Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Elsevier hereby grants permission to make all its COVID-19-related research that is available on the COVID-19 resource centre - including this research content - immediately available in PubMed Central and other publicly funded repositories, such as the WHO COVID database with rights for unrestricted research re-use and analyses in any form or by any means with acknowledgement of the original source. These permissions are granted for free by Elsevier for as long as the COVID-19 resource centre remains active.
STATE INSURANCE MANDATES AND TRENDS IN PREIMPLANTATION GENETIC TESTING (PGT) UTILIZATION IN THE UNITED STATES, Bronwyn S. Bedrick, MD, MSCI, Andrew D. Tipping, MA, 2 Kateleen B. Nickel, MPH, 3 Joan Riley, PhD, HCLD, 4 Tarun Jain, MD, 5 Emily S. Jungeheim, MD, MSCT 3 Johns Hopkins University, Baltimore, MD; 4 Center for Administrative Data Research, St. Louis, MO; 5 Washington University School of Medicine, St. Louis, MO; 6 Washington University School of Medicine, St. Louis, MO; 7 Northwestern University, Chicago, IL; 8 Northwestern Feinberg School of Medicine, Chicago, IL.

OBJECTIVE: To assess associations between insurance mandates for fertility care and PGT utilization over time

METHODS: Retrospective cohort study

RESULTS: 875,567 cycles were included. The majority of IVF cycles occurred in states with no coverage. Per capita, IVF cycles were performed at higher rates in comprehensive coverage states (336 per 100,000 women in 2016) followed by partial (186) and no (142) coverage. For PGT cycles, comprehensive coverage states had the highest use per capita (98), followed by no (53) and partial (34). However, beginning in 2009, the proportion of IVF cycles using PGT was actually highest in no coverage states. Median household income decreased with increasing insurance coverage. Between 2007-2013, there was a minimal, yet statistically significant yearly increase in the rate of PGT use ($\beta = 0.05, SE = 0.003, p < 0.0001$). For partial and comprehensive coverage states, this increase was lower compared to no coverage states ($p < 0.0001$). Between 2014-2016, there was a substantial increase in the use of PGT ($\beta = 0.43, SE = 0.005, p < 0.0001$). This rise was more substantial in partial coverage states ($\beta = 0.11, SE = 0.03, p < 0.0001$).

CONCLUSIONS: This is the first study to examine the association between state mandated insurance coverage and PGT use. Across both time periods, there was a strong association between state mandate and PGT use. Partial and comprehensive, or no coverage. State census data were used to determine the population of reproductive age women and median household income. Log binomial regression was used to analyze change in proportion of PGT cycles over time relative to mandate type.

| Period       | 1 | 2 |
|--------------|---|---|
| Year         |   |   |
| Total cycles | 81512 | 82920 | 82776 | 83402 | 83894 | 82215 | 77364 | 92074 | 100318 | 109092 |
| % of total cycles using PGT | 4.9 | 4.6 | 4.4 | 4.6 | 5.2 | 5.4 | 6.4 | 17.4 | 25.7 | 33.7 |
| % change in % PGT | - | -7.3 | -4.5 | 5.9 | 11.7 | 3.8 | 18.7 | - | 47.1 | 31.4 |
| % PGT – no coverage | 4.8 | 4.7 | 4.6 | 5.1 | 5.8 | 5.9 | 6.9 | 19.4 | 28.5 | 37.0 |
| % PGT – partial coverage | 3.5 | 2.9 | 2.2 | 2.3 | 2.1 | 1.9 | 4.2 | 6.9 | 12.3 | 18.4 |
| % PGT – comprehensive coverage | 5.6 | 4.8 | 4.5 | 4.2 | 4.6 | 5.2 | 5.8 | 15.4 | 21.9 | 29.1 |

SUPPORT: The Center for Administrative Data Research is supported in part by the Washington University Institute of Clinical and Translational Sciences (NCATS) of the National Institutes of Health (NIH) and Grant Number R24 HS19455 through the Agency for Healthcare Research and Quality (AHRQ).

Almost one third of the women attending our clinic fell into the 35 – 39 age group category. Such a wait is not acceptable at this age.
CONSIDERING LOCATION IN ACCESS TO INFERTILITY SERVICES. Nathaniel B. Stanley, MA University of South Florida, Tampa, FL.

OBJECTIVE: The objective of this research is to observe aspects of location in reference to the use of infertility services by U.S. residents, with the purpose of identifying instances of interstate and international travel related to accessing infertility services, and the location of CDC reporting ART clinics in relation to population and birth density. DESIGN: Place, location, and travel are important factors to consider when discussing accessibility of specialized healthcare, such as infertility services. The ability to observe differences in the locations of clinics is informative, but geographic proximity to a clinic does not equate to increased access to infertility services. Medicine in the United States is a business, so geographic spread of ART clinics will undoubtedly follow population density. When reviewing different national surveys available that include questions about residence and infertility services, such as the Society for Assisted Reproductive Technology (SART) and the National Survey of Family Growth (NSFG), the surveys did not ask the right questions that would give insight into the influence of location hypothesized to be influential, such as the type of employment (employment status, part time, full time, state in which people work) and whether people travel for services (where and how far people go to access infertility services).

