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# Autism Spectrum Disorders and Assisted Reproductive Technology: Massachusetts 2004-2010 Population-based Results from Data Linkage Efforts

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## Objectives

The etiology of autism spectrum disorders (ASD) is unknown. The impact, if any, of assisted reproductive technology (ART) on ASD has not been established. The study compares the prevalence of children 0-3 years with ASD conceived by mothers with infertility through ART (ART), mothers with infertility but not using ART (SUBFERT), and mothers without infertility spontaneously conceiving (FERTILE) âĂŞ separately among singletons and twins. The importance of linked population-based data systems to this analysis will be highlighted.

## Approach

This analysis requires linkage of three distinct data systems: the Society of Assisted Reproductive Technology Clinical Outcomes Reporting System (SART-CORS) clinical database; the Massachusetts Pregnancy to Early Life Longitudinal (PELL) public health data system (which includes birth certificate and hospital discharge data); and the MassachusettsâĂŹ childrenâĂŹs special needs Early Intervention (EI) program data. PELL data from 7/1/04-12/31/10 included 370,755 women with 474,784 deliveries resulting in 486,075 live births and fetal deaths. These were deterministically linked to 70,086 ART cycles among 28,490 women from SART-CORS; and then further linked to EI program participant data from 7/1/04-12/31/13. ASD was defined as a documented ASD diagnosis (ICD9 codes: 299) in the EI or hospital discharge records and/or claims documentation for autism-related EI specialty services. Chi-square and multivariate regression models estimated the association of ART, SUBFERT and FERTILE with ASD, controlling for maternal demographics, payer source, prenatal care, smoking, parity, delivery method, hypertension, obstetric or gynecologic health conditions, gender, paternal age and prematurity.

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## Results

Our final study population consisted of 481,575 children (460,117 singletons and 21,458 twins). Among singletons, the ASD prevalence was 1.7% and 1.3% in the ART and SUBFERT groups, respectively, compared to 1.0% in the FERTILE group. Among twins, the ASD prevalence was 2.3% and 2.4% in the ART and SUBFERT groups, respectively, compared to 2.0% in the FERTILE group. Among singletons, the adjusted odd ratios (aORs) were 1.0 [95% CI: 0.9-1.3] and 1.1 (95% CI: 0.9-1.4) for ART and SUBFERT compared to the FERTILE group. Among multiples, aORs were 1.1 (95% CI: 0.8-1.4) and 1.2 (95% CI: 0.8-1.8) for ART and SUBFERT compared to the FERTILE group. There were no significant differences in ASD prevalence between ART and SUBFERT groups.

## Conclusion

The likelihood of an ASD diagnosis among singleton or twin children born to ART or SUBFERT mothers does not differ from FERTILE mothers. Population-based linkage of clinical and public health databases provides unique opportunities to examine longer-term outcomes of ART.

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