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THE ECONOMIC VALUE OF SELF-ADMINISTERED SUBCUTANEOUS IMMUNOGLOBULIN G (SCIg) IN CANADA

A SCOPING REVIEW

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BACKGROUND

- Human polyclonal immunoglobulin G (IgG) is a standard treatment used for antibody deficiencies, primarily administered through intravenous Ig (IVIg) treatment in the hospital setting.[1,2]
- SCIg therapy has become available in Canada, allowing for patient-delivered home treatment.[3] Moreover, facilitated SCIg has been developed to enhance SCIg absorption and dispersion.[4]
- SCIg administration reduces patients' dependence on hospital services compared to traditional IVIg administration.[3]
- A broad summary of the literature is not currently available to inform the economic impacts of the different administration options for Igs.

OBJECTIVE

To summarize the economic value of SCIg versus IVIg treatment in Canada.

METHODS

SCOPING REVIEW

- A scoping review was conducted in February 2025 to identify available literature on healthcare resource use (HCRU), costs, cost-effectiveness, and budget impact of SCIg and IVIg in Canada.
- The review was guided by the Population, Interventions/Comparators, Outcomes, Study design (PICOS) criteria in **Figure 1**.
- The search was conducted in MEDLINE and Embase using indexed terms and keywords based on the PICOS criteria. A grey literature search was also conducted to supplement this search, in particular to identify reports from Canada's HTA agencies.
- Only articles published in English describing data from Canada, either nationally or from specific regions or provinces, were considered.

SYNTHESIS OF DATA

- To support comparisons of cost data, estimates from economic models were inflated to 2025 Canadian dollars (CAN$) based on the Health and Personal Care Consumer Price Index. Estimates of cost savings were converted to a common denominator of per patient per year for standardizing across the various approaches used in the literature to report these estimates.

Figure 1. PICOS criteria

Population	No restrictions, but with focus on children and adults with primary or secondary immunodeficiency; and adults with chronic inflammatory demyelinating polyneuropathy (≥18 years of age)
Intervention/ Comparators	• IVIg • SCIg (conventional / facilitated)
Outcomes	**HCRU** • Staff time • Inpatient & outpatient visits • Hospital visits & length of stay **Costs** • Total, direct medical & non-medical costs • Out-of-pocket costs • Indirect/societal costs **CE and BIA** • Cost-effectiveness outcomes • LY/QALYs/DALYs • CERs/ICERs • Total & incremental budget impact
Study design	• Clinical trials (single-arm, randomized, non-randomized) • Observational studies (retrospective, prospective, cross-sectional) • Economic evaluations (cost-effectiveness, cost-utility analyses, budget impact models)

Abbreviations: BIA, budget impact analysis; CE, cost effectiveness; CER; cost effectiveness ratio; DALY, disability adjusted life year; HCRU, healthcare resource use; ICER, incremental cost effectiveness ratio; IVIg, intravenous immunoglobulin; LY, life year; QALY, quality adjusted life year; SCIg, subcutaneous immunoglobin.

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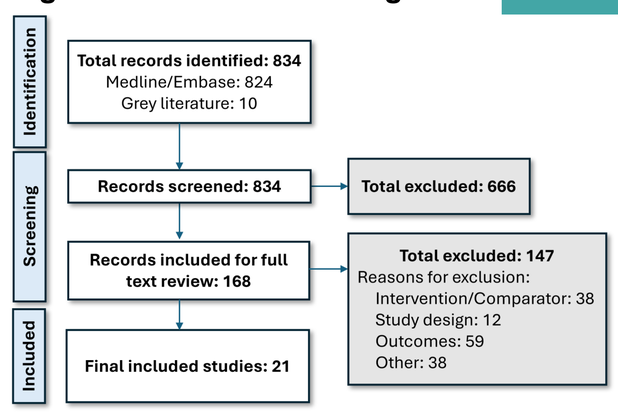
RESULTS

