	0	0	0
Male genital	0	0	0	0	0
Colon and rectum	0	0	1	0	1
Hodgkin Lymphoma	0	0	0	0	0
Non-Hodgkin Lymphoma	6	2	7	1	13
Leukemia	4	1	4	1	8
Brain/CNS	1	0	1	0	2
<u>Individual Market Total</u>	<u>122</u>	<u>12</u>	<u>15</u>	<u>3</u>	<u>136</u>
<u>Small Group Market</u>					
Breast	31	2	0	0	33
Cervix uteri	1	0	0	0	1
Corpus uteri	0	0	0	0	0
Ovarian	0	0	0	0	0
Male genital	0	0	0	0	0
Colon and rectum	3	1	4	0	7
Hodgkin Lymphoma	0	0	0	0	0
Non-Hodgkin Lymphoma	3	1	0	0	3
Leukemia	1	0	2	2	3
Brain/CNS	0	0	1	1	1
<u>Small Group Market Total</u>	<u>39</u>	<u>4</u>	<u>7</u>	<u>3</u>	<u>48</u>
<u>Large Group Market</u>					
Breast	511	42	4	0	514
Cervix uteri	17	7	0	0	17
Corpus uteri	5	0	0	0	5
Ovarian	3	2	0	0	3
Male genital	0	0	0	0	0
Colon and rectum	49	5	53	3	102
Hodgkin Lymphoma	0	0	0	0	0
Non-Hodgkin Lymphoma	41	10	41	7	82
Leukemia	4	0	11	5	15
Brain/CNS	3	1	3	0	6
<u>Large Group Market Total</u>	<u>633</u>	<u>67</u>	<u>112</u>	<u>15</u>	<u>744</u>

5. Please indicate which of the following services are currently covered for your fully insured business:

Carrier #1: With respect to “Harm Reduction” and “Conservative Gynecologic Surgery, contract language does not go into the level of detail described in the definition of service, therefore, it is unknown whether the services listed are provided. For non-preventive gynecological care, benefits state: Benefits are available for Medically Necessary gynecological care. Regarding radiation therapy, benefits state: radiation therapy which includes radiation administration is covered. However, concerning coverage of ovarian shield or testicular shielding during radiation, it is unknown whether the services listed are provided. The benefit does not go into the level of detail described in the definition of service.

Carrier #1	Currently Covered
Embryo Cryopreservation	No
Oocyte Cryopreservation	No
Sperm Cryopreservation	No
Harm Reduction	
Ovarian shielding during radiation therapy	N/A
Testicular shielding during radiation therapy	N/A
Ovarian transposition [oophoropexy]	N/A
Conservative Gynecologic Surgery	
Radical trachelectomy	N/A
Conservative ovarian cancer surgery	N/A

Carrier #2	Currently Covered
Embryo Cryopreservation	When infertility is covered as listed above for these in active infertility treatment as outlined above. Embryo storage is not covered unless the individual is in active infertility treatment
Oocyte Cryopreservation	Only covered for ASO clients who choose to offer this service
Sperm Cryopreservation	Only covered for ASO clients who choose to offer this service
Harm Reduction	
Ovarian shielding during radiation therapy [radiation shielding]	This would not be reviewed for medical necessity and would be covered
Testicular shielding during radiation therapy [radiation shielding]	This would not be reviewed for medical necessity and would be covered
Ovarian transposition [oophoropexy]	This would not be reviewed for medical necessity and would be covered
Conservative Gynecologic Surgery	
Radical trachelectomy	This would not be reviewed for medical necessity and would be covered
Conservative ovarian cancer surgery	This would not be reviewed for medical necessity and would be covered

