

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

## **Sharing Strategy for Hospital Consignment Inventories**

by

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**The Hong Kong Polytechnic University**

**(Conducted in English)**

### **Abstract:**

Consignment policy is an inventory management policy that a consigner (supplier/dealer) leaves inventory at the warehouse of a consignee (retailer/customer) but does not receive payment until the consigned inventory is used by the consignee. Many hospitals adopt consignment policy for purchasing disposable medical items from dealer. This policy provides the hospital with more flexible use of medical items, in addition, the delayed payment for consignment inventory allows the hospital to have better cash flow management. Meanwhile, this policy is also beneficial to the dealer in twofold. Firstly, dealer saves inventory holding cost by storing medical items at hospital's warehouse. Secondly, dealer keeps a more stable relationship with the hospital and maintain its market share through the policy. However, there are still some problems in consignment policy at hospital that needs further attention. The hospital may need to make emergent replenishment order with higher service/delivery fee if high demand suddenly occurs when a disastrous accident happens, since the hospital cannot consign too much inventory and the suddenly high demand is hard to predict.

Therefore, in our study, we first propose an inventory sharing mechanism between two hospitals. When shortage is anticipated at one hospital, besides of making emergent replenishment order to dealer, another hospital can share its inventory to this hospital. This study explores the value of sharing mechanism between two hospitals in a multi-period setting. We firstly identify conditions when inventory sharing occurs and suggest a safety complete sharing policy between two hospitals, and then derive the optimal inventory policies for each hospital. Furthermore, we examine the difference of sharing decision process under two cases, one case is that two cooperative hospitals are in an alliance where no sharing price exists, the hospital returns the inventory to the other hospital after replenishment. Another case is that two cooperative hospitals are non-alliance and they need to determine a specific sharing price. We further extend our study to consider the replenishment allocation problem and unpunctual return problem under the same sharing mechanism. In future, we will explore the sharing problem among multiple hospitals as well as the effect of the dealer on overall sharing mechanism from the perspective of medical supply chain.

### **Bio:**

ZHANG Ping received her Bachelor Degree (2016) from Shandong University of Science and Technology. She is currently pursuing her Doctor of Philosophy under the supervision of Dr. Anthony PANG and Prof. Hong YAN. Her interested research areas include healthcare operations and healthcare management.

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**All are welcome!**