

Cost-minimization analysis of introducing sublingual immunotherapy for the treatment of house dust mite allergic rhinitis in Quebec

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Background

The SQ HDM SLIT-tablet was recently approved by Health Canada as allergy immunotherapy (AIT) for the treatment of moderate to severe house dust mite (HDM) induced allergic rhinitis (AR)¹. AIT is a 3-year treatment and has traditionally been delivered as subcutaneous (SCIT) injections, administered in the physician's office. The sublingual immunotherapy tablet (SLIT-tablet) is suitable for at-home treatment after the first dose has been administered in the physician's office. This analysis was done to understand the economic implications of introducing SQ HDM SLIT-tablet in Quebec, where SCIT is already an available treatment option.

House dust mites are one of the most common source of indoor allergens worldwide, and its presence as a perennial allergen makes HDM respiratory allergic disease a chronic condition. In Canada, the most common species of HDM include *Dermatophagoides pteronyssinus* (*D. pteronyssinus*) and *Dermatophagoides farinae* (*D. farinae*).⁴

Methods

A cost-minimization analysis (CMA) was performed to estimate the economic impact of the SQ HDM SLIT-tablet compared to SCIT. As there is no available evidence indicating that the SQ HDM SLIT-tablet should not have at least the same efficacy as SCIT, a CMA was deemed appropriate. This underlying assumption of therapeutic equivalence could be considered conservative given the evidence supporting a favourable safety profile for SLIT vs. SCIT^{11,12,13}. A societal perspective was adopted in the model, including relevant costs such as; costs of medications, services of health care professional and patient resources. Costs and resources were based on published sources, where possible. In case no published sources were available the input to the model was based on physician opinion. The time horizon in the model was 3 years, which corresponds to treatment course of AIT. A discount rate of 1.5% was applied in accordance with CADTH guidelines². To understand the robustness of the results, sensitivity analyses were performed.

Results

The CMA shows that the societal cost of 3 year treatment with SCIT was 5,830 CAD, compared to 5,075 CAD if treated with SQ HDM SLIT-tablet, leading to an overall saving of 755 CAD. The sensitivity analyses showed the results to be robust. Of the sensitivity analyses nurse time per injection visit as well as number of injections per vial had the biggest impact on the results.

Table 1: Resource use SCIT and SQ HDM SLIT-tablet

	Resource use SCIT			Resource use SQ SLIT-tablet		
	Year 1	Year 2	Year 3	Year 1	Year 2	Year 3
10 mL vial³ (10 inj.)	3.1	1.3	1.3	-	-	-
SQ HDM SLIT-tablet (30 tabl.)	-	-	-	12	12	12
Start-up visits	1	-	-	1	-	-
- GP (5%)*	0.05	-	-	0.05	-	-
- Specialist (95%)*	0.95	-	-	0.95	-	-
Titration visits (1 wk. between inj.³)	24	-	-	-	-	-
- GP (95%)*	22.8	-	-	-	-	-
- Specialist (5%)*	1.2	-	-	-	-	-
Maintenance visits (4 wks. between inj.³)	7	13	13	-	-	-
- GP (95%)*	6.65	12.35	12.35	-	-	-
- Specialist (5%)*	0.35	0.65	0.65	-	-	-
Nurse time (0.75 pr. inj.)*	23.25	9.75	9.75	-	-	-
Nurse time (0.75 pr. start-up, tablet)*	-	-	-	0.75	-	-
Follow-up visits	1	1	1	1	1	1
- GP (50%)*	0.5	0.5	0.5	0.5	0.5	0.5
- Specialist (50%)*	0.5	0.5	0.5	0.5	0.5	0.5
Patient's time*³	48.48[#]	20.53[#]	20.53[#]	3[^]	1.25[^]	1.25[^]
Patient's travel distance (20 km. pr. visit)³	660	280	280	40	20	20

* Based on physician input #Patient's time include: Travel time round trip; 40 min.³, wait time; 15 min.³, injection time; 4 min.^{*}, post-injection time; 30 min.³, physician consultation time; 20 min.^{*} ^Patient's time include: Travel time round trip; 40 min.³, wait time; 15 min.³, physician consultation time; 20 min.^{*} and for year 1 only, a 30 min. post-tablet observational time after first tablet intake¹