Carrier #3	Currently Covered
Embryo Cryopreservation	IVF only covers involuntary infertility, which is defined by Health Plan as the inability to conceive after one (1) year of unprotected vaginal intercourse. IVF is only covered under the conditions described below: a. The Member's oocytes are fertilized with the Member's spouse's sperm; and] b. The Member or both the Member and the Member's spouse, has a history of infertility of at least two (2) years duration; or the infertility is associated with any of the following: i. Endometriosis; ii. Exposure in utero to Diethylstilbestrol, commonly known as DES; iii. Blockage of, or surgical removal of, one (1) or both fallopian tubes (lateral or bilateral salpingectomy); or iv. Abnormal male factors, including oligospermia, contributing to the infertility; c. The Member has been unable to attain a successful pregnancy through a less costly infertility treatment for which coverage is available under the Evidence of Coverage; and d. The in vitro fertilization procedures are performed at medical facilities that conform to the American College of Obstetricians and Gynecologists guidelines for in vitro fertilization clinics or the American Fertility Society Minimal standards for programs of in vitro fertilization.]
Oocyte Cryopreservation	Any charges associated with conservative ovarian cancer surgery are excluded from coverage.
Sperm Cryopreservation	Any charges associated with conservative ovarian cancer surgery are excluded from coverage.
Harm Reduction	
Ovarian shielding during radiation therapy	Any charges associated with conservative ovarian cancer surgery are excluded from coverage.
Testicular shielding during radiation therapy	Any charges associated with conservative ovarian cancer surgery are excluded from coverage.
Ovarian transposition [oophoropexy]	Any charges associated with conservative ovarian cancer surgery are excluded from coverage.
Conservative Gynecologic Surgery	
Radical trachelectomy	Any charges associated with conservative ovarian cancer surgery are excluded from coverage.
Conservative ovarian cancer surgery	Any charges associated with conservative ovarian cancer surgery are excluded from coverage.

Carrier #4	Currently Covered
Embryo Cryopreservation	Yes-SG and LG plans cover IVF
Oocyte Cryopreservation	Yes-SG and LG plans cover IVF
Sperm Cryopreservation	Specialized sperm retrieval techniques (including vasal sperm aspiration, microsurgical epididymal sperm aspiration (MESA), percutaneous epididymal sperm aspiration (PESA), electroejaculation, testicular sperm aspiration (TESA), microsurgical testicular sperm extraction (TESE), seminal vesicle sperm aspiration, and sperm recovery from bladder or urine for retrograde ejaculation) are considered medically necessary.
Harm Reduction	
Ovarian shielding during radiation therapy	Yes
Testicular shielding during radiation therapy	Yes
Ovarian transposition [oophoropexy]	Yes
Conservative Gynecologic Surgery	
Radical trachelectomy	Yes
Conservative ovarian cancer surgery	Yes

Carrier #5	Currently Covered
Embryo Cryopreservation	No coverage, all markets.
Oocyte Cryopreservation	No coverage, all markets.
Sperm Cryopreservation	No coverage, all markets.
Harm Reduction	
Ovarian shielding during radiation therapy	This is standard of care. The service is included in the radiation treatment fees.
Testicular shielding during radiation therapy	This is standard of care. The service is included in the radiation treatment fees.
Ovarian transposition [oophoropexy]	This surgical procedure is included in standard benefit plans.
Conservative Gynecologic Surgery	
Radical trachelectomy	This surgical procedure is included in standard benefit plans.
Conservative ovarian cancer surgery	This surgical procedure is included in standard benefit plans.



6. Please complete the following table based on calendar year 2016 costs:

	Number of Services	Allowed Charges	Average Allowed/Service
Carrier #1			
Oocyte Cryopreservation	1	\$900.00	0
Embryo Cryopreservation	30	\$18,283.80	\$652.99
Sperm Cryopreservation	15	\$1,043.65	\$208.73
Carrier #2			
Oocyte Cryopreservation	0	0	0
Embryo Cryopreservation	1	0	0
Sperm Cryopreservation	0	0	0
Carrier #3	Please note that the information pulled based on the CPT Codes given, Oocyte Cryopreservation (89337), Embryo Cryopreservation (89258), Sperm Cryopreservation (89259), do not reflect a cancer diagnosis. Our data does not show any of our members utilizing fertility preservation if they have cancer. The AHRQ Diagnosis buckets that these CPT codes fall into are: 051 OTHER ENDOCRINE DISORDERS, 166 OTHER MALE GENITAL DISORDERS, 174 FEMALE INFERTILITY, and 176 CONTRACEPTIVE AND PROCREATIVE. Services are based on Large group, Small Group, and Individual data.		
Oocyte Cryopreservation	0	0	0
Embryo Cryopreservation	28	\$18,283.80	\$652.99
Sperm Cryopreservation	5	\$1,043.65	\$208.73
Carrier #4	Information Unavailable		
Carrier #5	N/A Not a covered benefit		

