

Economic Assessment of Different Modalities of Immunoglobulin Replacement Therapy

Stephen K. Membe, MDE^a, Chuong Ho, MD^a, Karen Cimon, MLT^a,
Andra Morrison, BSc^a, Amin Kanani, MD, FRCPC^b,
Chaim M. Roifman, MD, FRCPC^{c,*}

KEYWORDS

- Subcutaneous • Intravenous • Cost-effectiveness
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- Immunodeficiency

The most common significant inherited immunodeficiency is characterized by an inadequate production of antibodies. This feature is shared by a variety of genetically and phenotypically distinct disorders such as x-linked agammaglobulinemia, common variable immunodeficiency, or hyper-immunoglobulin M (IgM) syndrome.¹ The functional defect in these disorders might be limited to the B cell or T cell compartments or involve both domains of the immune system. The lack of antibodies and thus the failure to respond to vaccinations predisposes these patients to invasive and potentially life-threatening infections. Unable to actively immunize these patients, attempts were made to replace antibodies with those derived from blood of immunocompetent individuals.^{2,3} Initially only limited quantities of immunoglobulins (Ig) could be delivered through plasma infusions or intramuscular injections.^{4,5} This treatment was painful and quantitatively inadequate. A major advancement in this field was the introduction of immunoglobulins suitable for intravenous use (IVIg).⁶ In the early 1980s, IVIg containing reduced IgG aggregates and low concentrations of IgA was introduced.⁶ IVIg could be administered in large doses which could achieve physiologic serum IgG through levels.⁷⁻⁹ This in turn dramatically reduced the frequency of infections and improved already existing lung disease.⁷⁻⁹

^a Canadian Agency for Drugs and Technologies in Health (CADTH), 600-865 Carling Avenue, Ottawa, ON, Canada K1S 5S8

^b St. Paul's Hospital and the University of British Columbia, 1081 Burrard Street, Vancouver, BC, Canada V6Z 1Y6

^c The Hospital for Sick Children, Division of Immunology and Allergy, 555 University Avenue, Toronto, ON, Canada M5G 1X8

* Corresponding author.

E-mail address: croifman@sickkids.ca (C.M. Roifman).

The intravenous (IV) route is presently the most common route of administration for Ig.^{10–12} In general, IVIg has been successfully used in many patients and is considered to be safe and well tolerated.^{7,9–12} Adverse reactions to IVIg range in severity from mild headaches to rare episodes of stroke.^{7,13} Individual products vary in their propensity to cause reactions. Also, infusion rates and concentrations of solutions are factors in patient tolerability. Poor venous access in some patients (eg, infants) may result in multiple attempts at venipuncture for each infusion. In some patients indwelling central venous devices are required, with the associated risks of infection and thromboembolic complications.

The subcutaneous route of administration of immunoglobulins (SCIg) was initially exclusively used in Sweden.^{14,15} It has been gradually introduced to the rest of Europe and more recently to North America. Advantages of SCIg include the lack of requirement for vascular access and increased patient autonomy due to self-administration. Disadvantages include frequent injections due to volume limitations of the amount that can be administered at one time and slow buildup of serum Ig trough levels. Lastly, the use of SCIg is contraindicated in patients with bleeding tendencies and in those with various skin conditions. In addition, doses beyond 400–600 mg/kg/mo, which are commonly used in autoimmune disorders, cannot be practically administered through the subcutaneous (SC) route.

The available Ig products on the market are prepared using the classic Cohn cold alcohol fractionation process, first developed more than 50 years ago.^{2,3} In this process, plasma from large pools of donors yields a fractionated serum of 95% to 99% IgG and traces of other immunoglobulins.⁶ The final product must be as free from bacterial and viral contamination as possible. There are several methods for ensuring this, including: donor screening, molecular testing to determine viral load, virus partitioning using Cohn-Oncley fractionation, Kistler-Nitschmann fractionation, chromatography or filtration, virus inactivation using pH 4 incubation, solvent-detergent, heat, caprylate or low pH formulation, and antibody-mediated virus neutralization.¹⁶

IVIg and SCIg are available in liquid or lyophilized form. The liquid form takes less preparation before use. Some products require refrigeration, and are available only in one or two concentrations.¹⁷ Standard IVIg treatment usually consists of infusions once a month.^{8,12} The usual maintenance dose for primary immunodeficiency (PID) is 400 mg/kg to 600 mg/kg infused every three to four weeks.^{8,12} Infusions usually take one to four hours⁹ and use standard IV administration equipment. Infusions are most commonly administered in a hospital or outpatient setting, but can be administered at home.

