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## Do regular oral nutritional supplements improve clinical outcomes in patients with *Clostridium difficile* infection: a pilot study

S. S. Wong<sup>1,2</sup>, J. O'Driscoll<sup>3</sup>, M. Weldon<sup>4</sup> and C. Y. Yau<sup>5</sup>

<sup>1</sup>Department of Nutrition and Dietetics, Stoke Mandeville Hospital, Aylesbury, Buckinghamshire, UK, <sup>2</sup>Centre of Gastroenterology and Clinical Nutrition, University College London, London, UK, <sup>3</sup>Department of Microbiology, Stoke Mandeville Hospital, Aylesbury, Buckinghamshire, UK, <sup>4</sup>Department of Gastroenterology, Stoke Mandeville Hospital, Aylesbury, Buckinghamshire, UK and <sup>5</sup>Medicine for Older People, Stoke Mandeville Hospital, Aylesbury, Buckinghamshire, UK

Although malnutrition is associated with adverse clinical outcomes and healthcare expenditures, these can be avoided or reversed by appropriate nutritional care<sup>(1,2)</sup>. In the present study, we have investigated the relationship between nutrition and outcomes in patients with *Clostridium difficile* (*C. diff.*) because this infection is highly prevalent amongst the hospital population<sup>(3)</sup>. The aim of this pilot study was to determine if regular oral nutritional supplements could improve clinical outcomes such as hospital length of stay (LOS) and 180 day mortality. During 2007–8, 102 adult patients (aged 18+) with hospital acquired *C. diff* infection were enrolled into the study. Patients were excluded if they could not give informed consent; had severe illness or acute stroke or were known to be intolerant to cow's milk protein. Fifty-eight patients were recruited prospectively for intervention while the notes of 44 patients were assessed as a retrospective control. Patients in the intervention group were each given 220 ml standard oral nutritional supplement (ONS) containing 330 kcal (1390 kJ) and 13.8 g protein, twice daily for 10 days. Seventy three percent of patients were found to have eaten less than half of their meal at the time of intervention. Only 29 patients (50%) completed the 10 day trial of supplements. The two groups were comparable in terms of age, nutritional status and disease severity (Table 1).

**Table 1.** Comparison of nutritional indices with control and intervention group

	Control group (n = 44) Median (sd)	Intervention (n = 29) Median (sd)	P value
Age	80 (12.3)	75 (16.7)	0.09
BMI (kg/m <sup>2</sup> )	22.6	24.8	0.103
Albumin (g/l)	21 (5.3)	25 (6.9)	0.362
Total protein (g/l)	56 (8.2)	57 (9.8)	0.88
CRP (mg/l)	105 (74.5)	61 (80.2)	0.07
Hb (g/l)	10.2 (1.8)	11.3 (1.9)	0.13

Those patients who received regular ONS had significantly shorter LOS (control: 77 days versus intervention: 42 days,  $P = 0.04$ ) and a lower mortality rate at 180 days (control: 16/44, 36.4% versus intervention: 5/58, 17.2%,  $P = 0.034$ ).

We conclude from this study that consumption of ONS by patients with known poor appetite and *C. diff* infection may reduce the length of hospital stay and mortality. We acknowledge this study has its scientific limitation as intention to treat principle was not used in this pilot study. This has a potential to decrease health care costs and mortality if used routinely in patients with *C. diff* infection. Further research in this area is merited.

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