建構台灣檢驗 LOINC 編碼及轉換機制之研究

Building Knowledge bases and Mapping Framework for Taiwan LOINC

中文摘要

隨著資訊科技的進步，國內各醫療院所或檢驗中心也陸續的發展資訊系統，以因應二十一世紀醫療環境的變遷與挑戰，來提昇整體醫療照護的品質與滿足國人的健康要求。目前國內各醫療院所或檢驗中心所使用的醫療資訊系統或檢驗系統不是由軟體供應商提供就是自行開發撰寫，但不可否認的是這些系統設計時不但未能引入共同協定的標準，廠商及院所相互之間也未相互的討論，最後導致今日系統和系統之間無法相互連線溝通，資料和資料之間也無法相互交換及使用的現象。

國際間針對各種醫療資訊標準早已建立，國內也正逐步的將各種標準納入使用中的資訊系統內。但以檢驗標準為例，國內各醫療院所仍使用的是自訂的院內碼。它缺乏一致性的檢驗分類及編碼原則，因此無法將兩家醫院間的檢驗結果拿來直接比較分析或交換資料，而增加了後續資料處理的時間及資源。而針對中央健康保險局頒佈的醫療費用給付標準是一個全國統一的使用標準，目前也是全國使用中，全國醫療院所的資訊系統也都針對自訂使用的院內碼和健保碼之間做好了對應關連的資料庫。因此，可利用此特性先將健保代碼和國際檢驗標準 LOINC 碼做好資料的對應，來達到院內碼和 LOINC 碼相互轉換對應的目的。

過去美國也有上述提到檢驗代碼標準化的問題。早在 1995 年美國 Regenstrief Institute 與病理學會(the College of American Pathologists)資訊委員會開始集合七家大型的檢驗實驗室開始共同制定 Logical Observation Identifier Names and Codes (縮寫為 LOINC)編碼作業，其主要目標就是提供全國通用的名稱與編碼用來辨識檢驗 (laboratory test)和臨床觀察(clinical observation)結果報告。

本文首先研究國際檢驗標準 LOINC 編碼及其資料庫，其次分析健保碼及國內各醫療院所檢驗編碼的差異點，最後以健保代碼為媒介，以檢驗的生化、血液項目為範圍，建置一個健保碼—LOINC 知識庫作為對應輔助轉換系統的依據。當檢驗資料要進行交換時，可協助國內醫療院所針對各自編訂的檢驗編碼轉換成為 LOINC 碼，如此就能達到檢驗資訊均能在不同的檢驗資訊系統之間相互溝通、交換、使用及分析，真正達到資訊轉換的目的，以利邁向與國際接軌的目標。

本論文所提的轉換方法是先建置一個健保碼—LOINC 知識庫。此知識庫已先將健保碼和 LOINC 編碼做好了對應關係，因此在各醫療院所使用時就大幅簡化了轉換作業的步驟及節省了轉換的時間，也增加了轉換的正確性。此研究以檢驗的生化、血液項目為建置知識庫的範圍，期以此為基礎，續將微生物、毒物、藥物、細胞、抗生素等部份逐步加入，擴充健保碼—LOINC 知識庫的內容，以利研究結果的應用及未來的推展。

英文摘要

The purpose of the present study is to build knowledge bases and to map framework for Taiwan LOINC. The LOINC codes have been greeted enthusiastically since they were released to the Internet in April of 1996. Since then fourteen revisions have been released and it now includes over 29,000 observation concepts. The informatics committee of the College of American Pathologists has endorsed the LOINC codes. The American Clinical Laboratory Association (ACLA), an association of large referral laboratories whose members are responsible for more than 60% of US outpatient laboratory test volume, has recommended LOINC for adoption by its members. Quest Diagnostics (formerly Corning MetPath), LabCorp, and SmithKline Beecham (now part of Quest Diagnostics), three of the largest commercial laboratories in the US, have adopted LOINC as their code system for reportable test results, as has ARUP (Associated Regional and University Pathologists). Mayo Medical Laboratories is currently mapping their tests to LOINC. In addition, all US veterinary medicine laboratories have committed to the use of LOINC.

The database includes fields for each of the six parts of the name. In addition, it may also contain EUCLIDES codes (for the component/analytic part of the name), IUPAC/IFCC codes, and ASTM codes, as well as related words, synonyms, and comments. Related words ("synonyms") are included to facilitate searches for individual laboratory test and clinical observation results.

In Taiwan, however, the hospitals use local codes to report the diagnostics. The disadvantages of local codes is to prevent the exchange data of medical informatics. The respective local codes of various hospitals lack of consistent diagnostic classification and coding rules. Therefore, it is time-consuming to compare or analyze diagnostic results between two laboratories. Moreover, the purpose of the NHI codes is for calculating insurance cost, not for clinical use. Consequently, building the knowledge bases for mapping coding systems is worthwhile.

The present study first reviewed the LOINC database, and then introduced the differences between various local codes in Taiwan's hospitals. Finally, by using NHI code as an interface, the present study built knowledge bases to map the local codes to LOINC codes. The mapping system was investigated by a hematology test and it showed that the mapping system was efficient and useful. Lastly, implication to the present study and further research was discussed in the last chapter.