

The Cost of Unintended Pregnancies in Canada: Estimating Direct Cost, Role of Imperfect Adherence, and the Potential Impact of Increased Use of Long-Acting Reversible Contraceptives

Amanda Y. Black, MD, MPH,^{1,2} Edith Guilbert, MD, MSc,^{3,4} Fareen Hassan, MSc,⁵ Ismini Chatziheofilou, MSc,⁵ Julia Lowin, MSc,⁵ Mark Jeddi, MA,⁶ Anna Filonenko, DrPH,⁷ James Trussell, BS, BPhil, PhD^{8,9}

¹Department of Obstetrics and Gynecology, The Ottawa Hospital, University of Ottawa, Ottawa ON

²Ottawa Hospital Research Institute, Ottawa ON

³National Institute of Public Health of Quebec, Quebec QC

⁴Department of Obstetrics and Gynaecology, Laval University, Quebec QC

⁵IMS Health, London, UK

⁶Department of Clinical Epidemiology and Biostatistics, McMaster University, Hamilton ON

⁷Bayer Pharma AG, Berlin, Germany

⁸Office of Population Research, Princeton University, Princeton NJ

⁹Honorary Fellow, University of Edinburgh, Edinburgh, UK

Abstract

Objective: Unintended pregnancies (UPs) are associated with a significant cost burden, but the full cost burden in Canada is not known. The objectives of this study were to quantify the direct cost of UPs in Canada, the proportion of cost attributable to UPs and imperfect contraceptive adherence and the potential cost savings with increased uptake of long-acting reversible contraceptives (LARCs).

Methods: A cost model was constructed to estimate the annual number and direct costs of UP in women aged 18 to 44 years. Adherence-associated UP rates were estimated using perfect- and typical-use contraceptive failure rates. Change in annual number of UPs and impact on cost burden were projected in three scenarios of increased LARC usage. One-way sensitivity analyses were conducted to assess the impact of key variables on scenarios of increased LARC use.

Results: There are more than 180 700 UPs annually in Canada. The associated direct cost was over \$320 million. Fifty-eight percent (58%) of UPs occurred in women aged 20 to 29 years at an annual cost of \$175 million; 82% of this cost (\$143 million) was attributable to contraceptive non-adherence. Increased LARC uptake produced cost savings of over \$34 million in all three switching scenarios; the largest savings (\$35 million) occurred when 10% of oral contraceptive users switched to LARCs. The minimum duration of LARC usage required before cost savings was realized was 12 months.

Conclusion: The cost of UPs in Canada is significant and much of it can be attributed to imperfect contraceptive adherence. Increased LARC uptake may reduce contraceptive non-adherence, thereby reducing rates of UP and generating significant cost savings, particularly in women aged 20 to 29.

Résumé

Objectif : Les grossesses non planifiées (GNP) sont associées à un fardeau financier considérable; au Canada, l'ampleur de ce fardeau demeure inconnue. Cette étude avait pour objectif de quantifier les coûts directs des GNP au Canada, la proportion des coûts liés aux GNP attribuables à une observance imparfaite du schéma posologique contraceptif et les économies potentielles associées à un accroissement de l'utilisation de modes de contraception réversible à action prolongée (CRAP).

Key Words: Unintended pregnancy, cost savings, contraceptive efficacy, contraceptive adherence, intrauterine device, intrauterine system, long-acting reversible contraceptive, LARC

Competing Interests: None declared.

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Méthodes : Un modèle de coût a été conçu pour estimer le nombre annuel de GNP et leurs coûts directs chez les femmes âgées de 18 à 44 ans. Les taux de GNP associés à l'observance ont été estimés au moyen des taux d'échec de la contraception en utilisation parfaite et en utilisation typique. Les modifications du nombre annuel de GNP et les effets sur le fardeau financier ont été projetés dans le cadre de trois scénarios prévoyant un accroissement du recours aux modes de CRAP. Des analyses simples de la variance en matière de sensibilité ont été menées pour évaluer les effets de variables clés sur les scénarios prévoyant un accroissement du recours aux modes de CRAP.

