

Age-Appropriate Formulations at Any Cost? A Canadian Case Example

Émilie Kate Landry¹, Sophie Bérubé¹, Andrea Gilpin¹, Denis Lebel^{1,2}, Catherine Litalien^{1,3}

¹The Rosalind & Morris Goodman Family Pediatric Formulations Centre of the CHU Sainte-Justine, ²Department of Pharmacy, ³Department of Pediatrics, CHU Sainte-Justine, Montréal, Québec Canada

Introduction

- Timely access of age-appropriate pediatric formulations is a challenge in Canada for several reasons including limited commercial opportunity, a complex regulatory and reimbursement system that has little accommodation for pediatric submissions, and financial hurdles for parents and caregivers when it comes to real world access.
- The case of Hemangioliol, a propranolol oral solution indicated for proliferating infantile hemangioma (IH), first approved through EMA Paediatric use marketing authorization (PUMA) pathway is a recent example of a pediatric age-appropriate formulation that went through Canada's complex system and which is still today not accessible to all Canadian children.

Objectives

- To provide an overview of the Canadian regulatory and reimbursement systems' complexity for pediatric age-appropriate formulations using the example of Hemangioliol

Method

- Regulatory history of Hemangioliol in Europe, US and Canada and assessments by CADTH and INESSS were found on the various agencies' websites. Status of reimbursement for provinces/territories was provided by the Canadian manufacturer of Hemangioliol. (Figure 1)
- Estimates of costs were based on a 4-month-old female patient weighing 6,4 kg (50th percentile) treated for IH or other medical conditions (e.g. Tetralogy of Fallot, migraine, tachyarrhythmias) at a daily dose of 3mg/kg/day for 30 days.
- The cost for treatment for parents for a propranolol oral solution was estimated for 30 days using data from the Quebec public drug plan (Régie de l'assurance médicament du Québec - RAMQ) and private insurance. Hemangioliol is reimbursed 100% by the RAMQ only when indicated in IH, and there is no coverage for any other pediatric uses. For private insurance, we assumed an 80% coverage (most frequent scenario). Information regarding cost was provided by a Quebec-based community pharmacy.

Figure 1: Hemangioliol in Canada: From Submission to Market Access



Table 1: Estimated cost of propranolol solution for a 30-day treatment in Quebec

Market Approval	Indication	Reimbursement					30-day Treatment for a 4-Month-Old Female Patient		
		Insurance	Coverage	Professional Fees for 30-day Service (CDN\$)	Oral suspension or solution (Concentration)	Cost per mg (CDN\$)	Cost (CDN\$)	Total with Professional Fees (CDN\$)	Out-of-pocket Cost for Parents (CDN\$)
Before	IH and other medical conditions	Public	100%	17.00	Compounding (5mg/ml)	0.033***	19.10	19.10	0.00
		Private	80%	20.00		0.037***	21.06	21.06	4.21
After	IH	Public	100%	9.61	Hemangioliol (3.75 mg/ml)	0.607	349.70	359.31	0.00
		Private	80%	21.95		0.607	349.70	371.65	74.33
	Other medical conditions	Public*	0%	21.95		0.607	349.70	371.65	371.65
		Private**	0-80%	21.95		0.607	349.70	371.65	74.33 to 371.65

*Due to unaffordable costs to parents, some pharmacists will resort to compounding despite availability of a commercial form. **Private insurance companies usually follow RAMQ's list of reimbursed medications, but some may offer better coverage. ***Professional fees are included in the cost per mg.

Results

- Seven (7) years after filing to Health Canada and 4 years post approval, Hemangioliol reimbursement under public drug plan is still pending for 2 out of 12 provinces/territories IH is estimated.
- For children with IH, under the Quebec public plan (known one of the best in Canada) there is no out-of-pocket costs to parents for Hemangioliol. These children are now getting a safer, commercial grade propranolol oral solution at no extra cost when compared to previous compounded preparation.
- For children with IH, under private insurance (with 80% coverage), out-of-pocket cost to parents for Hemangioliol increases 17-fold (from 4.21 to 74.33 CDN\$) when compared to the previous compounded preparation.
- For children who are prescribed propranolol a medical condition other than IH, no commercial solution is covered by public or private plan. Out-of-pocket cost for Hemangioliol for a 30-day treatment may thus be as much as 371.65 CDN\$ for a 30-day treatment, whether on the public or private plan.
- When a commercial preparation is available, pharmacists are obligated by law to serve this formulation over compounding, despite higher costs.
- Some pharmacists may resort to compounding despite legislation, but in most cases, the pharmacist would ask the prescriber to substitute for another medication at lower cost for the child's condition, narrowing the commercial opportunity and population that could benefit from using propranolol.

Summary

- Time from approval to real-world access can be very lengthy in Canada.
- Age-appropriate commercial formulations can translate in significantly higher out-of-pocket cost for parents depending on the reimbursement plans.
- Reimbursement of Hemangioliol solely for the approved indication (IH) is a limiting factor to accessing an age-appropriate formulation of propranolol for other medical conditions.
- To ensure children benefit from the safety and efficacy of age appropriate formulations, pediatric sensitive standards at the reimbursement level need to be advocated for.