Pharmacokinetic studies show a rapid increase in serum IgG levels immediately after the infusion (peak) and a subsequent gradual decline (trough). The role of IgG peaks in combating infection remains unknown, but trough levels above 5 g/L appear superior to lower serum IgG levels in preventing infections and improving lung disease.⁸

In comparison, SCIg therapy consists of weekly or biweekly administration, and the usual maintenance dose is 100 mg/kg, resulting in an accumulated monthly dose similar to that of IVIg therapy.¹⁸ The dose is self-administered or parentally administered at home, and the required equipment is tubing, needles or catheters, syringes, and an infusion pump.^{18,19} The initial infusion rate starts at 10 mL/h, and can be increased until the maximum rate of 22 mL/h is reached.⁹ Infusions typically take one to four hours.⁹ SCIg infusions do not result in a peak in serum Ig levels and trough levels rise gradually over a period of up to six months. Consequently, beginning treatment with IVIg and subsequent switching to SCIg is common practice. In preparation for home infusions, patients or parents are typically required to complete four to six educational and

training sessions at a hospital. Medical and nursing checkups are usually done every fourth week during the training period, including self-infusions under supervision at a clinic.

Economic assessment of these modalities of treatment is important and reflects on the health care system evaluated. In this article we have reviewed here studies performed to date including a recent extensive Canadian cost-minimization analysis (CMA).

REVIEW OF ECONOMIC STUDIES

Economic studies were conducted from the perspectives of the health care systems in Sweden, Germany, the UK, and France.^{20–22,24} The characteristics of the four reports are shown in **Table 1**. The cost parameters and assumptions in each study were reviewed to determine the extent to which the results can be applied to Canadian settings. The results and cost information from these studies appear in **Table 2**.

Several studies have described economic assessments which compare IVIg and SCIg. The studies appear similar in terms of clinical end points, cost items that were included in the analysis, results of the cost-effectiveness analysis, assumption about treatment settings for SCIg and IVIg patients, and assumption about the comparative effectiveness of SCIg and IVIg. The difference between the studies is the degree to which SCIg is cost-effective, owing to differences in study perspectives and differences in the per gram prices of immunoglobulin preparations (which accounts for >78% of the total costs of treatment) across countries. The major assumption in all the studies was equal benefit and harm of IVIg and SCIg.

In a cost analysis (CA) study, Gardulf and colleagues²¹ compared the yearly costs of home- and hospital-based SCIg to those of hospital-based IVIg from the perspective of the Swedish health care system. The per-patient yearly costs associated with IgG preparations, materials, personnel, rooms, and administrative overhead for each Ig therapy were computed. The original values in Swedish kronor were converted to United States dollars (one US\$ equals 7.8 kronor), using 1993 prices. The authors used yearly costs to compare hospital-based IVIg with hospital- and home-based SCIg. The yearly cost of hospital-administered SCIg was US\$4,656 with more than half (51%) of the cost attributed to IgG preparations. In comparison, the yearly cost of hospital-administered IVIg was US\$14,124, and 93% of the cost was attributed to IgG preparations. The yearly cost of SCIg administered at home was US\$3,096, with 78% of the cost attributed to IgG preparations. The authors concluded that by replacing hospital-based IVIg with home-based SCIg, the per-patient yearly cost would be reduced by more than US\$10,000.²¹

We identified two issues with the Gardulf and colleagues²¹ study. First, the implicit assumption in the CA that there was equal effectiveness between the two routes of administration could not be derived from the clinical data presented in the study. Second, the actual cost of therapy by either route of administration may have been underestimated because the study only accounted for costs accrued to the Swedish health care system. The costs associated with transportation of patients, management of adverse events (AE), and time spent by caregivers were not considered in the analysis.