MATERIALS AND METHODS: This research uses a survey instrument developed by the PI, and spatial analysis of 2017 CDC-reporting ART clinics in relation to population and birth density in the United States. The survey instrument includes questions about: employment, travel intentions and reasons, and state of residence. Frequency statistics calculated using SAS 9.4 will show variation in answers. Spatial analysis consists of geocoding CDC-reporting ART clinics, and comparing their location with population and birth density data at the Census Tract level. In order to identify spatial clustering of clinics, an Optimized Hot-Spot analysis of 2017 ART clinics was conducted in ArcPro 2.5.

RESULTS: Survey results from 134 persons in 33 states using infertility services reveal the majority of people accessing infertility services accessed those services in their same state of residence (88.3%), most people have not and are not considering traveling out of state (90.3%) or out of country (82.7%) to access infertility services. There were 440 ART clinics reporting data to the CDC in 2017. Optimized Hot spot analysis revealed 147 output features statistically significant based on an FDR correction for multiple testing and spatial dependence, and those areas overlapped with the largest population and birth density census tracts.

CONCLUSIONS: Based on survey results, it does not appear that interstate or international travel for infertility services occur with high frequency for U.S. citizens. Spatial analyses revealed distinct spatial patterns regarding the location of CDC-reporting ART clinics and population and birth densities. Based on the nature of medicine in the United States as a business, it makes logical sense that ART clinics exist in areas with high population.

THE COST OF INFERTILITY (COIN) STUDY: ASSOCIATIONS WITH INCOME & BURDEN OF TREATMENT. Viji Sundaram, MD, Jerrine R. Morris, MD, MPH,1 Take Anderson, MBA,2 Martha Noel, MD1 University of California, San Francisco, Department of Obstetrics and Gynecology, San Francisco, CA; 2FertilityIQ, San Francisco, CA.

OBJECTIVE: (1) To conduct an analysis in a national cohort of patients pursuing in vitro fertilization (IVF) to determine significant predictors for total out-of-pocket (OOP) cost; (2) To evaluate to what degree total OOP costs are determined by income; (3) To characterize how patients finance the cost of IVF.

DESIGN: Cross Sectional Cohort MATERIALS AND METHODS: In collaboration with a national fertility education company (FertilityIQ), a recruitment email was sent to all registered users of FertilityIQ who had undergone at least 1 cycle of fertility treatment. A total of 1,568 people (36%) opened the email & 337 (8%) completed the survey including questions regarding demographics, reproductive and IVF history, insurance information, financial details, opinions on legislation, and a standard Decision Regret Scale (DRS). Survey questions were created through an iterative process and revised to incorporate changes following pilot delivery to 10% of FertilityIQ users. Data analysis was performed with descriptive statistics; univariate logistic regression for dichotomous outcomes; and one-way analysis of variance (ANOVA) with pairwise comparisons using the Bonferroni adjustment for categorical outcomes.

RESULTS: Recruitment emails were distributed to 4,326 registered FertilityIQ users, with 1,568 people (36%) opening the email & 337 (8%) completing the survey. 66% of respondents were ≤34 years of age, and 59% were white. 40% of respondents completed a web-based survey on FertilityIQ; 59% completed a mail survey on the mail survey on the mail. Total OOP cost included: education, income, insurance fertility coverage, length of time trying to conceive, use of an egg donor or gestational carrier, IVF history, financial details, opinions on legislation, and a standard Decision Regret Scale (DRS). Survey questions were created through an iterative process and revised to incorporate changes following pilot delivery to 10% of FertilityIQ users. Data analysis was performed with descriptive statistics; univariate logistic regression for dichotomous outcomes; and one-way analysis of variance (ANOVA) with pairwise comparisons using the Bonferroni adjustment for categorical outcomes.

RESULTS: From 2006 to 2016, the number of ED visits for OT among 18–65-year-olds increased from 2,791 to 4,420 (p < 0.0001). Approximately one-third of these visits were comprised of women aged 26–44 years. More than half of all ED visits were paid for by private insurance (56.6%), followed by Medicaid (20.3%) as the next largest payer. 31.5% of visits occurred in large metropolitan areas. Metropolitan teaching hospitals experienced a notable increase in ED visits for OT over the study period, during which time visits for OT doubled from 1,263 to 2,695. Conversely, the number of visits remained at about 1,662 cases per year at metropolitan non-teaching and non-metropolitan hospitals. ED charges for OT nearly quadrupled over the study period. The average charge for OT patients in 2006 was $5,134 and in 2016 was $19,012 — an average annual increase of 14.4% compared to an annual increase of 8.5% for all other diagnoses in age matched women. Hospital admission rates declined over the study period from 76% in 2006 to 38% in 2016 (p < 0.01).

CONCLUSIONS: The overall utilization of the ED for ovarian torsion increased significantly during the 11-year study period, despite a significant decrease in admission rates. Given that OT is considered a surgical emergency, this decrease in admission rate is quite surprising. The majority of patients were insured by private insurance, and metropolitan teaching hospitals saw a significant increase of OT cases from 2006 to 2016. Furthermore, the cost of ED visits for OT increased dramatically, with ED charges climbing from $5,000 to almost $20,000. Future studies are needed to elucidate the drivers behind the decrease in admissions for torsion.