Investigation of Medical Accidents for the Development of Alert System to Reduce Alert Fatigue

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Abstract. Alert fatigue, a decrease in sensitivity to alerts, is a problem in the medical field. In this study, a survey was conducted on medical accidents in order to develop an alert that could be expected to reduce alert fatigue. As a result, medical accidents related to drugs are common worldwide, and the need for an alert system that can detect the implementation of medical treatment was found.

Keywords. Alert fatigue, alert system, medical accident

1. Introduction

In the operation of alert systems in healthcare, the notification of unrelated alerts has led to the problem of alert fatigue, which reduces sensitivity to alerts. There are researches on alert fatigue, narrowing down alerts of high importance [1], and incorporating dose checks into drug interaction alerts [2]. However, these researches have not been effective in reducing alert fatigue [3]. So, in order to reduce alert fatigue, it need to notify healthcare professionals who need the information individually at a time when they can always confirm the alert. Therefore, the purpose of this research is to construct an alert system that sends alerts only to healthcare professionals who need to be alerted, and prior to that, the alerts that should be implemented were examined.

2. Methods

In this survey of the current status of medical accidents in Japan, medical accident information from 2010 to 2021 collected and published by the Japan Institute for Health Care Excellence was used.

3. Results

The number of medical accidents and the number of medical institutions were surveyed (Figure 1). Medical accidents are classified into eight categories, but for this survey, medical accidents were limited to drugs, tests, blood transfusions, and medical devices that can be detected in advance, except for those that occur in real time and are difficult to detect by the system (Figure 2). It also found that patient rooms were the most common

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location for medical accidents, with 202 of the 415 drug-related medical accidents in 2021 occurring in hospital rooms.
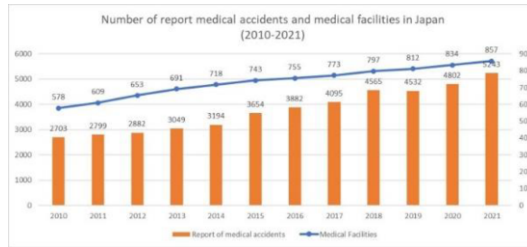

Figure 1. Number of reports medical accidents and medical facilities in Japan (2010-2021).
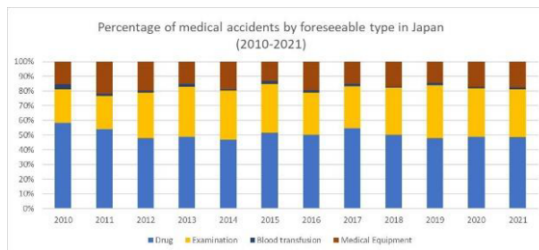

Figure 2. Percentage of medical accidents by foreseeable categories in Japan (2010-2021).

4. Conclusions

The survey results show that pharmaceuticals are the most common category of medical accidents that can be prevented with alerts. Globally, medical incidents involving pharmaceuticals are common, with more than 100,000 cases of suspected medication errors reported each year in the United States [4]. Similarly, in Australia, 250,000 patients are hospitalized annually for drug-related problems [5]. Since most drug-related medical incidents occur in patient rooms, the ability to detect medication status through an alert system is necessary to reduce these incidents. Therefore, it is planned to develop an alert system that detects medication status and notifies only those medical personnel who need to be alerted.

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