Hogy and colleagues²⁰ performed a CMA based on Chapel and colleagues' crossover clinical study,²³ which found no differences in efficacy or adverse reaction rates between Ig therapy given subcutaneously or intravenously. The CMA took the perspective of the German statutory health insurance, including only those costs that could be reimbursed (eg, costs due to Ig, premedication for IVIg patients,

Table 1
Characteristics of economic studies

Author and Country	Study Design, Perspective, Interventions	Study Population	Clinical Outcomes ^a	Cost Considered
Gardulf et al, ²¹ Sweden	CA Swedish health care system Home SCIg versus hospital SCIg and hospital IVIg	165 PID patients aged 13 years to 76 years	Frequency of adverse systemic reactions, occurrence and intensity of tissue reactions and serum IgG changes	Ig preparation, materials, personnel, rooms, administrative overhead
Hogy et al, ²⁰ Germany	CMA German statutory health insurance Home SCIg versus hospital IVIg	Subgroup analysis: adults (75 kg) and children (40 kg)	Used result of previous study, involving 30 PID patients that showed no significant differences in infection and AE rates between SCIg and IVIg	Ig, pre-medications, infusion pump, physicians, diagnostic procedures, sick leave for children's caregivers
Liu et al, ²⁴ UK	CMA UK health system Application of appropriate UK assumptions to Hoky et al ³⁷ cost calculations Home SCIg versus home IVIg and hospital IVIg	Hogy et al subgroup analysis: adults (75 kg) and children (40 kg)	As in Hoky et al; no significant differences in infection and AE rates between SCIg and IVIg	As in Hoky et al; Ig, pre-medications, infusion pump, infusion materials, physicians, diagnostic procedures, sick leave for children's caregivers
Haddad et al, ²² France	CA Public payer (France) Home SCIg versus hospital SCIg and hospital IVIg	Not stated	No clinical data provided; authors assume equal effectiveness between SCIg and IVIg	Hospital admission, transportation to and from hospital, Ig acquisition cost (pre-tax), homecare nursing, rental cost of administration pumps and perfusion kits

Abbreviations: AEs, adverse events; CA, cost analysis.

^a Primary outcome: infection rate; secondary outcome: AE rate, serum Ig levels.

Table 2
Results of reviewed economic studies

Author (Funding Source)	Sensitivity Analysis on Cost Parameters	Study End Point	Study Results
Gardulf et al ²¹ (Swedish Medical Research Council)	Not performed	Total yearly cost of SCIg treatment (home and hospital) versus IVIg treatment (hospital)	Hospital-based IVIg = \$14,124/y Hospital-based SCIg = \$4,656/year Home-based SCIg = \$3,096/year (costs in US\$ at 1993 prices)
Hogy et al ²⁰ (funding source unstated)	Patients' weight; monthly Ig dose; price/g of IVIg and SCIg; costs of pump, treatment procedures, and pre-medications; and sick leave	Total yearly cost of SCIg treatment versus IVIg treatment for each subgroup	Adult: IVIg = €31,027; SCIg = €14,893 Children: IVIg = €17,329; SCIg = €8,659 (costs in 2003 prices)
Liu et al ²⁴ (funding source unstated)	Not performed	Total yearly cost of SCIg treatment versus IVIg treatment for each subgroup (costs in 2005 £)	Adult: IVIg at home = £11,580 Adult: IVIg at hospital = £18,600 Adult: SCIg at home = £11,760 Children: IVIg at home = £6,540 Children : SCIg at home = £6,720
Haddad et al ²² (funding source unstated)	Not performed	Monthly treatment cost of SCIg and IVIg	Hospital IVIg (20 g/mo) = €1,192.19 Home IVIg (20 g/mo) = €1,033 Home IVIg (40 g/mo) = €2,034.50 Hospital SCIg (20 g/mo) = €2,908.76 Home SCIg (20 g/mo) = €1,518 Home SCIg (40 g/mo) = €2,507–€2,729

Table 3
Base-case costs and assumptions

Item	SClg	IVIg		Assumptions	Source
		Home	Hospital		
Adult's weight	NA	—	—	70 kg	Hogy et al, ²⁰ Liu et al, ²⁴ PID Survey ²⁷
Child's weight	—	—	—	40 kg	
Monthly Ig dose, adult	—	28 g	—	Average monthly dose/kg of body weight 0.4 g for either route	Liu et al ²⁴
Monthly Ig dose, child	—	16 g	—		
Dosing intervals	Weekly	—	Monthly	—	CBS (Mathias Haun, personal communication, 2007) and ZLB (David Barnes, personal communication, 2007)
Ig price/g	C\$57.75	—	C\$57.75		
Monthly treatment or diagnostic cost	NA	—	C\$87.00	4 h of nurses' time plus physicians' fees, costs are same for home- and hospital-based IVIg	National cost list, ^{26,32,a}
Monthly hospital charges	NA	NA	C\$110.72	Same charges for adult and child; cost covers infusion materials, administrative support, data management, and follow-ups	Calculated using expert opinion and National cost list ²⁶
Infusion pump cost/y	C\$525.12	NA	—	Similar pump prices for child and adult patients, 2 pumps required/patient, 1 pump lasts 5 years	Berger, ¹⁸ Hogy et al ²⁰ Liu et al ²⁴ http://www.marcalmedical.com

