EE467

Cost Comparison of Atezolizumab in Canada for the First-Line Treatment of Metastatic Non-Small Cell Lung Cancer Patients With High Programmed Death-Ligand 1 Expression

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Background

- Lung cancer remains the leading cause of cancer-related deaths in Canada. In 2024, an estimated 32,100 Canadians were diagnosed with the disease (13% of all new cancer cases), and an estimated 20,700 died from it[1-3].
- Non-small cell lung cancer (NSCLC) is the most common type, accounting for approximately 88% of all lung cancer cases[1,2], with 53% of patients in Canada being diagnosed with metastatic disease[4].
- Among these metastatic cases, approximately 29.8% present with high levels of programmed death-ligand 1 (PD-L1) expression[5].
- **The Unmet Need:** While existing intravenous (IV) immunotherapies are effective first-line treatments, they impose a considerable burden on the healthcare system and patients[6-9]. The administration of strictly IV therapies is constrained by vein access, limited infusion chair spaces, lengthy pharmacy preparation times, and extended hospital visits that can cause emotional and physical discomfort for patients[6,7,10-13].
- Atezolizumab offers both subcutaneous (SC) and IV routes of administration, offering a highly flexible, patient-centered option without compromising efficacy or safety.

Objective

To estimate the differential cost per patient of funding atezolizumab as a monotherapy for the first-line treatment of patients with metastatic NSCLC whose tumours have high PD-L1 expression (PD-L1 stained ≥ 50% of tumour cells [TCs] or PD-L1 stained tumour-infiltrating immune cells [ICs] covering ≥ 10% of the tumour area), as determined by a validated test and who do not have *EGFR* or *ALK* genomic tumour aberrations.

Methods

- **Study Design:** A Cost-Minimisation Analysis (CMA) evaluating atezolizumab against cemiplimab and pembrolizumab. Based on an Indirect Treatment Comparison (ITC)[14], all three immunotherapies were assumed to have comparable efficacy and safety; therefore, clinical outcomes like survival and adverse events were not included.
- **Time Horizon:** 5.3 months, which corresponds to the median duration of treatment of atezolizumab (IV formulation) observed in the pivotal GO29431 (IMpower110) study[15].
- **Target Market Split:** Atezolizumab costs were calculated assuming a market preference of 95% SC administration and 5% IV administration. The preference for SC will likely be driven by its additional administration and patient benefits, though a small proportion of patients may prefer IV, according to Canadian clinicians.
- **Cost Inputs:**
  - Drug Acquisition: Based on standard fixed-dosing schedules (1875 mg every 3 weeks [Q3W] for atezolizumab SC, 1680 mg Q4W for atezolizumab IV, 350 mg Q3W for cemiplimab, 400 mg Q6W for pembrolizumab)[16-19].
  - Healthcare Administration (Pan-Canadian): Included median hourly wages for nurses, pharmacists, and pharmacy technicians, as well as chemotherapy suite overhead costs[20-25]. Atezolizumab SC requires significantly less chair time (~7 minutes administration + 8 minutes observation) compared to the standard IV therapies (30-60 minutes administration + 30 minutes observation)[16-19].
  - Societal Costs (Quebec Base Case): Incorporated productivity loss due to drug administration for patients under 65, factoring in labour force participation and average provincial wages[26-28].

Figures and Tables

Table 1. Base Case Treatment Regimens and Patient Chair Time per Cycle

Generic Name	Base Case Regimen	Cycles per 5.3 Months*	Administration Time	Observation Time	Total Chair Time
Atezolizumab (SC)	1875 mg Q3W	7.7	7 minutes	8 minutes	15 minutes
Atezolizumab (IV)	1680 mg Q4W	5.8	30 minutes (60 minutes cycle 1)	30 minutes	60 minutes (90 minutes cycle 1)
Cemiplimab (IV)	350 mg Q3W	7.7	30 minutes	30 minutes	60 minutes
Pembrolizumab (IV)	400 mg Q6W	3.8	30 minutes	30 minutes	60 minutes

*Note: The median treatment duration was assumed to be 5.3 months across all therapies, corresponding to the pivotal GO29431 (IMpower110) study.

