# 建立稀有血品之用血安全管理模式-以紅血球抗原陰性血品為例

# Construct a Safe Transfusion Management Model for Rare Blood Component - Taking Negative RBC Antigen Blood as an Example


## 中文摘要

病患輸血前紅血球異體抗體篩檢陽性時，需進行紅血球異體抗體鑑定，並輸用該紅血球異體抗體相對應抗原陰性的紅血球血品，因各種紅血球抗原陰性的頻率不同，捐血中心將醫院病患經常需要或稀有紅血球抗原陰性的紅血球濃厚液從數以千計的各類血品中挑出隔離庫存，當病患有需求時，即可優先從這些庫存的紅血球血品供應，務求在最短時間內供應給醫院病患使用。

紅血球抗原系統繁雜且需求不定，若捐血中心庫存過多，則增加人力、儲存空間等有形、無形的資源浪費，若庫存不足則可能影響供應時效，危害病人用血安全及權益，本研究以長期與近期的醫院需求，預估經常供應及稀有紅血球抗原陰性血品的安全庫存量。另以林媽利醫師著作「輸血醫學」中記載有關台灣人紅血球抗原比率為參考依據，系統能即時提示紅血球抗原陰性比率並依庫存情形告知醫院血庫尋找的難易度及能否如期供應，請醫院血庫預做準備。

庫存稀有抗原陰性血型紅血球供需要的病患使用，儲存時間可能較其他血品長久，應用 RFID 技術管控血袋於室溫作業時間，以確保血液品質，使用 Passive Tag label 的血袋從冷藏庫取出時，經由 RFID Reader Station 記錄離開冷藏環境的時間，當接近規定時間(如 20 分鐘)則發出警訊請工作人員儘快處理，直到血品回到冷藏庫或是進入運送系統，以時間管控間接達到溫度監控的品管要求。

藉由本研究透過以資訊系統方式協助資源管理，能夠在正確的時間即時提供紅血球抗原符合的紅血球血品供病患使用，讓醫院病患能及時使用符合需求的血液以延續寶貴的生命。

## 英文摘要

Blood center inventory blood components with negative RBC antigen form thousands of blood bags for patient who have alloantibody and need transfusion. In order to manage those inventory. This study is to construct an Asp.Net web-base information system to inventory blood components with negative RBC antigen. Designing a web form to record blood bank''s orders, and forecast those orders by average forecasting. This system also can display RBC antigen frequency immediately by use of AJAX to help staffs make their work better.

Recently, several studies have been investigated the use of RFID labels on blood bags. In routine use, temperature monitor with semi-active or active labels are too expensive currently. 13.56 MHz High frequency passive RFID labels on blood bags can monitor the period of time when those bags are not been stored in 1 to 6 degree

refrigerator. It can alert staff to finish their process. And by use of temperature monitor that can provide full temperature history for the quality of blood bags effectively and inexpensively. By use of RFID reader station can recognize blood bags and their store box number with 13.56 MHz passive RFID, to display blood bags position to find those blood bags easier.

To construct a safe transfusion management model for rare blood component with information management for patient''s transfusion safety. Blood center can provide fresh blood component with negative RBC antigen to blood banks of hospitals.