**Cost-Effectiveness of Watchful Waiting vs Immediate Emergency Department Transfer After Epinephrine Autoinjector Use in Canada**

Rational: Patients experiencing food-related anaphylactic reactions frequently undergo immediate emergency department (ED) transfer following epinephrine administration, even though most of them are stable on presentation and do not require further medical intervention. We aimed to evaluate the cost-effectiveness of watchful and wait approach compared to immediate ED transfer after receiving outpatient epinephrine autoinjector

Methods:

We performed a cost-effectiveness analysis through Markov modeling simulation over a 20-years horizon to compare the watchful waiting approach with immediate transfer to the Emergency Department (ED) following a severe allergic reaction and the use of an epinephrine autoinjector (EAI) in a non-medical setting. The base-case model assumes a 10-fold increase in food allergy-related fatality risk for patients who adopt the "watchful waiting" approach. Outcomes quality-adjusted life-years (QALY), costs, and incremental cost per life year saved. Additionally, one-way deterministic sensitivity analyses were performed.

Results:

The benefit of immediate ED transfer for reducing allergy-related fatalities is minimal, with a reduction in pre-patient allergy related fatality rate of 5 over 20-year horizon compared to watchful and wait. The incremental cost per life year saved was $5,741,910 for immediate ED transfer versus watchful and wait, which decreased to $521,948 if a 100-fold fatality risk was assumed, and further decreased to $103,514 and $51,680 for 500-fold and 1000-fold increase in fatality risk, respectively.

Conclusion:

For patients with food-related anaphylactic reactions who received epinephrine outside medical settings, Immediate transfer to ED offers minimal benefits considering the excessive costs. Given this context, immediate ED transfer might not be cost-effective.