



Japan Council for Quality Health Care

Project to Collect Medical Near-Miss/
Adverse Event Information

Medical Safety Information

Incorrect Concentration of Adrenaline

No.108, November 2015



Six cases have been reported in which the concentration of diluted adrenaline solution prepared by the nurse differed from the concentration of diluted adrenaline solution that the physician intended should be administered as a subcutaneous injection during surgery (information collection period: from January 1, 2012 to September 30, 2015). The information is compiled based on “Individual Theme Review” (p.135) in the 33rd Quarterly Report.

Cases have been reported in which a higher concentration of diluted adrenaline solution than intended by the physician was administered as a subcutaneous injection during surgery, due to inadequate checks between the physician and the nurse.

Physician's Order	Physician's Intention [Adrenaline Dilution]	Prepared by Nurse [Adrenaline Dilution]	Concentration Error
Bosmin in normal saline	Bosmin Injection 1mg + normal saline to a total of 500mL [1:500,000]	0.05% Bosmin Solution (In-house preparation for external use) [1:2,000]	250 times
1:200,000 concentration of Bosmin	Double dilution of Xylocaine Injection 1% with Epinephrine [1:200,000]	Double dilution of Bosmin Solution 0.1% for external use [1:2,000]	100 times
Bosmin	Double dilution of Xylocaine Injection 1% with Epinephrine [1:200,000]	Double dilution of Bosmin Solution 0.1% for external use [1:2,000]	100 times
Bosusei (Intended to order Bosmin in normal saline)	Bosmin Injection 0.3mL + normal saline to a total of 100mL [1:333,333]	0.02% epinephrine solution (In-house preparation for external use) [1:5,000]	About 67 times
Unknown	Bosmin Injection preparation [1:200,000]	0.02% epinephrine solution (In-house preparation for external use) [1:5,000]	40 times
1:100,000 concentration of Bosmin	Bosmin Injection preparation [1:100,000]	1:3,000 concentration of Bosmin (In-house preparation for external use) [1:3,000]	About 33 times

Incorrect Concentration of Adrenaline

Case 1

The physician intended to administer a subcutaneous injection of a solution of adrenaline diluted 1:500,000 (0.0002% Bosmin). Before surgery, the physician gave an order to the scrub nurse for “Bosmin in normal saline, please.” Thinking that this was the in-house preparation of 0.05% Bosmin Solution (solution of adrenaline diluted 1:2,000), the scrub nurse asked the physician, “Is that 0.05%?” and the physician replied, “Huh? Yeah.” without checking the details. Unaware that 0.05% Bosmin Solution was for external use, the scrub nurse prepared it in a syringe. When the physician administered 60mL as a subcutaneous injection at the surgical sites, the patient developed tachycardia and hypertension, and went into ventricular fibrillation.

Case 2

During surgery, the physician gave an order to the circulating nurse for “1:100,000 concentration of Bosmin.” The circulating nurse replied, “We’ve got a 1:3,000 concentration of Bosmin.” Unaware that the 1:3,000 concentration of Bosmin was an in-house preparation for external use, the physician told the nurse to prepare that. The circulating nurse poured the 1:3,000 concentration of Bosmin into a beaker in the sterilized area. The physician then filled a syringe from the beaker and administered 7mL as a local injection. Immediately afterwards, the patient developed hypertension and increased heart rate, and went into ventricular fibrillation.

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

- When using diluted adrenaline solution during surgery, both physicians and nurses will check not only the name of the drug, but also the concentration and usage.
- “Not for injection” will be printed on the labels of in-house preparations for external use.

* 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.