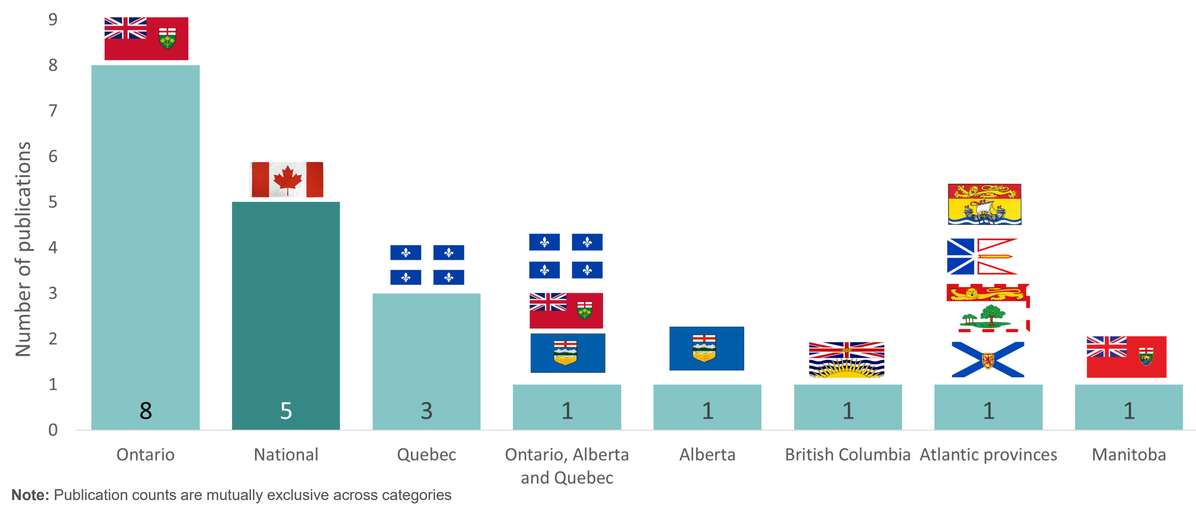
- From the total 834 identified records, 21 publications were included following a review against the eligibility criteria **(Figure 2)**.
- 11 reported HCRU and/or cost outcomes for SCIg and IVIg, while 10 reported outcomes for IVIg only. No studies described outcomes for facilitated SCIg.
- Data were available from individual provinces as well as nationally **(Figure 3)**.
- Key findings on HCRU and costs for SCIg and IVIg are summarized in **Table 1**.

Figure 2. PRISMA flow diagram



Abbreviations: PRISMA, Preferred Reporting Items for Systematic reviews and Meta-Analyses.
*Including 10 articles discovered by hand search

Figure 3. Geographies represented across 21 publications reporting outcomes for SCIg and IVIg



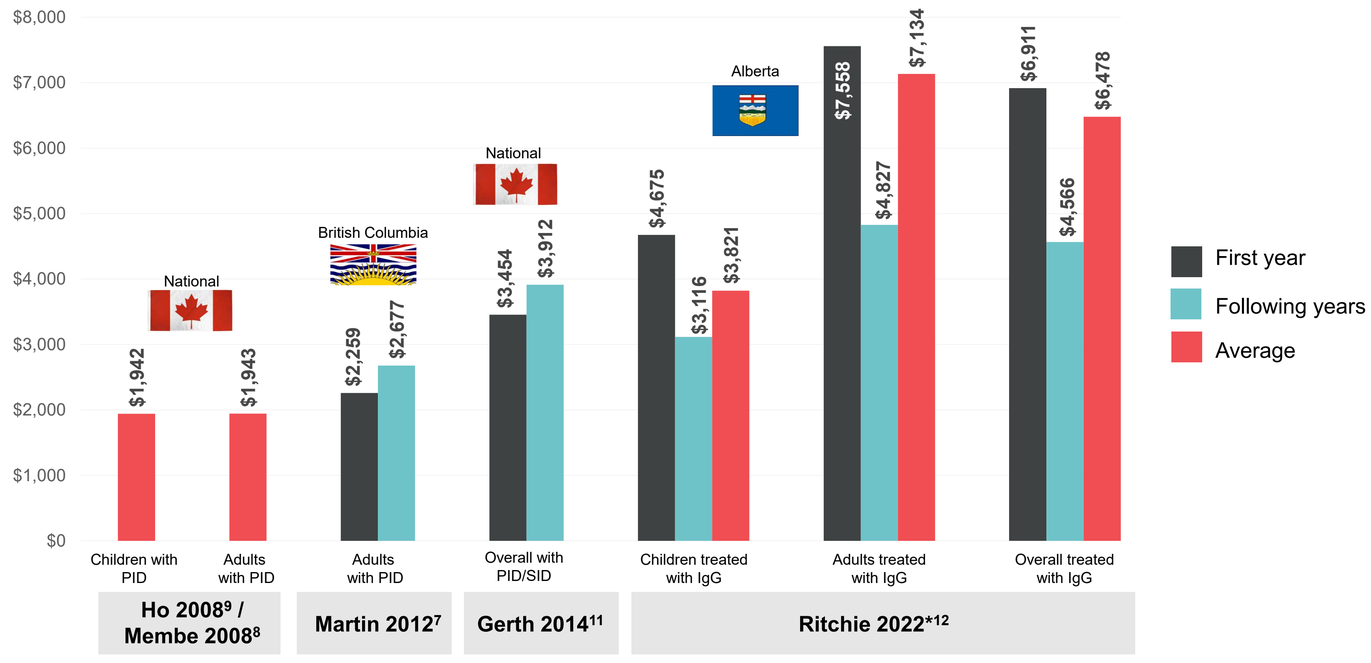
Note: Publication counts are mutually exclusive across categories

