

*The Hong Kong Polytechnic University*  
*Department of Logistics and Maritime Studies*  
*Research Seminar*

**Inventory Management of Platelets in Hospitals:  
Optimal Inventory Policy for Perishable Products with  
Emergency Replenishments**

by

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**Date: 3 December 2009 (Thursday)**

**Time: 10:30am - 11:30am**

**Venue: M714, Li Ka Shing Tower**

**The Hong Kong Polytechnic University**

**(Conducted in English)**

**Abstract:** Platelets are short-life blood components used in hospital blood transfusion centers. Excluding time for transportation, testing, and arrangement, clinically transfusable platelets have a mere three-day life-span. This paper analyzes a periodic review inventory system for such perishable products under two replenishment modes. Regular orders are placed at the beginning of a cycle. Within the cycle, the manager has the option of placing an emergency order, characterized by an order-up-to level policy. We prove the existence and uniqueness of an optimal policy that minimizes the expected cost. We then derive the necessary and sufficient conditions for the policy, based on which a heuristic algorithm is developed. A numerical illustration and a sensitivity analysis are provided, along with managerial insights. The numerical results show that, unlike typical inventory problems, the total expected cost is sensitive to the regular order policy. It also shows that the optimal policy is sensitive to

changes in the expected demand, suggesting to decision makers the significance of having an accurate demand forecast.

**Bio:** Dr. Deming Zhou holds a Bachelor of Engineer and Master of Management Science and Engineering from Tsinghua University and a Ph.D in Management from the Anderson School of Management at UCLA. He joined the Dept. of DSE of the Faculty of Business Administration at CUHK in 2005 as an Assistant Professor. Deming Zhou's research interests are in supply chain contract design, supply chain competitions, air cargo logistics, and other OM related issues. He has papers published in Management Science, EJOR, and other referred academic journals.

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**All are welcome!**