Japan Council for Quality Health Care

Project to Collect Medical Near-Miss/ Adverse Event Information

Medical Safety Information

No.183, February 2022

Confusion between Product Volume and Active Ingredient Dosage (1st Follow-up Report)

Events involving confusion between product volume and active ingredient dosage were highlighted in Medical Safety Information No. 9 “Confusion between total product amount and content of active ingredient” (August 2007). As eight similar events have subsequently been reported, information about this issue is hereby provided once again (information collection period: from January 1, 2015 to December 31, 2021). This information was compiled on the basis of the content featured in Recurrence of Events and Occurrence of Similar Events section of the 66th Quarterly Reports.

Cases have again been reported in which confusion between product volume and active ingredient dosage when prescribing powdered medication resulted in an overdose.

Image of Case 1

Patient referral document
Aleviatin Powders 2 g/day* 2 times/day After breakfast and dinner

*Prescription intended to be for a product volume of 2 g/day (active ingredient dosage of 200 mg/day)

[Prescription order screen]
Aleviatin Powders
2,000 mg/day
2 times/day
After breakfast and dinner

It must be 2,000 mg because it’s 2 g

Quantity prescribed in error

Aleviatin Powders
Product volume 10 g/time
(Active ingredient dosage 1,000 mg/time)

Tenfold dose

Correct prescription quantity

Aleviatin Powders
Product volume 1 g/time
(Active ingredient dosage 100 mg/time)

- Product volume refers to the total weight, while active ingredient dosage refers to the titer or quantity of the main/active pharmaceutical ingredient.
- This is the 1st follow-up report regarding confusion between total product amount and content of active ingredient, following Medical Safety Information No. 9.

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Case 1

At this hospital, prescriptions for powdered medication were meant to be ordered on the basis of active ingredient dosage. The physician did not know that powdered medication has both a product volume and an active ingredient dosage. Accordingly, when switching from the patient's current medications to an internal prescription, the physician ordered "Aleviatin Powders 2,000 mg/day 2 times/day: after breakfast and dinner" after seeing "Aleviatin Powders 2 g/day 2 times/day: after breakfast and dinner" on the patient referral document. When the pharmacist made an inquiry about the prescription, the physician checked the patient referral document and, thinking that 2,000 mg should be fine because the document stated 2 g, told the pharmacist to dispense the prescription as ordered. The pharmacist prepared and dispensed an active ingredient dosage of 2,000 mg/day (product volume of 20 g/day). The nurse administered the drug to the patient, without questioning the fact that the sachets contained a large quantity of powder. The ward pharmacist noticed the overdose two days later.

Case 2

When administering Leukerin Powder 10% to a patient, Senior Physician A ordered Physician B to prescribe 150 mg, intending that this should be the product volume, as powdered medications at the medical institution where Senior Physician A formerly worked were ordered on the basis of product volume. At this hospital, prescriptions were meant to be ordered on the basis of active ingredient dosage, so Physician B entered 150 mg as ordered. When the pharmacist made an inquiry about the prescription, Physician B told the pharmacist to dispense the prescription as ordered, because they had prescribed it in accordance with the senior physician's order. The patient was administered an active ingredient dosage of 150 mg/day instead of 15 mg/day for 10 days.

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

- **Display either [Product volume] or [Active ingredient dosage] on the prescription order screen and prescription.**
- **Educate both physicians and nurses that powdered medication has both a product volume and an active ingredient dosage.**

The measures above are examples. Please consider initiatives suitable for your own facility.

Key Preventive Measures

- **When sharing information between facilities by means of a patient referral document or the like, specify whether the quantities indicated on prescriptions for powdered medication refer to product volume or active ingredient dosage.**

(Comprehensive Evaluation Panel)

* 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 the Project website for details.
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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