Cost-effectiveness analysis of Mepitel film for prevention of acute radiation dermatitis in breast cancer: From a Canadian healthcare perspective

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Introduction

- Mepitel film (MF), while relatively costly, significantly reduces severe acute radiation dermatitis (ARD) in patients with breast cancer compared to standard-of-care (SoC) in randomised controlled trials (RCT).
- Hence, a cost-effectiveness analysis (CEA) from a Canadian healthcare payer's perspective was conducted.

Method

- A decision model was constructed to perform a CEA for MF compared to SoC (moisturisers) for the prevention of grade 2 or higher ARD following adjuvant hypo-fractionated (40 Gy in 15 fractions) whole-breast radiotherapy (RT) based on a Canadian multicentre RCT (1).
- Direct and indirect cost data for the prevention and management of ARD were collected based on medical expenses at two oncology centres in two different provinces in Canada.
- Quality-of-life utility values were derived from mapping the Dermatology Life Quality Index (DLQI) score (2) for patients with grade 2 or higher ARD at week 6 of RT to the EQ-5D (3).
- Two arms were compared using the incremental cost-effectiveness ratio (ICER).
- A willingness-to-pay (WTF) threshold of CAD 50,000 per quality-adjusted life years (QALY) gained was used.
- One-way sensitivity analysis was performed to account for uncertainty in decision model assumptions.

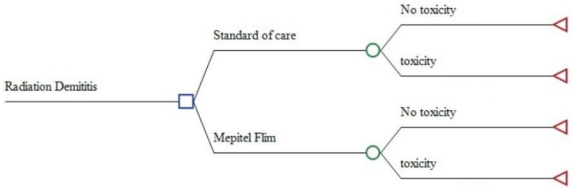

Figure 1. Decision Tree Model

Result – Base case analysis

- Base case analysis using incidence of grade 2 or higher ARD for women who underwent adjuvant hypo-fractionated (40 Gy in 15 fractions) whole breast RT showed that MF was a cost-effective strategy compared to SoC (moisturisers), with an **ICER** of **CAD 3,366 per QALY gained**, resulting from an **incremental cost of CAD 71** and an **incremental effectiveness gain of 0.02 QALYs**.
- When the indirect cost for nurse staff time was included, the result was an ICER of **CAD 2,823 per QALY gained** that has **CAD 543 cost difference** with the same effectiveness gain (0.02).

Result – One way sensitivity analysis

- Results were **most sensitive to the quality-of-life utility value for ARD**, variation of grade 2 or higher ARD rate without MF use, quality-of-life utility value without ARD in order.
- Our model result **remained < CAD 50,000 per QALY gained** in any range of each model parameter by taking into account uncertainty.

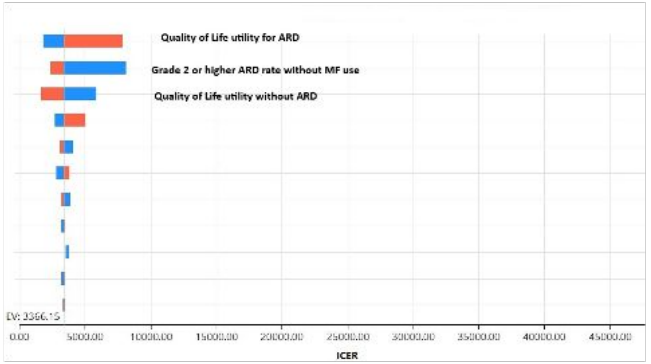

Figure 2. Tornado diagram for incremental cost-effectiveness ratio

Conclusion

- MF is a cost-effective intervention for preventing high-grade ARD and should be recommended for patients with breast cancer undergoing adjuvant RT at high risk of developing it.

References

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