



Vancomycin or Metronidazole for the Treatment of Severe *Clostridium difficile* Infection in Hospitals

Technology and Condition

Vancomycin and metronidazole antibiotics available within Canada used to treat *Clostridium difficile* (*C. difficile*) infection (CDI).

Issue

Uncertainty exists around the optimal first-line therapeutic policies to treat severe *C. difficile* in a cost-effective manner within the context of the Canadian, publicly funded health care system.

Methods

A systematic literature review to determine the comparative effectiveness of vancomycin and metronidazole for the outcomes of cure, recurrences, complications, and serious adverse events in adults or children with moderate or severe CDI was performed. A search and assessment of clinical practice guidelines was also completed.

The primary economic analysis, based on efficacy data from one randomized controlled trial, compared the cost-effectiveness of first-line therapy with vancomycin versus metronidazole in patients with severe CDI. The budget impact analysis compared incremental costs of first-line treatment using vancomycin versus using metronidazole in hospitalized patients with severe CDI.

Results

Vancomycin demonstrated a higher clinical cure rate in adults with severe CDI and a similar clinical cure rate in moderate CDI cases compared to metronidazole. Based on limited available evidence, conclusions about outcomes of recurrences, complications, and serious adverse events could not be made.

The cost-effectiveness analysis estimated an incremental cost increase of \$1,161 per cure for oral capsule vancomycin as first-line treatment. From the budget impact analysis, treatment of initial severe CDI with vancomycin resulted in an annual national incremental impact of:

- \$734,826 for hospital budgets (\$72,646 with injectable vancomycin used orally, available only in hospitals)
- \$398,454 for community drug budgets.

In an outbreak of a hypervirulent strain of *C. difficile*, the annual incremental national impact was estimated at \$1.74 million (hospital budgets) and \$3.2 million (community drug budgets).

If vancomycin can demonstrate better effectiveness for reducing severe complication rates versus metronidazole, hospital budgets may realize net savings of \$8.5 million nationally. This net savings is based upon initial use of vancomycin capsules to treat severe CDI.

Implications for Decision-Making

- **Higher clinical cure rate was demonstrated using vancomycin over metronidazole** for hospitalized adult patients with severe CDI.
- **In severe CDI, net health expenditure may be reduced** if vancomycin can demonstrate reductions in hospitalization costs due to reduced length of stay. Budgetary impact will vary between drug and overall budgets within hospitals and communities.
- **Continuance of treatment should be a consideration when selecting in-hospital therapy.** Therapy effectiveness, availability, and impact on resources within community settings warrant thought for patient discharge.
- **Results must be interpreted with caution.** Conclusions are based on a limited number of studies that included both initial and recurrent cases of CDI. Two rigorous international guidelines were found, each recommending the use of vancomycin as first-line therapy for severe CDI.

This summary is based on a comprehensive health technology assessment available from CADTH's website (www.cadth.ca): Perras C, Tsakonas E, Ndegwa S, Conly J, Valiquette L, Farrah K. *Vancomycin or Metronidazole for Treatment of Clostridium difficile Infection: Clinical and Economic Analyses* [Internet]. Ottawa: Canadian Agency for Drugs and Technologies in Health; 2010 (CADTH Technology Report; No. 136) [cited 2011-01-26].

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