7. Please indicate the average paid to allowed ratio for 2016 for the following:

	Individual	Small Group	Large Group
Carrier #1			
Paid	\$634,913.06	\$124,329.82	\$4,152,504.46
Allowed	\$3,029,758.56	\$480,934.62	\$17,718,034.80
Ratio	21%	26%	23%
Carrier #2	68.00%	76.80%	78.90%
Carrier #3	83%	N/A, In MD this carrier has no Small Group Plans	98%
Carrier #4	N/A	Information unavailable	Information unavailable
Carrier #5	N/A - Not a covered benefit	N/A - Not a covered benefit	N/A - Not a covered benefit



8. If some of the services in the proposed mandate are not currently covered or have some type of service limitation, please provide the following information, using calendar year 2016 data:

	Fertility Preservation-Related Rejected Claims (in Dollars)	Fertility Preservation-Related Rejected Claims (PMPM)	Reason for Rejection (if available)
Carrier #1			
Individual	N/A		
Small Group	Covered Benefit	Covered Benefit	
Large Group	Covered Benefit	Covered Benefit	
Total			
Carrier #2			
Individual	\$0.00	\$0.00	N/A
Small Group	N/A	N/A	N/A
Large Group	\$1,677.00	\$1,677.00	Non-Network Provider Used
Total	\$1,677.00	\$1,677.00	Non-Network Provider Used
Carrier #3			
Individual	0	265	\$592,637.47
Small Group	0	36	\$39,035.90
Large Group	0	984	\$1,573,908.33
Total	0	1285	\$2,205,581.70
Carrier #4			
Individual	\$0.00	\$0.00	\$0.00
Small Group	\$0.00	\$0.00	\$0.00
Large Group	\$0.00	\$0.00	\$0.00
Total	\$0.00	\$0.00	\$0.00
Carrier #5			
Individual	\$492,800.43	\$3.89	Payment for this service is denied. Benefits are only available when you receive services from a provider in your plan's network and in your plan's network service area.
Small Group	\$467,268.76	\$0.91	Thank you for using network physician or other health care professional. We have applied the contracted fee. The PTNT is not responsible for the diff between the AMT CHRG'D by the physician or healthcare professional and the AMT allowed by the contract.
Large Group	\$1,541,415.23	\$1.54	
Total	\$2,501,484.42	\$1.53	



9. What would be the impact on premium if this proposed mandate were to pass? Please express as a PMPM and as a percentage of premium for each market segment: individual, small group, large group in the following table:

	Impact on Premium (PMPM)	Impact on Premium (% of premium)
Carrier #1	The impact is unknown at this time.	
Carrier #2	Due to limited data experience, the carrier did not feel it was credible to split out the PMPM by segment, therefore, maintained the \$0.23 for each market. Moreover, due to the limited data we have for this benefit, the impact on premium may not be credible.	
Individual	\$0.23	0.05%
Small Group	\$0.23	0.05%
Large Group	\$0.23	0.05%
Total	\$0.23	0.05%
Carrier #3	N/A as we cover this today. We cannot provide separate cost data on the impact of the freezing and storage charges since these charges are typically the member's cost.	
Carrier #4		
Individual	\$0.05-\$0.05	-
Small Group	N/A	N/A
Large Group	\$0.05-\$0.05	-
Total		
Carrier #5		
Individual	\$1.50	0.4%
Small Group	\$1.50	0.4%
Large Group	\$1.50	0.4%
Total	\$1.50	0.4%