Table 2. Cost Comparison Breakdown per Patient (5.3 Month Median Treatment Duration)

Cost Category	Atezolizumab*	Cemiplimab	Pembrolizumab
Pan-Canadian Analysis			
Drug Acquisition Costs	$49,825	$62,991	$67,600
Non-Drug Costs	$469	$1,365	$683
Total Pan-Canadian Costs	$50,294	$64,356	$68,283
Savings Seen with Atezolizumab	*Reference*	*-$14,062 (-22%)*	*-$17,988 (-26%)*
Quebec Analysis (Societal)			
Drug Acquisition Costs	$49,695†	$62,991	$67,600
Non-Drug Costs	$469	$1,365	$683
Societal Costs	$22	$79	$39
Total Quebec Costs	$50,186	$64,435	$68,322
Savings Seen with Atezolizumab	*Reference*	*-$14,249 (-22%)*	*-$18,136 (-27%)*

*Atezolizumab represents a 95%:5% split between the SC and IV formulations, respectively.
†The list price of Atezolizumab IV differs between Pan-Canada and Quebec.

Results

- **Pan-Canadian Drug Costs:** Over the 5.3-month treatment duration, the drug acquisition cost per patient was $49,825 for atezolizumab (a weighted average of $49,571 for atezolizumab SC Q3W [95%] and $54,655 for atezolizumab IV Q4W [5%]), $62,991 for cemiplimab Q3W, and $67,600 for pembrolizumab Q6W.
- **Lower Healthcare Resource Utilization:** Due to the faster administration of the SC formulation, the aggregated administration cost (healthcare professional wages + chemotherapy suite overhead) was $469 for atezolizumab (a weighted average of $435 for atezolizumab SC Q3W [95%] and $1,111 for atezolizumab IV Q4W [5%]) compared to $1,365 for cemiplimab Q3W, and $683 for pembrolizumab Q6W.
- **Pan-Canadian Total Costs:** Over the 5.3-month treatment duration, total costs per patient (drug + administration) were $50,294 for atezolizumab, $64,356 for cemiplimab, and $68,283 for pembrolizumab.
- **Cost Savings Summary:** This analysis shows that atezolizumab would be $14,062 (-22%) less expensive than cemiplimab Q3W and $17,988 (-26%) less expensive than pembrolizumab Q6W, when considering drug acquisition and aggregated health care costs.
- **Scenario Analysis:** Even when simulating a weight-based dosing scenario (2 mg/kg Q3W) for pembrolizumab—which although not listed in the product monograph directly, is sometimes used in clinical practice instead of fixed dosing—atezolizumab remained less costly along with comparable efficacy and safety.
- **Quebec Societal Costs:** Factoring in productivity loss costs, total costs per patient were $50,186 for atezolizumab (a weighted average of $50,026 for atezolizumab SC Q3W [95%] and $53,225 for atezolizumab IV Q4W [5%]), $64,435 for cemiplimab Q3W, and $68,322 for pembrolizumab Q6W. Productivity loss specifically was $22 for atezolizumab versus $79 and $39 for cemiplimab and pembrolizumab respectively, due to reduced time spent in the hospital.

Conclusions

- The addition of atezolizumab SC (and IV) to Canadian public drug plans is anticipated to result in financial savings per patient.
- Because the target patient population is well-defined and treatment duration is predictable (non-chronic), payers can anticipate a reliable and predictable financial impact.
- Beyond quantifiable financial savings, shifting from IV to SC administration addresses a major unmet need by alleviating systemic capacity burdens (freeing up infusion chairs), reducing pharmacy preparation time, and significantly improving the treatment experience for patients and their caregivers.

Limitations

- The analysis is conservative and primarily captures direct measurable financial impacts; it does not fully quantify the broader qualitative benefits of SC administration, such as specific improvements in patient preference, emotional well-being, or caregiver scheduling flexibility.

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