Multi-criteria allocation decision for emergent patients by affinity set

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ABSTRACT

Emergency medical and transferring is an important issue nowadays, it ’ s also the most important preprocess before patients arriving hospitals. A paramedic can find out patients' symptom by triage, then contact nearby hospitals to transferring. As the triage process is too complicated, although the studies about triage process are numerous, but it ’ s seldom using in information system developing. This study is trying to match demand side (patients) and supply side (hospitals) to make a decision about transferring patients. The patients attribute are: rank of patients, and urgency of patients. The hospitals attribute are: number of doctors on call, special life supports, number of available beds, rank of hospital, distance to hospital, and number of specialty doctor. These are measured by quantitative methods. The model objective is to match demand side and supply side, and find out the most suitable hospital. The traditional multi-criteria decision-making model can ’ t evaluate the sequence of multi-attribute. The last, we use a network model based on affinity set to represent the decision process of allocating patients.

Keywords : Affinity Set, Triage, Multi-criteria decision-making, emergency medical

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REFERENCES

英文文獻: 【1】Chen, Y. W., Wang C-H and Lin, S-J, “ A Multi-objective Geographic Information System for Transporting Nuclear Wastes, ” Omega, Vol. 36, P363-372. 【2】Crina Grosan, et al(2007), “ Multicriteria programming in medical diagnosis and treatments ”, Applied Soft Computing, Vo.8, No.4, P1407-1417 【3】Derlet, R. W.,(2002), "Overcrowding in Emergency Department: Imcrease demand and decreased capacity, ” Annals of Emergency Medicine, Vol.34, No.2, P155-159. 【4】Gerven, R.V., Deloozh, H., & Sermeus, W. (2001). Systematic Triage in the Emergency Department using the Australian National Triage Scale: A pilot project, ” European Journal of Emergency Medicine, Vol.8, P3-7. 【5】Gulcin Buyukozkan, Gizem Cifci, Sezin Guleryuz (2011), “ Strategic analysis of healthcare service quality using fuzzy AHP methodology, ” Expert Systems with Applications, Vol 38, No.8, P9407-9424 【6】Tien-Chin Wang, Hsien-Da Lee and Po-Hsun Cheng (2009), “ Applying Fuzzy TOPSIS Approach for Evaluating RFID System Suppliers in Healthcare Industry, ” New Advances in Intelligent Decision Technologies, Vo.199, No., P519-526. 【7】IOM home (2011), http://www.iom.edu/ 【8】Jimenez, J., Murray, R., Beveridge, R., Pons, J., Cortes, E., & Garrigos, F., et al., “ Implementation of the Canadian Emergency Department Triage and Acuity Scale (CTAS) in the principality of andorra: Can triage parameters serve as emergency department quality indicators, ” Canada Journal of Emergency Medicine, 5 (5), 315-322 (2003). 【9】McCaig,L.F.&Burt,C.W., 2003, National hospital ambulatory medical care survey 2001 emergency department summary. Online Statitics of Centers for Disease Control and Prevention. 【10】Omar M. Ashour, (2010), “ Fuzzy AHP and utility theory based patient sorting in emergency departments ”, International Journal of Collaborative Enterprise, Vo.1, No.3-4 【11】Murray, M., Bullard, M. & Grafstein, E. (2004). Revision to Canadian emergency department triage and acuity scale implementation guidelines. Canadian Journal of Emergency Medicine, Vol.6, P421-427. 【12】Ramler, (1994), “ Emergency nursing: A physiologic and clinical perspective, ” Philadelphia:W.B.Sauders, P23-31. ? 【13 】Vance, J., & Sprivulis, P.(2005). Triage Nurse Validly and Reliably estimate Emergency Department Patient Complexity, ” Emergency Medicine Australia, Vol.17, No.4, P382-386. 【14】 （Agency for Healthcare Research and Quality, ESI Version 4） http://www.ahrq.gov/research/esi/esi1.htm 【15】Sheehy(1992), “ Emergency nursing:Principles and practices(3rd ed), ” St Louis Mosby. 【16 】Yi-Ping Cheng, et al(2011), “ Bi-level weights sum method for shock diagnosis, ” Expert Systems with Applications, Vo.38, No.4, P4497-4504.

中文文獻: 【17】王冠傑(2009)，應用 RFID於災後傷患後送管理模型之研究，大葉大學工業工程與科技管理學系碩士論文。 【18】石崇良、侯勝茂（2004），病人安全之現況與建議，台灣醫學期刊，第8卷，第4期，頁521-527，7月。 【19】王偉驎，林文燦、賴政皓、陳

慧敏（2008），應用資料探勘技術提升急診醫學檢傷分類之一致性－以台灣某醫學中心急診醫學部為例，品質學報，第15卷，第4期，8月。【20】行政院衛生署，「台灣地區平均每日醫療服務量統計」，行政院衛生署網站，2010。【21】邱曉彥(2007)，急診檢傷護理人員對檢傷分類系統認知態度與e化期望之研究，國立陽明大學臨床護理所碩士論文。【22】吳青翰(2009)，最小化整體死亡人數之大量傷病患事故救護車派遣模式，成功大學交通管理學系博士論文。【23】邱曉彥、陳麗琴、林琇珠、桑穎穎、康巧娟、邱艷芬(2008)，台灣急診檢傷新趨勢－五級檢傷分類系統，護理雜誌，第55卷，第3期，頁87-91，6月。【24】沈永釗(2010)，急診各級檢傷分類護理人力配置需求之探討，臺北醫學大學護理學所碩士論文。【25】李卓倫、陳瑞杰、陳文意、梁亞文、陳慈純，(2010)，嚴重外傷存活病患的失能影響因素，臺灣公共衛生雜誌，第29卷，第6期，頁518 -527，12月。【26】祝國忠、周奎宇、陳詳衡(2008)，大規模災難事件中資訊技術介入緊急醫療救護之探討，健康管理學刊，第6卷，第1期，頁23-31，6月。？【27】紀志賢、石富元、趙文杏、莊佳璋、蔡明哲、蔡良敏(2000)，台灣地區災難醫療通訊之初步評估，中華民國急救加護醫學會雜誌，第11卷，第3期，頁118-124，9月。【28】陳榮基(2002)，醫療糾紛的預防，台灣醫學人文學刊，第3卷，第 1 & 2 期，頁103-109，5月。【29】陳曉恩(2007)，急診檢傷分類、病患結構與醫療資源耗用之相關研究，元智大學資訊管理學系碩士論文。【30】國家衛生研究院 (2010)，節錄自病人安全資訊網，資料庫說明與譯碼簿，全民健康保險學術研究資料庫。Http://w3.nhri.org.tw/nhird/index.php【31】張俊郎、李佳峻、蔡孟宏（2007），運用人工智慧技術以提昇急診檢傷分類之品質，中華民國品質學會第 43 屆年會暨第 13 屆全國品質管理研討會。【32】賴政皓（2008）應用資料探勘技術提升急診醫學檢傷分類之一致性—以台灣某醫學中心為例，國立勤益科技大學工業工程管理學系碩士論文。【33】蕭芳瑩（2004），智慧型急診檢傷無線通訊及支援系統之開發，國立陽明大學衛生資訊與決策所碩士論文。