10. Please identify any administrative concerns/costs associated with this proposed mandate.

	Response
Carrier #1	The definition of Iatrogenic Infertility is too broad as it includes impairment of fertility caused directly or indirectly by "surgery". This definition could ultimately include voluntary male or female sterilization.
Carrier #2	<p>"This has the potential of being an unfunded mandate associated with significant costs. In addition, we consider the cryopreservation, storage and thawing of immature oocytes to be unproven.</p> <ul style="list-style-type: none"> • Cryopreservation of oocytes is considered E/U/I because it is unknown how long oocytes will remain viable under cryopreservation and the success rate of oocyte fertilization after undergoing thawing is unknown. • Standard billing practices across the industry are to use health insurance for these services when there is an infertility diagnosis. This carrier, as with most carriers, predicates its payment of reproductive services on the presence of that infertile diagnosis. • In the case where there is a good chance for a person to be rendered infertile, technically the person is not infertile at the time of harvesting. Therefore, it is unclear whether or not: • Proper billing practices will allow the use of an infertility diagnosis on these claims. • There would be a cancer or other illness diagnosis that can be used to identify these claims (we tend to doubt it). In short, there is not enough claim experience among the clinics, providers, and insurance carriers to know what kind of valid diagnosis codes will be used to bill. Without knowing this, carriers will need to set these services to pay for any diagnosis to handle automatic payment of claims. This presents a financial risk for overpayment and for an opportunity for customers to preserve material for any reason. Other alternatives are less than ideal: • Pay claims upon appeal • Attempt medical review, which can be costly and require retrieving doctor's notes and other information across multiple providers to confirm the medical need."
Carrier #3	We have implemented this as a standard offering for more than 5 years. Freezing and storage costs are typically the member's cost as they can stretch on for years/decades.
Carrier #4	The administrative concern with this proposed coverage is that the benefit is not supported by other insurance carriers, so if we make the decision to cover the service, there is a possibility of adverse selection and high impact rate. As for cost, unless the mandate specifies what cost share should be applied, the service will be covered at the applicable infertility cost share, which is 50% coinsurance.
Carrier #5	<ul style="list-style-type: none"> • Long-term maintenance costs to preserve the reproductive materials for long periods of time. • Chain of custody for reproductive materials if member does not survive their treatments.

11. Please provide any other comments or suggestions regarding this proposed mandate.

	Response
Carrier #1	We respectfully submit that the proposed mandate well exceeds the industry standard and would impose significant cost and burden on the insurance industry.
Carrier #2	No additional comments
Carrier #3	No other comments at this time.
Carrier #4	
Carrier #5	We do not recommend coverage for freezing and storage of eggs/embryos/sperm because they can recur for years or decades.

12. How does your coverage typically differ for self-funded plans or, is coverage typically the same as fully insured plans? If coverage for self-funded plans differs, what is your estimate of the proportion of self-funded plans that cover this benefit to the same extent as fully-insured plans?
A) None B) Some, but less than half C) About half D) Most E) All

	Response
Carrier #1	(b) - Some, but less than half. * The carrier has identified only one self-insured account coded for this benefit.
Carrier #2	(d) – Most. Almost all plans exclude coverage of preservation. We administer for a small number of self-funded clients across markets and across the nation who have requested this type of coverage. Claims are paid with any diagnosis; we are unable to confirm the underlying condition that would warrant preservation.
Carrier #3	(d) – Most. While the types of services covered and excluded are mostly the same, self-funding clients rarely limit the services to those with diagnosed infertility. This allows the benefit to be applied as offered to same sex couples and single women.
Carrier #4	At this time, we do not have a response.
Carrier #5	D - Most self-insured plans cover fertility preservation for iatrogenic reasons.

Appendix II: Claim Codes

<u>Primary Diagnosis</u>	<u>ICD 10</u>	<u>ICD 9</u>
Brain and other Central Nervous System Tumors	C72.xxx	192.xxx
Breast Cancer	C50.xxx	174.xxx
Cervical Cancer	C53.xxx	180.xxx
Colorectal Cancer	C18.xxx	153.xxx
Leukemia	C95.xxx	208.xxx
Liver Cancer	C22.xxx	155.xxx
Lymphoma	C85.xxx	202.xxx
Melanoma	C43.xxx	172.xxx
Bone Cancer	C41.xxx	170.xxx
Soft Tissue Sarcoma	C46.xxx	176.xxx
Uterine Sarcoma	C57.xxx	183.xxx
Testicular Cancer	C62.xxx	186.xxx
Thyroid Cancer	C73	193
<u>Secondary Diagnosis</u>		
Encounter for fertility preservation counseling	V26.42	Z31.62
Encounter for fertility preservation procedure	V26.82	Z31.84

