

Less is more: improving outcomes and cutting costs to Quebec's assisted reproduction program

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On Aug. 5, 2010, Quebec became the first jurisdiction in North America to fund assisted reproductive technology (ART) for all women of childbearing age wanting to conceive using medical intervention. The primary impetus of the Québec Assisted Reproduction Program was to institute a mandatory single-embryo transfer policy to reduce the number of multiple gestations and their concomitant risks,¹ thereby decreasing the demand for neonatal care services. In 2013, the Quebec Ministry of Health and Social Services appointed a commissioner to undertake a full review of the program. Government officials and representatives of professional medical associations were reportedly concerned about the cost (about \$60 million annually), about the possible overuse of the program, and that an already strained health care system would be required to provide additional treatment, obstetric services, birthing facilities and neonatal intensive care to those who used the program.^{1,2} We expect the commissioner's review to include recommendations to reduce the number of procedures, and to restrict who is covered and under what conditions. In this commentary, we discuss limitations of the current program and make recommendations for improvements.

Currently, the program covers costs for up to three stimulation or six natural in-vitro fertilization (IVF) cycles, including infertility assessment and treatment procedures.¹ A primary care referral is not required to access the program; couples need only valid Quebec health cards. The program's laudable intent was to provide province-wide access to treatment. However, there is risk of overuse with such a program if the severity of infertility is not assessed.

Severity of infertility is determined by several risk factors, including maternal age and some underlying reproductive conditions.^{3,4,5} Decisions regarding the priority and timing of assisted reproduction should be based on the severity of infertility, the probability of conceiving under different treatment scenarios (including no treatment) and the risk of adverse outcomes, with all

decisions aimed to maximize the chances of delivering a healthy, single, full-term infant.^{4,6}

The current program includes a mandated single-embryo transfer policy, however, evidence shows that singleton pregnancies conceived through assisted reproduction carry an increased risk of adverse outcomes (i.e., preterm birth, low birth weight and birth defects), when compared with births that involve couples without infertility or subfertile couples who go on to conceive spontaneously.^{4,7} Therefore, a decision to proceed with ART therapy, even when it involves a single-embryo transfer, should still be made with caution. A single-embryo transfer policy cannot sufficiently address the burden of risk and costs associated with assisted reproduction. Infertility per se may be an independent risk factor for adverse pregnancy outcomes.³ Indeed, there is a moderately increased risk of preterm birth and other adverse outcomes among couples with a longer time to pregnancy compared with couples who conceive within 12 months, independent of treatment.^{4,8} However, ART treatment itself confers an important independent effect.^{4,6}

Couples who conceive spontaneously after a period of infertility are at a relatively lower risk of adverse outcomes when compared with couples who conceive with either non-IVF-based (e.g., insemination and/or ovulation induction) or IVF-based procedures.⁴ Although many couples who are infertile will require medical assistance to conceive, studies show that as many as 40%

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KEY POINTS

- Access to services of the Québec Assisted Reproduction Program need to be modified to reduce costs and risks associated with treatment.
- A standardized data-driven protocol for priority of care based on individual patient assessment that includes the probability of success and failure, as well as risks of treatment would reduce over- and undertreatment and make access to care more equitable across clinic sites.
- Forty percent of couples who seek infertility services conceive without treatment. These healthy couples could be assisted through appropriate support to improve their chances of conceiving naturally.
- A provincial registry that collects data on services and tracks patients and their outcomes would permit local evidence to be used to evaluate and improve the program.

who seek treatment conceive spontaneously.^{5,6} Interventions to promote the likelihood of conceiving spontaneously could thereby reduce costly overtreatment and adverse ART-related pregnancy outcomes.

To avoid both over- and undertreatment of patients, we recommend that the program mandate standard access criteria⁹ that are informed by current epidemiologic research on infertility and by known risks and benefits of procedures within the context of different health scenarios. Such criteria should include a standardized point of access through family physician or obstetrician–gynecologist referral channels. Upon referral, triage for priority of care should be data-driven and based on individual-level predictions of success and failure.^{2,9} Moreover, the implementation of a registry system, which the program currently lacks, that not only tracks patients but also collects data on treatment practices of clinics, pregnancies and birth outcomes is vital for future monitoring and evaluation of the program.

