Abstract

Background: Parenteral nutrition (PN) is a costly technology used widely to provide nutrition to patients who have an inaccessible or non-functioning intestine. Two all-in-one systems currently being used are customized formulations and three-compartment bags. Objective: To provide a systematic cost comparison of the two all-in-one PN systems: individualized (made from nutrient solutions) versus commercialized (made from three-compartment bag), both prepared in hospital pharmacies. Setting: This study was conducted in three public Spanish hospitals. Method: We conducted a cost-minimization study to analyze prospectively the total cost of PN bags, accounting for all of the processes involved in preparing and delivering PN bags (cost of manpower, nutrition solutions, medical supplies and quality controls) in three different healthcare settings. To compare therapeutic alternatives of equivalent nutritional value, the study was performed for the most frequently employed formulation and similar to commercial preparations. A univariate sensitivity analysis was performed to evaluate the impact of different rates of use of three-compartment PN bag. Results: 157 routine acts of PN bag preparation (65 customized and 92 three-compartment) were observed and timed over 9 days. Total costs of the 157 PN bags were included in the study. Mean costs of customized bags were higher than three-compartment bags, 51.16 ± 5.63 € versus 39.69 ± 3.00 € respectively (p < 0.01). Manpower costs were responsible for the majority of the differences found (70%). The time to complete an adult bag for the hospital compounded system was a mean of 25.9 minutes longer than the three-compartment system. In scenarios using a three-compartment system for 30%, 70% and 90% of PN provision, a cost savings of 4.3%, 10.1% and 12.9% respectively could be achieved. Greatest rates of changing from customized bags (70% and 90%), in a hospital with 1,800 PN bags/year, might reduce the annual budget by 9306 € and 11,964.8 €, respectively. Meanwhile, in a large facility the savings for 8,000 TPN days would be 64,248 € and 82,605 €, respectively. Conclusions: Since seeking cost-reduction of effective treatments is needed, the use of three-compartment bags for standard adult PN could lead to cost savings. Our data should be helpful for health care providers to calculate their own cost of administer.

Keywords
Cost analysis, Parenteral nutrition, Parenteral nutrition methods, Parenteral nutrition economics.