Bibliography

- Alliance for Fertility Preservation. "Paying for Treatments." <http://www.allianceforfertilitypreservation.org/costs/paying-for-treatments>. Accessed October 3, 2017.
- Alliance for Fertility Preservation. "State Legislation: California." <http://www.allianceforfertilitypreservation.org/advocacy/state-legislation/california>. Accessed September 26, 2017.
- Alliance for Fertility Preservation. "State Legislation: New York." <http://www.allianceforfertilitypreservation.org/advocacy/state-legislation/new-york>. Accessed September 26, 2017.
- American Cancer Society. "Estimated Number of New Cases for Selected Cancers by State, US, 2017". <https://www.cancer.org/content/dam/cancer-org/research/cancer-facts-and-statistics/annual-cancer-facts-and-figures/2017/estimated-number-of-new-cases-for-selected-cancers-by-state-us-2017.pdf>. Accessed September 26, 2017.
- American Cancer Society. "Estimated Number of New Cases for the Four Major Cancers by Sex and Age Group, 2017." <https://www.cancer.org/content/dam/cancer-org/research/cancer-facts-and-statistics/annual-cancer-facts-and-figures/2017/estimated-new-cases-for-the-four-major-cancers-by-sex-and-age-group-2017.pdf>. Accessed September 26, 2017.
- American Cancer Society. "How Cancer Treatments Can Affect Fertility in Women." Last Revised June 28, 2017. <https://www.cancer.org/treatment/treatments-and-side-effects/physical-side-effects/fertility-and-sexual-side-effects/fertility-and-women-with-cancer/how-cancer-treatments-affect-fertility.html>. Accessed September 28, 2017.
- American Cancer Society. "How Cancer Treatments Can Affect Fertility in Men." Last Revised June 28, 2017. <https://www.cancer.org/treatment/treatments-and-side-effects/physical-side-effects/fertility-and-sexual-side-effects/fertility-and-men-with-cancer/how-cancer-treatments-affect-fertility.html>. Accessed October 2, 2017.
- Brittany Raposa, "Maria's Law: Extending Insurance Coverage for Fertility Preservation to Cancer Patients in Massachusetts." UMass Law Review, 2014. <http://scholarship.law.umassd.edu/umlr/vol9/iss2/5/>. Accessed October 3, 2017.
- California Health Benefits Review Program. "Analysis of California Senate Bill 172 Fertility Preservation." April 13, 2017. http://chbrp.ucop.edu/index.php?action=read&bill_id=233&doc_type=1000. Accessed September 26, 2017.
- Campo-Engelstein, Lisa. "For the Sake of Consistency and Fairness: Why Insurance Companies Should Cover Fertility Preservation Treatment for Iatrogenic Infertility." http://oncofertility.northwestern.edu/sites/oncofertility/files/legacy_files/uploadedfilecontent/chapter_29_word.pdf. Accessed September 26, 2017.
- Carla M. Bann, et al. "Cancer Survivors' Use of Fertility Preservation." Journal of Women's Health. December 2015, 24(12): 1030 - 1037. <https://doi.org/10.1089/jwh.2014.5160>. Accessed October 5, 2017.



