For efficient parenteral nutrition, amino acids, non-protein calorie sources and electrolytes should be administered simultaneously. It is usually recommended that mixed solutions should be prepared in the hospital pharmacy by combining in a single bottle commercially available sterile solutions, using an aseptic technique under a filtered air laminar flow hood [1]. This method has several disadvantages. Usually only larger hospitals have the necessary equipment. The mixed solution can be stored only for a limited period of time because of unstability. Once prepared, changes in electrolyte composition, which are frequently necessary in severely ill patients, usually cannot be achieved.

We developed a simple device permitting bedside mixing and infusion of 3 different solutions. This mixing and infusion set (figure 1) is completely closed and consists of a graduated flexible plastic bag with 3 inlet lines and one outlet line with bubble trap and particle filter, and a side arm with female connection. The inlet lines can be connected with 3 commercially available solutions. By gravity the appropriate amount of each of these solutions can be introduced into the bag. The mixture can then be administered via the outlet line. As the capacity of the bag is maximally 500 ml, 6 to 10 fillings allow the administration of 3 to 5 liters of mixture daily. This simple mixing and infusion set offers several advantages. The mixing procedure, performed bedside, is very simple, and is achieved in a completely closed system without the introduction of air from outside. As the mixing has to be repeated approximately every 2 to 4 hours, the composition of the mixture can be adapted several times daily if necessary. In comparison with an analogous infusion set described recently [2], our set has the following advantages: inlet lines, mixing bag, air trap, particle filter and outlet line are a single construction. The system is completely closed without air inlet. The larger capacity of the mixing bag permits less frequent filling. The plastic bag can be fitted in a pressure set permitting infusion under pressure, for example via a Buselmeier shunt.

This mixing and infusion set (commercially available: BL070, Bellco, Mirandola, Italy) has been used for several months in our medical intensive care unit and has been adopted by the nursing staff as an important improvement over previous methods for simultaneous administration of several solutions.

Figure 1. A mixing and infusion set.

References