Infusion material cost /y for home IVIg and SCIg	C\$377.43	C\$377.43	NA	Same costs of infusion materials for SCIg and home-based IVIg; for hospital-based IVIg, cost included in-hospital charges	Berger, ¹⁸ Liu et al, ²⁴ Norfolk Medical ³⁰
Monitoring costs every 6 mo	C\$55.00	C\$55.00	NA	Once every 6 mo SCIg, and home-based IVIg patients require monitoring by nurse or physician	‡
Transportation costs/mo	NA	NA	C\$10.50	Patient chooses to travel by public transit or taxi; average traveling distance to clinics or hospitals 15 km in Ontario	Ontario Maternity Expert Panel ²⁵
Cost of time lost for treatment/h	C\$8.56	C\$8.56	C\$18.92	Opportunity cost of time taken to administer home-IVIg or SCI and hospital IVIg is forgone value of unpaid work and paid work respectively	Statistics Canada; ²⁸ Public Health Agency of Canada; ²⁹ PID Survey ²⁷

Abbreviations: CBS, Canadian Blood Services; IMIg, intramuscular immunoglobulin; NA, not applicable. Liu et al.²⁴

^a Expert opinion.

infusion pumps and materials used with SCIg, treatment and diagnostic procedures, and sick leave for children's caregivers). The costs of managing AEs and time lost from work for adults were considered to be identical for SCIg and IVIg and thus were excluded.

The yearly costs of SCIg and IVIg therapy were derived from the monthly costs for adults and children, calculated as a function of their respective average monthly Ig dose (ie, determined by average body weight and market price per gram of Ig). The quantity of health care resources (treatment and diagnostic procedures) used was obtained from a survey of 18 German PID-treatment centers. All costs were expressed in 2003 euros (€).

The base case results show that the yearly costs to treat an adult patient were €31,027 (IVIg) and €14,893 (SCIg). The yearly costs for a child were €17,329 (IVIg) and €8,659 (SCIg). For both subgroups, Ig acquisition costs were the main cost driver, accounting for >80% of the total yearly cost for each treatment arm. One-way sensitivity analyses were conducted to factor in the uncertainties and variations in resource use, average body weight, monthly dose, and prices. In adult patients, the incremental costs between IVIg and SCIg were more sensitive to changes in the price of Ig and less so to the changes in body weight. In children, the incremental costs were most responsive to changes in body weight.

The study by Hogy and colleagues²⁰ showed that compared to IVIg, SCIg was cost saving because its price was 50% cheaper. However, this may not hold in the long-run as market forces will likely eliminate such per-unit cost differences. The study did not itemize the resources included in the calculations. As a result, it was unclear whether overhead costs and hospital charges were accounted for. Moreover, the ability to generalize the results is questionable, because the authors did not describe the methods used for the survey that was the basis for most of the cost calculations.

More recent work by Liu and colleagues²⁴ was instrumental in examining the cost drivers associated with IVIg and SCIg. The authors did not develop a new analysis, but investigated whether Hogy and colleagues'²⁰ costing assumptions applied in the United Kingdom (UK). This involved an examination of the cost parameters used in Hogy and colleagues'²⁰ study and their underlying assumptions, followed by application of the appropriate UK costs parallel to the original German costs. An average 2003 monthly exchange rate of one pound (£) for €1.453 and an annual inflation rate of 2.9% were used to calculate the equivalent UK costs in £ for 2005.

Regarding the costing assumptions between the two countries, Liu and colleagues²⁴ established that IVIg and SCIg are administered at home and in the hospital in the UK. In adults, the yearly price and cost of treatment or diagnostic procedures for IVIg were lower in the UK than in Germany (ie, £10,800 versus £22,194 and £180 versus £407 respectively). The yearly cost of a SCIg pump was higher in the UK (£180 versus £113). The costs associated with sick leave for caregivers of children and senior/disabled adult patients receiving IVIg and SCIg did not apply in the UK, and the costs due to infusion materials and hospital charges for IVIg (originally excluded in Hogy and colleagues' study) were applied in the UK costing assumptions. The remaining cost parameters (ie, SCIg price, premedication for IVIg patients, and materials used for SCIg) were applicable and within the reasonable cost range in the UK.