Through standardized triage, each couple would receive a personalized assessment that would include risks and probability of success and failure. These predictions would be based on the length, type and severity of infertility and on results of diagnostic tests and procedures. Triage could limit delays in treatment for those unlikely to conceive without medical intervention, by either expediting assisted reproduction or by treating the underlying cause of infertility, which the program currently does not emphasize. Triage could also identify younger, healthier couples who require support to pursue pregnancy on their own. The program could provide fertility education,¹⁰ encourage the use of fertility awareness methods and promote preconception health (i.e., weight loss, smoking cessation) to increase the chances of spontaneous pregnancy and reduce ART-associated risks.

Family physicians and obstetrician–gynecologists could provide referrals to fertility education classes and prescribe low-cost fertility technologies (e.g., over-the-counter ovulation predictor kits) for patients with a good chance of conceiving spontaneously. Couples on the mild end of the infertility continuum (e.g., those with unexplained infertility) could, while under the care of their primary care practitioner, continue to try to conceive without treatment while they wait their turn to access fertility services. Effectively, those most in need would receive priority treatment, and other couples would maximize their potential to conceive while waiting.

Our recommendations seek to preserve province-wide access to ART and to augment this goal by ensuring that all Quebec clinics meet

the same standards, provide patients with equal access to care and prioritize treatment for those most in need. Eliminating self-referral and incorporating triage could lessen the overall burden on the health care system, limit unnecessary tests and procedures and their associated risks, and reduce the number of high-risk births. Mandating standard access criteria and implementing a program registry would also benefit patients by providing them up-to-date, data-driven information about their chances of success that could guide patients' decisions regarding treatment. Couples could also be given important information on and assistance in interpreting risks of treatment (e.g., adverse effects of drugs) and risks of an eventual ART-achieved pregnancy and birth.

Standardization of the Québec Assisted Reproduction Program through referral from primary care physicians, a triage process and encouragement of low-risk, noninterventionist methods has the potential to improve outcomes and reduce costs of an important social and public health program.

References

1. Québec assisted reproduction program. Québec (QC): Gouvernement du Québec; 2013. Available: <http://sante.gouv.qc.ca/en/programmes-et-mesures-daide/programme-quebecois-de-procreation-assistee/remboursement-des-couts/> (accessed 2013 Oct. 30).
2. *Mémoire de la fédération des médecins spécialistes du Québec: Programme québécois de procréation assistée*. Montréal (QC): Fédération des Médecins Spécialistes du Québec; 2013. Available: www.fmsq.org/documents/10275/13957/Me%CC%81moire+FMSQ_Procr-assiste%CC%81e_22-05-13.pdf (accessed 2013 Oct. 30).
3. Basso O, Baird DD. Infertility and preterm delivery, birthweight, and caesarean section: a study within the Danish National Birth Cohort. *Hum Reprod* 2003;18:2478-84.
4. Pinborg A, Wennerholm UB, Romundstad LB, et al. Why do singletons conceived after assisted reproduction technology have adverse perinatal outcome? Systematic review and meta-analysis. *Hum Reprod Update* 2013;19:87-104.
5. Gnath C, Godehardt E, Frank-Herrmann P, et al. Definition and prevalence of subfertility and infertility. *Hum Reprod* 2005;20:1144-7.
6. ESHRE Capri Workshop Group. Failures (with some successes) of assisted reproduction and gamete donation programs. *Hum Reprod Update* 2013;19:354-65.
7. Davies MJ, Moore VM, Willson KJ, et al. Reproductive technologies and the risk of birth defects. *N Engl J Med* 2012;366:1803-13.
8. Messerlian C, Maclagan L, Basso O. Infertility and the risk of adverse pregnancy outcomes: a systematic review and meta-analysis. *Hum Reprod* 2013;28:125-37.
9. *Fertility: assessment and treatment for people with fertility problems*. London (UK): National Institute for Health and Clinical Excellence; 2013. Available: <http://publications.nice.org.uk/fertility-cg156/about-this-guideline#copyright> (accessed 2013 Oct. 30).
10. Zelkowitz P R, S, Carrier, E M, Tulandi, et al. The impact of government-funded IVF on patient-centered care in Quebec: the perspectives of physicians, nurses, and support staff. *Proceedings of the Canadian Fertility and Andrology Society meeting*; 2013 Sept. 26–29; Victoria (BC).

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