Japan Council for Quality Health Care

Project to Collect Medical Near-Miss/ Adverse Event Information

Medical Safety Information

No.106, September 2015

Wrongly Prepared Drug for a Pediatric Patient

Five cases have been reported involving an overdose due to an error in the preparation of a drug for a pediatric patient, even though the prescription was correct (information collection period: from January 1, 2012 to July 31, 2015). The information is compiled based on “Individual Theme Analysis” (p.145) in the 27th Quarterly Report.

Cases of overdose due to errors in the preparation of a drug for a pediatric patient resulting from miscalculation or assumptions have been reported.

Drug Name	Physician's Order	Erroneously Prepared Dosage	Age	Background
VANCOMYCIN for I.V.Infusion 0.5	40mg/time	400mg/time	0 months	Assumed 1g=100mg
VANCOMYCIN for I.V.Infusion 0.5 (2 vials)	70mg/time	700mg/time	2 months	Felt uneasy that the volume was 0.7mL when the drug was dissolved in the concentration 100mg/mL and assumed it should be 7mL
Prograf Injection 2mg	0.18mg/day	1.8mg/day	2 years	• Error in the formula used for calculation • Did not refer to the prescription, which described the correct dilution method
AMIKAMYCIN INJECTION 100mg	4.5mg/time	18mg/time	0 months	Miscalculation
Fludara 50mg	15mg/day	30mg/day	2 years	Miscalculation

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Case 1

There was an order for "Vancomycin 40mg + normal saline 5mL 5mL/h 3 times/day" for a pediatric patient less than a month old. Vancomycin 0.5g should have been dissolved in 5mL of normal saline, with 0.4mL of this solution providing the 40mg dosage, but Nurse A did the mental arithmetic based on the assumption that 1g=100mg (in fact, 1g=1,000mg). To check, Nurse A said to Nurse B, "It's Vancomycin 0.5g dissolved in 5mL of normal saline and then 4mL of that, isn't it?" and Nurse B said, "That's right," without calculating it him/herself. Nurse A prepared the drug in this way and then administered it. The error in preparation was discovered the following day, when the patient was found to have an elevated blood concentration of Vancomycin.

Case 2

0.18mg/48mL of Prograf Injection 2mg (0.4mL) was being prepared for a continuous intravenous infusion into a 2-year-old pediatric patient. On the injection order, the pediatrician had written the following comment regarding the preparation method: "Mix 19.6mL of normal saline with 0.4mL of Prograf to get 0.1mg/mL, then take 1.8mL of this and add normal saline until you have 48mL." When the pharmacist did the calculation, s/he used 1.8mg instead of the 0.18mg specified in the formula and then failed to refer to the physician's comment. Consequently, instead of 1.8mL (=0.18mg) of Prograf at 0.1mg/mL, 18mL was prepared and administered. When the pharmaceutical department was preparing Prograf the following day, the previous day's error in preparation was noticed.

Preventive measures taken at the medical institutions in which the events occurred.

Staff members will do the following when administering drugs to pediatric patients:

- **Physicians will specify the dilution method in the comments field of the prescription.**
- **The pharmaceutical department will check the formula used for the calculation when carrying out the accuracy check.**
- **When preparing drugs, staff members will record the process of calculating the dosage and 2 staff members will check it.**

* As part of the Project to Collect Medical Near-Miss/Adverse Event Information (a Ministry of Health, Labour and Welfare grant project), this medical safety information was prepared based on the cases collected in the Project as well as on opinions of the "Comprehensive Evaluation Panel" to prevent the occurrence and recurrence of medical adverse events. See quarterly reports and annual reports posted on the Japan Council for Quality Health Care website for details of the Project.
http://www.med-safe.jp/

* Accuracy of information was ensured at the time of preparation but cannot be guaranteed in the future.

* This information is intended neither to limit the discretion of healthcare providers nor to impose certain obligations or responsibilities on them.

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