# 以決策樹及類神經網路進行洗腎患者抽血數據分類

**彭禹傑[a]、白榮貴[b]、江蔚文[c]**

[a]國立台北護理學院資訊管理研究所

[b]財團法人新光吳火獅紀念醫院腎臟科

[c]國立台北護理學院資訊管理研究所

*E-mail: [a]yuchiehpeng@gmail.com [b]t001517@ms.skh.org [c]jiang6@ntcn.edu.tw*

**摘要**

在現今醫療產業中，大量採用資訊科技以提昇醫療的品質。台灣地區人民因腎衰竭而接受長期洗腎者有逐年增加的趨勢。而洗腎患者中，有三分之一是由糖尿病所引起的。傳統上糖尿病是經由糖化血色素濃度來判斷，但大多數糖尿病患會隨著腎臟功能衰竭，導致血清中胰島素半衰期的延長，因而產生正常的糖化血色素濃度。所以往往無法由糖化血色素數值來判斷腎臟病患是否有糖尿病。本研究將決策樹與類神經網路應用在洗腎患者之血液生化檢查數據上，希望藉由血液中其它成分的數值，找出患有糖尿病的病患，以便醫師後續做正確的處置。結果顯示決策樹與類神經網路分類糖尿病與非糖尿病患者的正確率大約為七成，其中類神經網路分類正確率稍高，大約為 72%。分類結果可供醫事人員參考。

**關鍵字**：洗腎、糖尿病、決策樹、類神經網路

**Abstract**

*Information technology is extensively used in today's medical industry to enhance the quality of medical care. In Taiwan, the number of patients under dialysis is increasing every year. One-third of these dialysis patients have diabetes mellitus. Diabetes is usually judged by serum HbA1C levels. However, because of prolonged serum insulin half-life, most diabetes patients have normal serum glucose levels when kidney failure developed. Therefore, it is not easy to identify diabetic dialysis patients by serum HbA1C levels. In this study, decision trees and artificial neural networks were used on examining blood data from hemodialysis patients. The goal is to identify dialysis patients with diabetes from their blood data other than HbA1C. Thus, proper treatment can be given afterwards. Results of our experiments showed that the rate of correct classification is about 70%, of which neural networks provide a higher rate of 72%. The classification results can be helpful references for medical staff to give proper treatment for their patents.*

***Keywords***：*Dialysis、Diabetes Mellitus、Decision Trees、Neural Networks.*