- Center for Consumer Information & Insurance Oversight. "List of Proposed Essential Health Benefit Benchmark Plans for 2017 and Beyond."
<https://www.cms.gov/CCIIO/Resources/Data-Resources/Downloads/Final-List-of-Proposed-BMP.pdf>. Accessed September 26, 2017.
- Department of Legislative Services, Maryland General Assembly 2017 Session. "Health Insurance - Coverage of Fertility Preservation Procedures for Iatrogenic Infertility."
http://mgaleg.maryland.gov/2017RS/fnotes/bil_0008/sb0918.pdf. Accessed October 3, 2017.
- Duck Sung Ko, et al. "Pregnancy and Fertilization Potential of Immature Oocytes Retrieved in Intracytoplasmic Sperm Injection Cycles." *Clinical and Experimental Reproductive Medicine* 42.3 (2015): 118 – 125.
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4604295/>. Accessed September 27, 2017.
- Eun Mi Chang, et al. "In Vitro Maturation of Human Oocytes: Its Role in Infertility Treatment and New Possibilities." *Clinical and Experimental Reproductive Medicine* 41.2 (2014): 41 – 46. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4102689/>. Accessed September 27, 2017.
- Fertility Authority. "Maryland Infertility Insurance Mandate."
<https://www.fertilityauthority.com/costs/insurance-coverage/maryland-infertility-insurance-mandate>. Accessed September 27, 2017.
- Fertility Center of Maryland. "Egg Freezing Costs." <http://www.fertilitycentermd.com/egg-freezing-pricing-maryland-fertility.html#Weeh82iPLIU>. Accessed October 13, 2017.
- ISFP Practice Committee et al. "Recommendations for Fertility Preservation in Patients with Lymphoma, Leukemia, and Breast Cancer." *Journal of Assisted Reproduction and Genetics* 29.6 (2012): 465 – 468. <https://www.ncbi.nlm.nih.gov/pubmed/22648282>. Accessed September 27, 2017.
- Jennifer Mersereau, MD, MSCI. "Chance of Pregnancy After Oocyte Cryopreservation". March 14, 2013. <http://oncofertility.northwestern.edu/resources/chance-pregnancy-after-oocyte-cryopreservation>. Accessed September 29, 2017.
- Johns Hopkins Medicine. "Options for Women Before Treatment."
http://www.hopkinsmedicine.org/gynecology_obstetrics/specialty_areas/fertility_services/fertility_preservation/options_for_women_before_treatment.html. Accessed October 3, 2017.
- John Hopkins Medicine. "Penile Vibratory Stimulation and Electroejaculation."
http://www.hopkinsmedicine.org/healthlibrary/test_procedures/urology/_22,PenileVibrator yStimulationandElectroejaculation. Accessed October 12, 2017.
- Journal of Clinical Oncology. "American Society of Clinical Oncology Recommendations on Fertility Preservation in Cancer Patients." June 2016.
<http://ascopubs.org/doi/full/10.1200/jco.2006.06.5888>. Accessed September 26, 2017.

- Journal of Clinical Oncology. "Fertility Preservation for Patients with Cancer: American Society of Clinical Oncology Clinical Practice Guideline Update." May 2013.
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5321083/>. Accessed September 26, 2017.
- Kumar Gubbala, et.al, "Outcomes of Ovarian Transposition in Gynaecological Cancers: A Systematic Review and Meta-Analysis." Journal of Ovarian Research. June 25, 2014.
<https://ovarianresearch.biomedcentral.com/articles/10.1186/1757-2215-7-69> Accessed October 12, 2017.
- Leukemia and Lymphoma Society. "Facts and Statistics."
<https://www.lls.org/http%3A//lls.org.prod.acquia-sites.com/facts-and-statistics/facts-and-statistics-overview/facts-and-statistics>. Accessed September 27, 2017.
- LiveStrong. "Position Statement: Health Insurance Coverage for Iatrogenic Infertility."
<https://d1un1nybq8gi3x.cloudfront.net/sites/default/files/what-we-do/reports/LIVESTRONG-CLRC-Position-Statement-Iatrogenic-Infertility-2011.pdf>. Accessed September 26, 2017.
- Marij J. Frantzen, et.al. "Gonan Shielding in Paediatric Pelvic Radiography: Disadvantages Prevail Over Benefit". Insights Imaging. February 2012.
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3292647/>. Accessed October 11, 2017.
- Maryland Census 2010. "State of Maryland Age Profile 1: Age by Sex for Persons in Households and Persons in Group." 2011.
http://planning.maryland.gov/msdc/census/cen2010/SF1/AgeProf/age_MDST.pdf. Accessed September 26, 2017.
- Maryland Department of Legislative Services, "Fiscal and Policy Note" Senate Bill 918.
http://mgaleg.maryland.gov/2017RS/fnotes/bil_0008/sb0918.pdf. Accessed October 3, 2017.
- Maryland Insurance Administration. "Essential Health Benefits Chart." 2015.
<http://insurance.maryland.gov/Consumer/Documents/publicnew/essentialbenefitschart.pdf> . Accessed November 3, 2017.
- Maryland Insurance Administration. "Maryland's Mandated Benefits."
<http://insurance.maryland.gov/Consumer/Documents/publicnew/mandatedbenefits.pdf> . Accessed November 3, 2017.
- Mayo Clinic Staff. "Fertility preservation: Understand your options before cancer treatment." October 26, 2016. <http://www.mayoclinic.org/healthy-lifestyle/getting-pregnant/in-depth/fertility-preservation/art-20047512>. Accessed September 29, 2017.
- Nalini Mahajan. "Fertility Preservation in Female Cancer Patients: An Overview", Journal of Human Reproduction. Jan-Mar 2015.
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4381379/> Accessed October 12, 2017.
- National Cancer Institute. "SEER Explorer". May 18, 2017.
<https://seer.cancer.gov/explorer/application.php>. Accessed September 27, 2017.