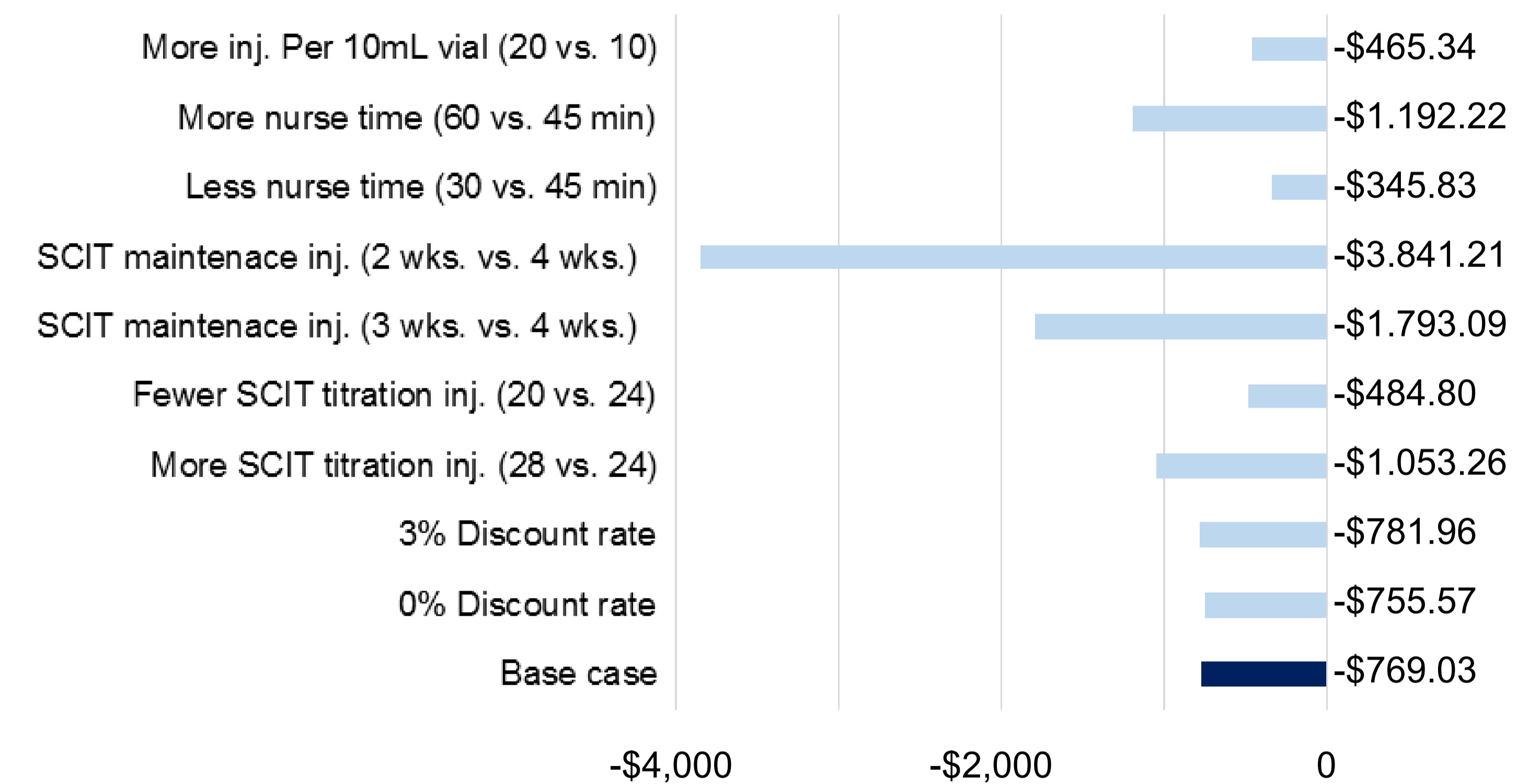
Table 2: Resource costs

Cost category	Cost type	\$CAD/unit
HDM SCIT vials	10 mL concentrate (Omega)	\$107.64 ⁶
SQ HDM SLIT-tablet	Box of 30 tablets	\$117.30
	Dispensing fee/claim	\$9.00 ⁵
Physician	Visite principale 09127 (cabinet privé)	\$88.50 ⁵
	Visite de controle 09129 (cabinet privé)	\$59.50 ⁵
	Cure d'hyposensibilisation inclut la participation de professionnels au procédé, le cas échéant, et l'interprétation, une injection 00100 (cabinet)	\$15.00 ⁵
Nurse	Hourly wage	\$30.00 ⁷
Patient	Average hourly wage	\$24.66 ⁸
	Travel expense by private car	\$0.50 ⁹

Table 3: Cost of three year treatment

Cost category	SQ HDM SLIT-tablet	SCIT	SQ HDM SLIT-tablet vs. SCIT
Drug cost	\$4,609.95	\$613.55	\$3,996.40
Physician cost	\$267.00	\$1,122.00	-\$855.00
Nurse cost	\$22.50	\$1,282.50	-\$1,259.50
Total Health Care Costs	\$4,899.45	\$3,018.05	\$1,881.40
Indirect cost	\$175.23	\$2,812.50	-\$2,636.97
Total costs	\$5,074.68	\$5,830.25	-\$755.57

Figure 1: Sensitivity analyses



Conclusion

The economic analysis shows that SQ HDM SLIT-tablet is a cost-minimizing alternative to HDM SCIT when considered from a social perspective in Quebec.



References

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