Table 1. Overview of key findings on HCRU and costs (uninflated) for SCIg and IVIg in Canada

Outcome	Key findings across PID / SID populations
HCRU	• Overall HCRU was lower with SCIg treatment, including fewer hospital visits and reduced need for hospital infrastructure.[5] • SCIg home administration did not require any nursing time after initial training (typically 1-3 visits[6]), beyond 1.5 hours per follow-up visit.[5] IVIg infusions took approximately 4 hours per infusion, requiring supervision from both a physician and a nurse.[7,8] • SCIg follow up visits were 3-4 per year. IVIg infusions required 14 hospital visits per year ($p<0.001$).[9]
Costs	• One-year direct costs were lower in SCIg vs hospital-based IVIg in both adults ($20,417 vs $21,777) and children ($12,101 vs $13,461).[7,8] • Switching a pediatric cohort to SCIg from IVIg substantially reduced annual lost parental productivity costs ($16 vs $1,120).[10]
Cost-effectiveness & budget impact	• In a cost-utility analysis, SCIg dominated hospital-based IVIg, even when hospital charges, physician costs, and nurse costs for hospital IVIg were lowered by 50%.[7,8] • Incremental cost-effectiveness ratio (ICER) for home-based IVIg was $39,500/QALY.[7,8] • Budget impact analyses and cost models consistently showed that switching patients from IVIg to SCIg would result in savings to the healthcare system (**Figure 4**).[5,7,8,11] • Savings increased as a greater percentage of patients were switched from IVIg to SCIg ($23 and $35 million over 3 years for a 50% and 75% switch, respectively, in a Canadian PID/SID population).[11]

Abbreviations: HCRU, healthcare resource use; ICER, incremental cost effectiveness ratio; IVIg, intravenous immunoglobulin; PID, primary immunodeficiency; QALY, quality adjusted life year; SCIg, subcutaneous immunoglobulin; SID, secondary immunodeficiency

Figure 4. Annual per patient cost savings with switching from IVIg to SCIg (inflated to 2025 CAN$)



Abbreviations: CAN$, Canadian dollar; IgG, immunoglobulin; IVIg, intravenous immunoglobulin; PID, primary immunodeficiency; SCIg, subcutaneous immunoglobulin; SID, secondary immunodeficiency.
*Cost savings with switch from clinic-administered IVIg to self-administered SCIg were statistically significant across all comparisons for Ritchie 2022 ($p<0.001$)[11]

DISCUSSION

- This review is the first study to summarize literature on the economic impacts of SCIg and IVIg in Canada and highlights the value of SCIg in reducing burden to the Canadian healthcare system.
- Patients treated with SCIg had minimal long-term healthcare involvement and greater independence than with IVIg after upfront infusion education was provided.
- Reductions in HCRU and costs were seen across categories (e.g., nursing time, hospital visits, lost productivity). Differences between SCIg and IVIg were often statistically significant.
- Economic models from provinces and across Canada estimated substantial cost savings following the switch from IVIg to SCIg, with greater savings as a larger percentage of patients switched to SCIg. Of note, assumptions used in economic models may underestimate real-world SCIg use, thereby underestimating the calculated cost savings.
- Choice of Ig administration modality is a complex decision and shared decision-making with the patient and multidisciplinary clinical team is often valuable. Findings from this study provide evidence to support this decision-making from an economic perspective.

CONCLUSION

SCIg represents an important treatment option both for alleviating burden to the Canadian healthcare system and for patients. Substantial cost savings were estimated following the switch from IVIg to SCIg with significant reductions in HCRU, which could potentially release otherwise limited resources. These findings provide healthcare decision makers with valuable information to support the adoption of SCIg where appropriate and feasible.

DISCLOSURES
The study was supported and funded by Takeda Canada Inc.
Antoinette Cheung, Megan Manuel, and Romina Fakhraei are employees of Broadstreet HEOR. Stephen Mac and Aidan Giangregorio are employees of Takeda Canada Inc. Stephen Mac holds stock or stock options in Takeda. Stephen D. Betschel has consulted and participated in advisory boards for ALK, Astria, BioCryst Pharmaceuticals, Canadian Blood Services, CSL Behring, Ionis Pharmaceuticals, KalVista Pharma, Pharming, Pharvaris, Takeda.

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SUPPLEMENTARY INFORMATION

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