INTRODUCTION

• Clostridium difficile is a microorganism capable of prolifering in the intestinal lumen and of producing toxins and is the most frequent cause of hospital-acquired diarrhea in industrialized countries.

• The clinical spectrum of C. difficile infection (CDI) ranges from symptoms of uncomplicated diarrhea with benign evolution to symptoms of progressive severity that include pseudomembranous colitis and toxic megacolon10-12.

• The annual incidence of CDI in Spain is estimated at 17.1 cases per 100,000 hospitalized patients and at 25.1 cases for 10,000 hospital discharges and admissions, respectively5,13. In a Spanish study, hospital mortality was much greater in cases with CDI (31%) than in controls that did not present the disease (6.8%)5,14.

• Patients with clinical symptom or signs consistent with CDI, positive diagnostic test and persistent diarrhea despite the discontinuation of the antibiotic should be treated with vancomycin or metronidazole. However, infection recurrences are frequent with these antibiotics and may present in more than 25% of the cases treated5-12.

• Fidaxomicin is an antibiotic that belongs to the class of the macrocyclics and is indicated for the treatment of CDI5-12.

• In clinical trials5,15, fidaxomicin was not inferior to vancomycin in the clinical cure of patients with CDI, but it was superior in the reduction of recurrence rates, with a greater sustained response after 30 days.5

• The patients included in the clinical trials, subsequent studies were performed in different subgroups of patient with a high risk of developing CDI (with or without recurrences, such as patients with cancer, on concomitant antibiotic treatment and with renal impairment5,16).

• In these special populations CDI has been associated with longer length of stay (LOS) and higher hospital costs5,12.

OBJECTIVE

• To assess the cost-utility of fidaxomicin versus vancomycin in the treatment of Clostridium difficile infection (CDI) in three special populations: patients with cancer; with concomitant antibiotic therapy; with renal impairment.

METHODS

Model overview

A Markov model was developed to simulate the therapeutic management and disease course in cohorts of patients with CDI.

• Cycle length was 10 days (corresponding to treatment course) and the time horizon was one year.

• All patients enter the model with CDI and receive initial treatment with fidaxomicin or vancomycin with one of the possible outcomes: CDI cured; patient clinically cured after initial treatment; CDI cured after initial treatment failure (after subsequent treatment) with CDI failure; High doses of vancomycin; CDI with failure; Tapering regimen of vancomycin.

• Successfully treated patients remain in the ‘CDI cured’ health state unless they transition to: Death; Recurrence**.

• The perspective was that of the Spanish National Health System.

Assumptions

• It was assumed that the adult patient with CDI (with cancer, concomitant antibiotic treatment or renal impairment) is treated orally with fidaxomicin (200 mg twice-daily (BID) for 10 days) or vancomycin (125 mg four times a day (QID) for 10 days).

• All the patients of a hypothetical cohort initially have CDI. If not or may not be clinically cured. In the case of an initial cure, the patient may or may not have a recurrence.

• It is assumed that when the initial recurrence of CDI is not severe, the treatment is with metronidazole (in both the fidaxomicin and vancomycin arms) at the dose of 500 mg three times a day (TID) (1500 mg/day).

RESULTS

• In patients with CDI and cancer, fidaxomicin was the dominant treatment versus vancomycin (gain of 0.014 QALYs and savings of €2,397 per patient). At the cost-effectiveness threshold of €30,000 per QALY gained, the probability that fidaxomicin is the cost-effective treatment was 99% (Table 1 and 2).

• In patients with CDI and renal impairment, fidaxomicin was also the dominant treatment versus vancomycin (gain of 0.014 QALYs and savings of €1,432 per patient). At the cost-effectiveness threshold of €30,000 per QALY gained, there is a 94% probability of fidaxomicin being cost-effective (Table 1 and 2).

• In patients with CDI and renal impairment, fidaxomicin was also the dominant treatment versus vancomycin (gain of 0.013 QALYs and savings of €1,432 per patient). At the cost-effectiveness threshold of €30,000 per QALY gained, there is a 94% probability of fidaxomicin being cost-effective (Table 1 and 2).

CONCLUSIONS

• According to the economic model and the assumptions considered, fidaxomicin is a cost-effective treatment compared with vancomycin in the three CDI populations analysed (with cancer, concomitant antibiotic therapy or renal failure). The probability that fidaxomicin is a more cost-effective first-line treatment for the three populations analysed is above 90%.

• The results of this study confirm that fidaxomicin represents a first choice of treatment for these patient profiles, being the dominant option compared with vancomycin.

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