

Assisted reproductive technology use, embryo transfer practices, and birth outcomes after infertility insurance mandates: New Jersey and Connecticut

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Objective: To explore whether recently enacted infertility mandates including coverage for assisted reproductive technology (ART) treatment in New Jersey (2001) and Connecticut (2005) increased ART use, improved embryo transfer practices, and decreased multiple birth rates.

Design: Retrospective cohort study using data from the National ART Surveillance System. We explored trends in ART use, embryo transfer practices and birth outcomes, and compared changes in practices and outcomes during a 2-year period before and after passing the mandate between mandate and non-mandate states.

Setting: Not applicable.

Patient(s): Cycles of ART performed in the United States between 1996 and 2013.

Intervention(s): Infertility insurance mandates including coverage for ART treatment passed in New Jersey (2001) and Connecticut (2005).

Main Outcome Measures(s): Number of ART cycles performed, number of embryos transferred, multiple live birth rates.

Result(s): Both New Jersey and Connecticut experienced an increase in ART use greater than the non-mandate states. The mean number of embryos transferred decreased significantly in New Jersey and Connecticut; however, the magnitudes were not significantly different from non-mandate states. There was no significant change in ART birth outcomes in either mandate state except for an increase in live births in Connecticut; the magnitude was not different from non-mandate states.

Conclusion(s): The infertility insurance mandates passed in New Jersey and Connecticut were associated with increased ART treatment use but not a decrease in the number of embryos transferred or the rate of multiples; however, applicability of the mandates was limited. (*Fertil Steril*® 2016;105:347–55. ©2016 by American Society for Reproductive Medicine.)

Key Words: Infertility insurance mandate, embryo transfer, multiple births, assisted reproductive technology (ART), in vitro fertilization (IVF)

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The increased use of assisted reproductive technology (ART) and non-ART fertility treatments over time has led to an increase in the

multiple birth rate (1). Assisted reproductive technology cycles average \$12,400 for fresh, autologous cycles in the United States (2). Because the

majority of patients in the United States pay for ART directly out of pocket, financial pressure can lead patients to transfer more than one embryo to

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The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

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maximize their chance for success, thus increasing multiple births. However, multiple births are associated with increased health risks to mother and infants (3, 4).

Infertility insurance mandates require that private insurers cover some costs associated with infertility diagnosis and treatment. Infertility mandates that include coverage for ART can reduce pressure to transfer multiple embryos during an ART cycle. Currently 15 states have infertility-related insurance mandates; only 8 require coverage for ART, among which there are various treatment restrictions, and patient and employer exemptions (5–9). Previous studies of infertility-related insurance mandates compared embryo transfer (ET) practices and ART treatment outcomes in mandate states with those in non-mandate states; however, observed effects could reflect differences in patient populations rather than insurance mandates (6–8,10–13).

The Centers for Disease Control and Prevention collects data on all United States ART cycles and outcomes per the Fertility Clinic Success Rate and Certification Act of 1992 (14). Because data collection began in 1995, only Connecticut and New Jersey have implemented infertility insurance mandates that include ART coverage. The objectives of this study were to explore changes in ART use, ART practice, and ART birth outcomes after the implementation of these infertility mandates in Connecticut and New Jersey, compared with non-mandate states.

MATERIALS AND METHODS

Data Source

We analyzed data from the Centers for Disease Control and Prevention's National ART Surveillance System and annual, state-specific population data prepared by the Census Bureau in collaboration with the National Center for Health Statistics, namely 1996–1999 bridged-race intercensal, 2000–2009 revised bridged-race intercensal, and 2010–2013 bridged-race vintage 2013 postcensal July 1 estimates (15, 16).

Insurance Mandates

Infertility insurance mandates including coverage for ART were enacted in New Jersey on August 31, 2001 and in Connecticut on October 1, 2005 (17, 18). The New Jersey mandate applies to patients younger than 46 years and includes women younger than 35 years who are unable to conceive over a 2-year period, women aged 35 years and older who are unable to conceive over a 1-year period, men unable to impregnate a woman, women unable to carry a pregnancy to live birth, and anyone with medical sterility. The Connecticut mandate applies to patients younger than 40 years who are unable to conceive or sustain a successful pregnancy within a 1-year period and who have been covered by a policy for at least 12 months. The New Jersey mandate covers a total of four egg retrievals along with all associated ART, fresh and frozen embryo transfers, assisted hatching, intracytoplasmic sperm injection (ICSI), and medications, whereas the Connecticut mandate covers at most two cycles of ART, with each fertilization or transfer counting as one cycle. Connecticut also limits each cycle to “not more than 2 embryo

implantations per cycle” (18), whereas New Jersey has no such limitations. In addition to ART coverage, the New Jersey mandate covers artificial insemination, ovulation induction, and surgery, whereas the Connecticut mandate covers four cycles of ovulation induction and three cycles of IUI. Both states require patients to use less-costly procedures first. Both states allow exclusions for religious employers and employers who self-insure, and New Jersey also exempts employers with fewer than 50 employees (5).

Statistical Methods

We explored trends in ART use, ART practice, and ART birth outcomes among all ART cycles for New Jersey, Connecticut, and all four states in the Northeast census region that do not have any infertility insurance mandate (the non-mandate states: Maine, New Hampshire, Pennsylvania, and Vermont) from 1996 through 2013. These four states were chosen for their close geographic proximity to New Jersey and Connecticut, resulting in more similarity between the states being compared. We excluded banking cycles resulting in the cryopreservation of all oocytes or embryos and research cycles evaluating new procedures. An ART use ratio was calculated as the number of cycles performed per 1,000 women in the population aged 15–44 years. We compared the percentage change in each measure from the year the mandate passed to the following year between the mandate and non-mandate states.

We generated 2-year pre- and post-mandate periods for each mandate state to explore ET procedures started directly before and after the mandates were passed for fresh non-donor cycles resulting in transfer. We used a 2-year period to provide enough time for a transition period after the mandates went into effect, but also to limit other changes in ART practice and birth outcomes in this rapidly changing field. For New Jersey, the periods were September 1, 1999 through August 31, 2001 and September 1, 2001 through August 31, 2003; for Connecticut, they were October 1, 2003 through September 30, 2005 and October 1, 2005 through September 30, 2007. We included the birth outcomes for all transfers started during these time periods, even if the birth outcome occurred later. Data for the same time periods in the non-mandate states were used for comparison. A 4-year pre- and post-mandate period was explored to assess sensitivity to time period length; stratification by the female patient's age at the time the cycle was started was explored to assess sensitivity to patient population; and a comparison group of all 35 states and the District of Columbia without infertility insurance mandates was explored to assess the impact of using a limited comparison group vs. all non-mandate states.

We looked at the associations between mandate period (pre-/post-mandate) and ART patient characteristics for mandate and non-mandate states using a Rao-Scott χ^2 test to account for clinic-level clustering. We explored associations between mandate period and ART use using Poisson regression for the number of cycles started per year, accounting for the female 15–44-year population. Because we had annual population estimates, we approximated the population using the year that covered the majority of the time

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