The results of Liu and colleagues'²⁴ study showed that the yearly costs for home-based IVIg and SCIg therapy were similar: £11,580 (IVIg) and £11,760 (SCIg) per year for adults and £6,540 (IVIg) and £6,720 (SCIg) per year for children. However, the cost of hospital-based IVIg was significantly higher at £18,600 per year. The differences in cost were attributed to hospital services, infusion materials, and treatment and diagnostic procedures for IVIg patients.

Haddad and colleagues²² compared the monthly costs of treatment between IVIg and SCIg from the perspective of the public payer in France. The comparison involved six treatment alternatives: hospital 20 g IVIg, hospital 20 g SCIg, home 20 g IVIg, home 20 g SCIg, home 40 g IVIg, and home 40 g SCIg. The costs due to hospital admission, transportation to and from hospital, pre-tax Ig acquisition, homecare nursing, and rental of administration pumps and perfusion kits were included. The treatment intervals were set at once per month for IVIg and four times per month for SCIg patients.

The base-case monthly costs of treatment were:

- IVIg 20 g = €1,192.19 (hospital) and €1,033 (home)
- SCIg 20 g = €2,908.76 (hospital) and €1,518 (home)
- IVIg 40 g = €2,034.50 (home)
- SCIg 40 g = €2,507–€2,729 (home)

The acquisition and hospital costs for either route of administration were major cost drivers. For example, with IVIg 20 g, approximately 57% of the total treatment cost is due to the cost of Ig, and 39% is due to hospital charges. For SCIg, approximately 30% of the total treatment cost is due to the cost of Ig, and 64% is due to hospital charges. When Ig was administered at home (by IV or SC), the IVIg patient had lower costs associated with the rental of administration pumps and perfusion kits, and IVIg acquisition.

PRIMARY ECONOMIC ASSESSMENT IN CANADA

In the present study, SCIg and IVIg were assumed to yield identical clinical outcomes, as per Chapel and colleagues.²³

The base-case results from the CMA for an adult and a child by treatment appear in **Tables 4 and 5** respectively. These results show that for each treatment arm, Ig prices account for >85% of the total cost of therapy. The results show a cost difference between SCIg and hospital-based IVIg therapies of about \$2,000 Canadian dollars (C\$) each year per patient, when indirect costs are included; and a cost advantage for home-based IVIg compared with SCIg. The difference is about C\$1,400 per year per patient when indirect costs are excluded.

Table 4
Results of adult yearly cost by treatment in Canada

Cost Items	SCIg	IVIg	
		Home Based	Hospital Based
Immunoglobulin	C\$19,404.00	C\$19,404.00	C\$19,404.00
Treatment by physician and nurse	NA	NA	C\$1,044.00
Hospital	NA	NA	C\$1,328.64
Infusion pump	C\$525.12	NA	NA
Infusion materials	C\$377.43	C\$377.43	NA
Monitoring	C\$110.00	C\$110.00	NA
Total direct treatment	C\$20,416.55	C\$19,891.43	C\$21,776.64
Transportation	NA	NA	C\$126.00
Time lost because of treatment	C\$616.32	C\$410.88	C\$1,135.20
Total direct and indirect	C\$21,032.87	C\$20,302.31	C\$23,037.84

Abbreviation: NA, not applicable.

Table 5 Results of child yearly cost by treatment in Canada			
Cost Items	SClg	IVIg	
		Home Based	Hospital Based
Immunoglobulin	C\$11,088	C\$11,088	C\$11,088
Treatment by physician and nurse	NA	NA	C\$1,044.00
Hospital	NA	NA	C\$1,328.64
Infusion pump	C\$525.12	NA	NA
Infusion materials	C\$377.43	C\$377.43	NA
Monitoring	C\$110.72	C\$110.72	NA
Total direct treatment	C\$12,101.27	C\$11,576.15	C\$13,460.64
Transportation	NA	NA	C\$126
Time lost because of treatment	C\$616.32	C\$410.88	C\$1,135.20
Total direct and indirect	C\$12,717.59	C\$11,987.03	C\$14,721.84

Abbreviation: NA, not applicable.

