

# **INVENTORY MANAGEMENT MODEL FOR AN EMERGENCY MEDICAL SERVICE**

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## **Abstract**

Emergency medical services-EMS are responsible for pre-hospital stabilization and transport of patients under emergency conditions. For EMS, medicine management is essential as affects the safety of the patient, the quality and the costs of the services. Medicines are perishable products, which have a constant utility up until a known expiration date, this characteristics limiting the lifetime of the good and add complexity to their inventory management.

A study of the processes involved with the replenishment and consumption of medicine on different EMS in Medellín-Colombia, showed discrepancies between the records and the inventory on hand, the presence of medicine with a lifetime close to their expiration date and perished items. Base on those considerations, a medicine inventory model is proposed. The model separates the concepts of inventory replenishment and inventory review, and integrates a multi-criteria classification in order to considerate the service characteristics and the medicine properties as perishable products.

This research was funded with public funds of the Colombian government and counted with the support of a real EMS. The resulting model was used to establish some functional requirements of Appbulancia, an EMS inventory management software to administrate the medical supplies and equipment on this kind of services.

## **Keywords**

Medicines; Inventory Management; Multicriteria clasification.

## **Biography**

**Viviana Carvajal** is an Industrial Engineer. She holds a Masters in Engineering. Her research interests include inventory management, multicriteria classification, and health care supply chains.

**Pablo A. Maya** is a Professor of the Industrial Engineering Department at the Antioquia University in Colombia. He holds a Master and a Ph.D. in Operations research. His research interests are mainly on the field of applied OR techniques, particularly to problems with potential social impact such as sustainable transport, health services and humanitarian and non-profit logistics.

**Gloria M. Osorno** is a professor at the Faculty of Industrial Engineering at the Unidad Central del Valle del Cauca. Magíster in Engineering and Logistics Specialist. The topics of interest in research are models of inventory, process improvement, productivity and logistics in health services