Résultats : On compte plus de 180 700 GNP chaque année au Canada. Les coûts directs qui leur sont associés sont de plus de 320 millions de dollars. Cinquante-huit pour cent (58 %) des GNP se sont manifestées chez des femmes de 20 à 29 ans, ce qui représente un coût annuel de 175 millions de dollars; 82 % de ce coût (143 millions de dollars) étaient attribuables à la non-observance du schéma posologique contraceptif. L'accroissement du recours aux modes de CRAP a généré des économies de plus de 34 millions de dollars dans le cadre des trois scénarios de transition envisagés; les économies les plus importantes (35 millions de dollars) ont été constatées dans le cadre du scénario prévoyant que 10 % des utilisatrices de contraceptifs oraux adopteraient un mode de CRAP. La durée minimale d'utilisation d'un mode de CRAP nécessaire pour l'obtention d'économies était de 12 mois.

Conclusion : Au Canada, le coût des GNP est considérable; de plus, une bonne partie de ce coût est attribuable à une observance imparfaite du schéma posologique contraceptif. L'accroissement du recours aux modes de CRAP pourrait mener à une baisse du taux de non-observance du schéma posologique contraceptif, ce qui entraînerait une baisse des taux de GNP et générerait des économies considérables, particulièrement chez les femmes de 20 à 29 ans.

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INTRODUCTION

Unintended pregnancies are associated with a substantial, and potentially avoidable, cost burden.¹ In the United States, half of all pregnancies are unintended and the rates of unintended pregnancies appear to be increasing.^{2,3} Women in the 15- to 19-year-old age group have the highest proportion of unintended pregnancies,⁴ with 82% of pregnancies being unintended³; however, women in the 20- to 24-year-old age group have the highest rate of unintended pregnancy (104/1000 women aged 15 to 44 years).³ The annual medical costs of UP in the United States is approximately US\$4.6 billion.¹ Data on UP in Canada are more limited, but suggest

ABBREVIATIONS

IUC	intrauterine contraceptive
LARC	long-acting reversible contraceptive
OC	oral contraceptive
SARC	short-acting reversible contraceptive
UP	unintended pregnancy

that up to 40% of pregnancies in Canada are unintended.⁵ Surprisingly, there are no studies of the full cost burden of UP in the Canadian setting.

Despite the wide range of contraceptive options available in Canada, only 65% of Canadian women who are at risk of pregnancy and not trying to conceive “always” use a method of contraception.⁶ Conversely, 35% either never use a method of contraception (15%) or use contraception inconsistently (20%).⁶ With many contraceptive methods, contraceptive effectiveness is high with perfect use but imperfect adherence during typical use contributes to contraceptive failures.⁷ In fact, half of UPs in the United States occur in women using contraception.² In addition, 17.6% of Canadian women are using contraceptive methods that are associated with higher failure rates; these include coitus interruptus, natural family planning, and rhythm methods.^{6,7}

Contraceptive methods that are less dependent on the user are associated with typical-use failure rates that are closer to perfect-use failure rates.⁷ The most effective methods of reversible contraception during typical use are LARCs, including intrauterine contraceptives and subdermal implants, because they do not rely on user adherence.⁷ However, subdermal implants are not available in Canada and use of IUCs by Canadian women is low (< 5%).⁶ Increasing IUC use may help to decrease the rates of adherence-related UP and the cost burden associated with these pregnancies. Studies in the United States¹ and Norway⁸ have found that increasing LARC uptake may result in reduced rates of UP and hence a significant cost savings. To date, no study has quantified the direct cost of UPs in Canada or the proportion of this cost that can be attributed to imperfect contraceptive adherence.

The objectives of this study were to quantify the direct cost burden of UPs in Canada, to determine the proportion of UPs and cost attributable to imperfect contraceptive adherence, and to estimate the potential cost savings that could be realized with increased usage of LARCs in Canada. IUCs are the only LARCs available in Canada, thus the cost savings and timeframe within which the savings could be achieved were calculated in three scenarios of increased IUC usage.

METHODS

Model and Population

Using a framework that followed the structure of previous analyses in the United States,^{1,9} a cost burden model was constructed. Using this model, the annual number and cost of UPs in Canada were estimated. Next, the proportion of UPs attributable to imperfect adherence and the

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