- Paul Fronstin. "Self-Insured Health Plans: Recent Trends by Firm Size, 1996-2015". EBRI.org Notes. July 2016. Vol. 37, No. 7. https://www.ebri.org/pdf/notespdfs/EBRI_Notes_07-no7-July16.Self-Ins.pdf Accessed October 3, 2017.
- Point2Homes. "Maryland Demographics." <https://www.point2homes.com/US/Neighborhood/MD-Demographics.html#IncomeFinancial>. Accessed September 26, 2017.
- Saine Irtan, MD, et.al. "Ovarian Transposition in Prepubescent and Adolescent Girls with Cancer." The Lancet Oncology. December 2013. <https://www.ncbi.nlm.nih.gov/pubmed/24275133>. Accessed October 12, 2017.
- Shady Grove Fertility. "ASRM 2016: Retrieval of More Eggs In IVF Leads To More Babies Born Per Cycle." October 18, 2016. <https://www.shadygrovefertility.com/blog/treatments-and-success/asrm-2016-retrieval-of-more-eggs-in-ivf-leads-to-more-babies-born-per-cycle/>. Accessed September 29, 2017.
- Shady Grove Fertility. "Cost of Freezing Eggs." <https://www.shadygrovefertility.com/affording-care/egg-freezing-cost/cost-freezing-eggs>. Accessed October 12, 2017.
- Shady Grove Fertility. "Frequently Asked Questions About Frozen Embryo Transfers." September 11, 2017. <https://www.shadygrovefertility.com/blog/treatments-and-success/frequently-asked-questions-about-frozen-embryo-transfers/>. Accessed September 29, 2017.
- State of Rhode Island. "2017 – S 0821 Substitute A." April 26, 2017. <http://webserver.rilin.state.ri.us/BillText/BillText17/SenateText17/S0821A.pdf>. Accessed September 26, 2017.
- Statistical Atlas. "Household Income in Maryland." <https://statisticalatlas.com/state/Maryland/Household-Income>. Accessed September 26, 2017.
- Terri L. Fauber, EdD, R.T.(R)(M). "Gonadal Shielding in Radiography: A Best Practice?" American Society of Radiologic Technologist. Accepted February 29, 2016. <http://www.radiologictechnology.org/content/88/2/127.abstract> Accessed October 12, 2017.
- The Oncofertility Consortium, Northwestern University. <http://oncofertility.northwestern.edu/resources/gonadal-shielding>. Accessed October 12, 2017.
- UConn Center for Public Health and Health Policy. "Review and Evaluation of Certain Health Benefit Mandates in Connecticut 2013." December 31, 2013. http://www.allianceforfertilitypreservation.org/assets/pdf/2013_ct_review.pdf. Accessed September 26, 2017.
- USC Fertility. "How Many Eggs should I Freeze." December 8, 2015. <http://uscfertility.org/how-many-eggs-should-i-freeze/>. Accessed September 29, 2017.