Table 6 Base-case parameters, ranges of sensitivity analysis, and rationale			
Item	Base-Case Parameters	Sensitivity Analysis Range	Rationale for Range
Adult's weight	70 kg	45–95 kg	± 25 kg
Child's weight	40 kg	2–70 kg	Infant to adult
Ig monthly dose/kg body weight	0.4 g	0.15 g–0.60 g	Range reported from PID survey ²⁷
IVIg price/g	C\$57.75	C\$50.00–70.00	Current range (CBS)
SClg price/g	C\$57.75	C\$50.00–70.00	CBS range
Infusion pump (SClg) cost	C\$525.12/y	C\$262.56–787.68	± 50%
Infusion materials cost	C\$377.43/y	C\$188.71–566.14	± 50%
Treatment costs (hospital IVIg)	C\$1,044.00/y	C\$522.00–1,566.00	± 50%
Transportation cost (hospital IVIg)	C\$10.50/mo	C\$5.00–20.00	Bus fare to taxi fare
Monitoring cost (SClg and home IVIg)	C\$55.00/6 mo	C\$0.00–220.00	0–4/y
Time lost because of treatment (SClg)	C\$8.56/h (unpaid work)	C\$4.28–25.68	0.5–3 h/infusion (once a month)
Hospital charges (IVIg)	C\$1,328.64/y	C\$664.32–\$1992.96	±50%
Time lost because of treatment (home IVIg)	C\$8.56/h (unpaid work)	C\$8.56–51.36	1–6 h/infusion (once a month)
Time lost because of treatment (hospital IVIg)	C\$18.92/h (paid work)	C\$18.92–151.36	2–6 hours/infusion

Abbreviation: CBS, Canadian Blood Services (Mathias Haun, personal communication, 2007).

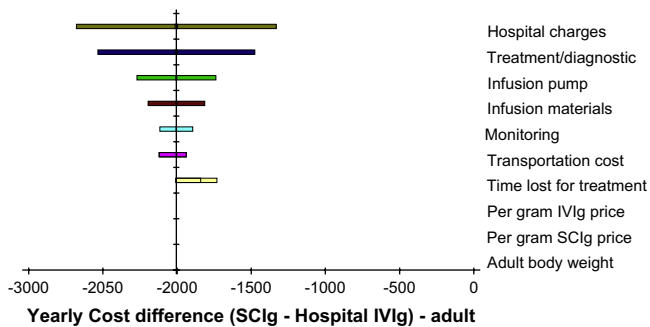


Fig. 1. Adults (SCIg and hospital IVIg). IVIg, intravenous immunoglobulin; SCIg, subcutaneous immunoglobulin.

Two factors explain the small cost difference between the two routes. First, the Ig acquisition cost that constitutes most of the total costs for each treatment alternative is similar. Second, for SCIg therapy, the high prices of the pump, monitoring, and infusion materials offset approximately half the gains from averted hospital charges and treatment or diagnostic costs.

In the sensitivity analysis, we varied each cost driver to account for uncertainty in the use of resources for each subgroup. We recorded the resulting incremental cost differences for each parameter to determine their respective magnitude of influence to the base-case incremental cost differences. The sensitivity ranges for each parameter, with the justification, are tabulated against base-case parameters in **Table 6**.

The results of the sensitivity analysis are shown in tornado diagrams, depicting the influence of each parameter on incremental cost. Tornado diagrams for children are replicas of those for adults, because the dollar value for each variable (except the per gram price of Ig that is the same for each intervention) is applied to adults and children. Except for the first comparison, we display only the adult tornado diagrams. For adults (**Fig. 1**) and children (**Fig. 2**), the results of the sensitivity analysis show that the yearly incremental cost differences between SCIg and hospital-based IVIg are more responsive to hospital charges, treatment costs, costs of infusion pumps, and costs of infusion materials. Overall, the cost differences are not driven by the per gram price of IVIg and SCIg, because they are assumed to be in the same range.

