ABSTRACT
According to "Institute of Medicine investigation report", there are at least 44,000 people die in hospitals each year as a result of medical errors, and these deaths due to medical errors is becoming the 8th-leading cause of death in the United States. These results point out a serious problem of medical errors, and consumers should realize that there is no absolutely safe in the health care system.

In this research, medical errors are defined as delayed diagnosis, which means patients' injuries are ignored at Emergency Room (ER), but are identified by doctors in Intensive Care Unit (ICU). This study is using Affinity Set by topology concept as the tool of data mining to classify and analyze the relations within medical data, and to discuss which key attributes would cause delayed diagnosis. Furthermore, to help medical providers to reduce the probability of delayed diagnosis and to improve the quality of health care.

Studying results indicate when the patient's triage is resuscitative, and the blood pressure and the pulse are abnormal, which lead to high probability (59%) to cause delayed diagnosis, it may because doctors at ER don't have time to appropriately diagnose the patients, and doctors usually diagnose a patient's symptoms by his first impression; therefore, they really ignore when the patient is consciously and breathes normally. In addition, when doctors are overworked, it is likely cause to delayed diagnosis, but doctors' age and specialists don't influence the probability of delayed diagnosis. The rules of Affinity with the highest hit rate is 72.6%; however, the first rule of ROSETTA only gets 40% hit rate, and the database is disorderly and can't describe the observation's behavior clearly.

Keywords: delayed diagnosis; affinity set; data mining; topology

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ROSETTA software:  http://www.idi.ntnu.no/~aleks/thesis/ 