

IT Errors Make More Serious Harm for Patient - A Case Study by Using Taiwan Patient Safety Report System Data

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Background

Most of the hospital have used IT in order to decrease the cost and increase the quality of healthcare, however, more and more medical errors were happening, and some of those are because of IT System problems, it also cause patients harm. The international research group Emergency Care Research Institute (ECRI) publish the report of top 10 health technology hazards every year, in this report also can found it have many hazards is related IT system. The IT system error probably let physicians / nurses get the error data and make wrong decision, even make patients' harm.

Objective

The main purpose of this study is to know whether the patient safety events those cause by IT system error will lead higher probability of patients' harm. This research uses the data of Taiwan Patient safety Report system (TPR), the system is created to collect the case of patient safety events in the hospital, reporter need to descript the detail of event and fill the questionnaire online, during 2014-2018 it totally collect more than eight hundred thousand cases already.

Method

In this research, we use the data of medication safety problem during 2016 to 2017 to analysis the cases that reported relate to information technology to know the reasons and what they cause the patient's harm. After cleaning the data, totally 42,236 cases were included in this study.

Result

This study found nearly 2% (807 cases) of the medication safety cases reported to IT related event. In these cases, 510 cases (63%) was happen when order entry stage and followed by dispensing stage (152 cases, 19%); drug receiving stage (96 cases, 12%), some of the cases duplicate happen in multiple stage; most of the cases are near miss (548 cases, 68%) and 52 cases (6.4%) got harm in the events. We also found the cases that because of IT problem have higher probability let the patient harm in some stages. In the order entry stage, it include drug name error, pathway error, dose error, frequency error, patient identify error, drug combination problem, not appropriate drug use, dilution error, duplicate drug use and missing the order; missing dispensing in drug dispensing stage and dosage error, frequency error, dilution error, wrong receiving time, and receiving but order cancelled. In average, the probability of harm in IT related events is 2-5 times that of other events.

Conclusion

In this study, we found even the cases of IT related is not a big part in patient safety events, but in some cases, it has higher probability to let patient harm.

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Stage	Type of error	Harm probability	
		IT related (n=807)	Non IT related (n=41529)
Order entry (n=510)	Drug name	0.25%	0.11%
	Pathway	0.12%	0.04%
	Dose	0.62%	0.38%
	Frequency	0.25%	0.14%
	Patient identify	0.12%	0.04%
	Dosage	0.00%	0.04%
	Amount	0.00%	0.06%
	Drug combination	0.25%	0.04%
	Not appropriate drug use	0.50%	0.33%
	Dilution	0.12%	0.03%
	Duplicate drug use	0.25%	0.15%
Prescription delivery (n=18)	Missing the order	0.50%	0.13%
Prescription delivery (n=18)	Patient identify	0.00%	0.02%
Receiving (n=96)	Drug name	0.00%	0.31%
	Pathway	0.00%	0.01%
	Dose	0.12%	0.18%
	Frequency	0.00%	0.02%
	Patient identify	0.00%	0.02%
	Dosage	0.00%	0.06%
	Amount	0.00%	0.04%
	Missed doses	0.37%	0.04%
	Dilution	0.00%	0.01%
	Storage	0.00%	0.01%
Delivery (n=8)	Delay	0.00%	0.04%
	Location	0.00%	0.01%
	Lose	0.00%	0.02%
	Damage	0.00%	0.00%
Dispensing (n=152)	Drug name	0.37%	0.91%
	Pathway	0.00%	0.31%
	Dose	1.98%	1.62%
	Frequency	0.37%	0.15%
	Patient identify	0.00%	0.52%
	Dosage	0.00%	0.11%
	Missed doses	0.37%	0.54%
	Amount	0.12%	0.21%
	Leakage	0.00%	2.40%
	Dilution	0.50%	0.13%
	Speed	0.25%	0.32%
	Lose	0.00%	0.02%
	Time	0.87%	0.47%
	Sequence	0.00%	0.06%
	Parts	0.00%	0.02%
Receiving but order cancelled	0.25%	0.09%	
Storage	0.00%	0.04%	