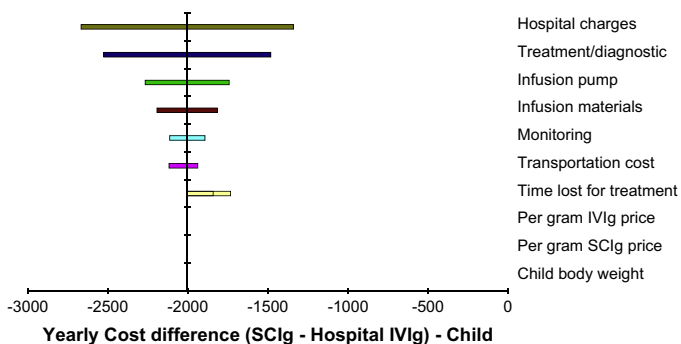


Fig. 2. Children (SCIg and hospital IVIg). IVIg, intravenous immunoglobulin; SCIg, subcutaneous immunoglobulin.

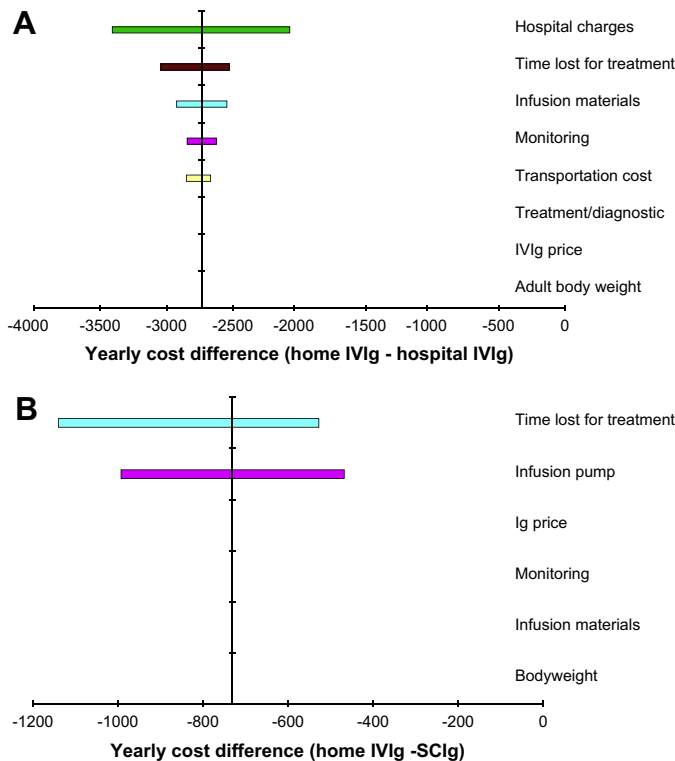


Fig. 3. (A) Yearly incremental cost difference (home IVIg–hospital IVIg). (B) Yearly cost difference (home IVIg–SCIg).

Hospital charges, time lost because of treatment, and infusion materials are major drivers of the cost differences between home-based IVIg and hospital-based IVIg (**Fig. 3A**). The yearly incremental cost differences between SCIg and home-based IVIg are responsive to the cost of infusion pumps and time lost because of treatment. The per gram prices of SCIg and IVIg, infusion materials, body weight, and monitoring were assumed to be in the same sensitivity range between the two interventions. Therefore, they do not influence the cost differences (**Fig. 3B**).

We have shown here that differences in cost effectiveness between hospital-based IVIg and home based IVIg or SCIg are modest. Home IVIg appeared to be the potentially most cost saving Ig route of administration. Home SCIg, although to a lesser degree, could also save costs when compared with hospital IVIg. Future studies should determine the safety and long term efficacy of home treatment.

SUMMARY

In spite of major differences in the health care systems in various countries, some common themes emerged. First, because the cost of Ig constitutes the lion’s share of this therapy, lower costs of SCIg in some countries influenced cost analysis studies in favor of SCIg when compared with IVIg. Second, if SCIg and IVIg costs are comparable, then home-based treatment appears more cost effective than hospital-based therapy. The extent of this advantage varies among countries.

In Canada the CMA show only minimal cost differences between the two treatments. This is attributed to the parity pricing per gram of SCIg and IVIg in this country, and the fact that the acquisition cost of Ig made up the largest proportion of total costs of either treatment. In our analysis, the cost differences resulted from differences between the sums of transportation costs, hospital charges, and treatment or diagnostic charges for hospital-based IVIg and infusion pumps, infusion materials, and monitoring for SCIg. As a result, we found the cost difference between treatments to be small, because the costs due to the materials required for SCIg infusion offset most of the gains from the avoidance of hospital and treatment or diagnostic charges. As a result, home-based IVIg shows a larger net gain from the avoidance of hospital charges.

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