Impact of Potential Teratogenic Medication Alert System in the Emergency Department

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Abstract

It has always been important to prescribe medications for reproductive-age women with considerations of teratogenic effects and potential fetal harm. To help healthcare providers make evidence-based decisions, we developed PLEASE (Pregnant Lady Early Access System for Embryo) in the Emergency Department. We could check whether reproductive-age women were pregnant or not, and also we could confirm whether medications were potential teratogenic or not by using PLEASE system at the appropriate time. After the implementation of PLEASE in the Emergency Department, the average prescription ratio of medications per person has fallen by 10 percent and the average prescription ratio of drugs defined by the FDA category X per person has fallen by 55 percent. Decision support alerts available at the exact moment of prescription for potential teratogenic medications for reproductive-age women could improve the safety in both patients and the healthcare providers by avoiding dangerous exposures to medications with fetal risks.

Keywords:

Alert, Decision support, Patient safety, Emergency, Pregnancy

Introduction

Through a preliminary study about the actual prescription status of the potential teratogenic medications for reproductive-age women in the Emergency Department with 2006 medical records, we found that 1,962 (25.3%) patients received at least one potential teratogenic drug defined by the FDA pregnancy category, among the 7,742 women. Among patients for whom a pregnancy test was not performed, only 87 (7.6%) patients were informed by their doctors on the potential teratogenicity of their medications.

Methods

PLEASE (Pregnant Lady Early Access System for Embryo) projected team was composed of a clinical doctor, three pharmacists, two nurses, and three experts of information technology. We designed PLEASE system with three main characteristics implemented in the algorithm. First, the system can confirm whether a reproductive-age woman is pregnant or not by entering information of pregnancy in the Electronic Nursing Record and the information can be shared with not only the Emergency Department but also other departments throughout Asan Medical Center. Second, the system can check whether a medication is potentially teratogenic or not by interfacing with drug information database. And third, the system has a time control on the pop-up window function by setting the patient's expected date of confinement or the patient's history of infertility.

Results & Conclusion

We implemented PLEASE system in computerized physician order entry system (CPOE) and Electronic Medical/ Nursing Record on May 2007. We have been using this system without major difficulties for more than two years. Now, we have tried to analyze the effect of PLEASE on the prescription status of the potential teratogenic medications for reproductive-age women in the Emergency Department by comparing the order trend during 17 months before and 17 months after the system implementation between December 2005 and September 2008. We excluded patients who had immediate need of CPCR or emergency delivery for our study. As a result, the average prescription ratio of medications per person has fallen by 10 percent (from 7.63 to 6.89) and the average prescription ratio of drugs based on FDA category X per person has fallen by 55 percent (from 0.23 to 0.10).

A trial of decision support alerts available at the exact moment of prescription for potential teratogenic medications for reproductive-age women in the Emergency Department could improve the safety in both patients and healthcare providers by avoiding dangerous exposures to medications with fetal risks.

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