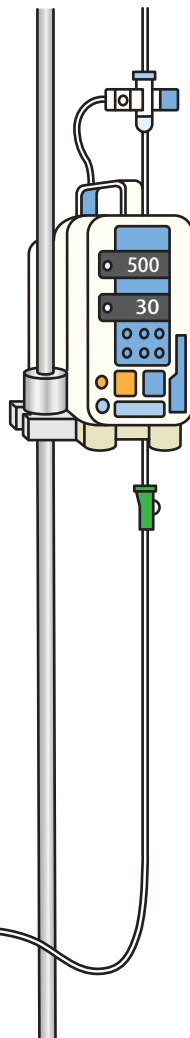
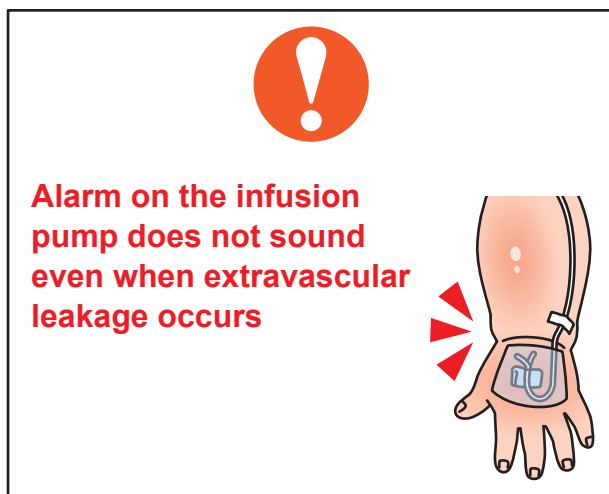


Extravascular Leakage in Pediatric Patients (1st Follow-up Report)

Cases have been reported in which delays in noticing extravascular leakage when administering infusions to pediatric patients resulted in the patient requiring treatment.

Information was originally provided in Medical Safety Information No. 7 “Extravascular Leakage in Pediatric Patients” (June 2007). Subsequently, 52 events of this nature were reported between January 1, 2018 and August 31, 2023. This information was compiled on the basis of the content featured in Recurrence of Events and Occurrence of Similar Events section of the 73rd Quarterly Report.

Image of case



Main Background Factors

- The nurse was using an infusion pump and thought that the alarm would sound in the event of extravascular leakage, so they did not undertake observations of the insertion site.
- As it was night time and the pediatric patient was asleep, the nurse did not observe the insertion site, to avoid waking the patient.
- The nurse was unable to observe the insertion site, because non-transparent tape had been used to fix the IV in place.
- The arm into which the peripheral venous line had been inserted was protected with a cover and dressings, so observation was difficult.
- The pediatric patient was crying and the nurse assumed that it was because the patient was fasting, so they did not observe the insertion site.
- The nurse observed only the insertion site, without checking the arm as a whole or looking for differences between the left and right arms.

Extravascular Leakage in Pediatric Patients (1st Follow-up Report)

Case 1

Acmain D Injection was being administered to a nine-month-old pediatric patient at a rate of 30 mL/h via a peripheral venous line into the dorsum of the hand using an infusion pump. The patient's arm was fixed with a splint and protected with a cover. The nurse observed the patient every hour or so until 06:00, to check that extravascular leakage had not occurred and that the cover had not slipped, and found no edema or induration of the arm. No further observation was carried out thereafter, as the patient was not crying and the nurse thought that the alarm on the infusion pump would sound if extravascular leakage occurred. About four hours later, when taking the cover off to remove the peripheral venous line, the nurse noticed that the patient's fingers were purple and skin necrosis had occurred.

Case 2

Veen-D Injection was being administered to a two-year-old pediatric patient at a rate of 40 mL/h via a peripheral venous line into the dorsum of the right hand using an infusion pump. At 22:00, the nurse checked the operating condition of the infusion pump and confirmed that there was no swelling around the insertion site. The nurse visited the patient's room every half an hour to an hour thereafter, but, as the alarm on the infusion pump did not sound and the patient was sleeping, they did not observe the insertion site, to avoid waking the patient. At around 07:30 the following morning, the nurse noticed that the insertion site was swollen and the skin had turned white. The patient's right arm was engorged, with swelling extending as far as the right precordium.

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

- While administering infusions, regularly observe the insertion site of the peripheral venous line and the surrounding area, to ensure the prompt discovery of extravascular leakage.
- Ensure widespread awareness of the fact that alarms on infusion pumps and the like cannot be used to detect extravascular leakage of infusions.

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

Key Preventive Measures

- Ensure widespread awareness of the following points within your facility.
- In pediatric patients, extravascular leakage has a high probability of serious impacts, as the leakage spreads through subcutaneous tissue.
- Alarms on infusion pumps and the like detect obstructions in the line and are not designed to detect extravascular leakage.
- Keep the insertion site and surrounding area under observation, devising appropriate means of fixing and covering peripheral venous lines.

(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.

<https://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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