Evaluation of medical safety in an e-Health information system through incident reports management system

Takehiro Matsumoto, Masayuki Honda

Department of Medical Informatics, Nagasaki University Hospital

Abstract

A new e-Health information system was introduced to Nagasaki University Hospital in June 2008. In this paper, the effect of medical safety by introducing new system is evaluated through incident reports management system. Although total number of incident reports increased after the new incident report management system was started in 2007, the number of reports with keywords of medication and drug injection decreased from 413 (21.2%) to 357 (17.0%) ($p<0.001$) and from 289 (14.8%) to 277 (13.2%) ($p=0.132$) after e-Health information system was updated respectively. The number of reports with more severe level of over "3a" which had keywords of medication or drug injection decreased, too. These results show the new e-Health information system was effective for medical safety at least on the medication and drug injection process.

Keywords:

Incident report, EHR, Medical safety

Introduction

Evaluation of e-Health information system is not easy, and one of the most important effects of e-Health information system is improvement of medical safety. Nagasaki University Hospital planned to start a new e-Health information system (NEC MegaOrk HR) in June 2008, so the effect of medical safety by introducing a new system is evaluated through incident reports management system.

Methods

A new safety management system was developed in 2007 as a Web application system. A completed report was approved by supervising risk manager at first and then the general risk manager was secondly approved. Approved report is uploaded immediately on this system, in which all the staff can easily survey new reported incidents. The title, summary and countermeasure of the new incident reports were displayed in line at first for easy and quick survey, and the details of the reports are displayed after clicking the detail button. In case the general risk manager put a mark with date-data to the important report for later evaluation of the countermeasure, the alert mark for evaluation will be attached automatically. On the other hand a new e-Health information system started in 2008 and it had been developed for improvement of medical safety on the medication and drug injection, and it was evaluated through both changes of number and distribution of severity levels of incidents reports, related to medication and drug injection from 2007 to 2009. The severity level was determined in the guideline which was provided from the Safety Management Association of National University Hospitals in Japan. (Table 1)

table1 the guideline of severity level of incidents provided from the Safety Mangament Association of National University Hospitals in Japan

severity level	damage	details
0	-	Patients had no bad effect.
1	-	Patients had no direct damage.
2	+	Patients had mild effect, and no treatment was required.
3a	++	Patients had mild damage, and minimal invasive treatment was required.
3b	+++	Patients had transient damage, and invasive treatment was required.
4a	++	Patients had permanet damage.
4b	+++	Patients had severe permanet damage.
5	++++	death

Results

The total number of reports with keyword of medication changed from 413 (21.2%) in 2007 to 357 (17.0%) in 2008. ($p<0.001$) And severity level over 3a also decreased from 4 in 2007 to 2 in 2008 and severity level over 3b decreased from 1 to 0. On the keyword of drug injection, it found from 289 (14.8%) to 277 (13.2%) ($p=0.132$), and from 29 to 28 over 3a level. But over 3b level no changing found with 1 report.

Discussion

The number of reports with keyword of medication and drug injection decreased respectively after the e-Health information system was updated. And the number of reports with severity level over 3a also decreased. These facts show the new e-Health information system was effective for medical safety at least on the medication and drug injection process.