Project to Collect Medical Near-Miss/Adverse Event Information

Medical Safety Information

April 2024

No.209

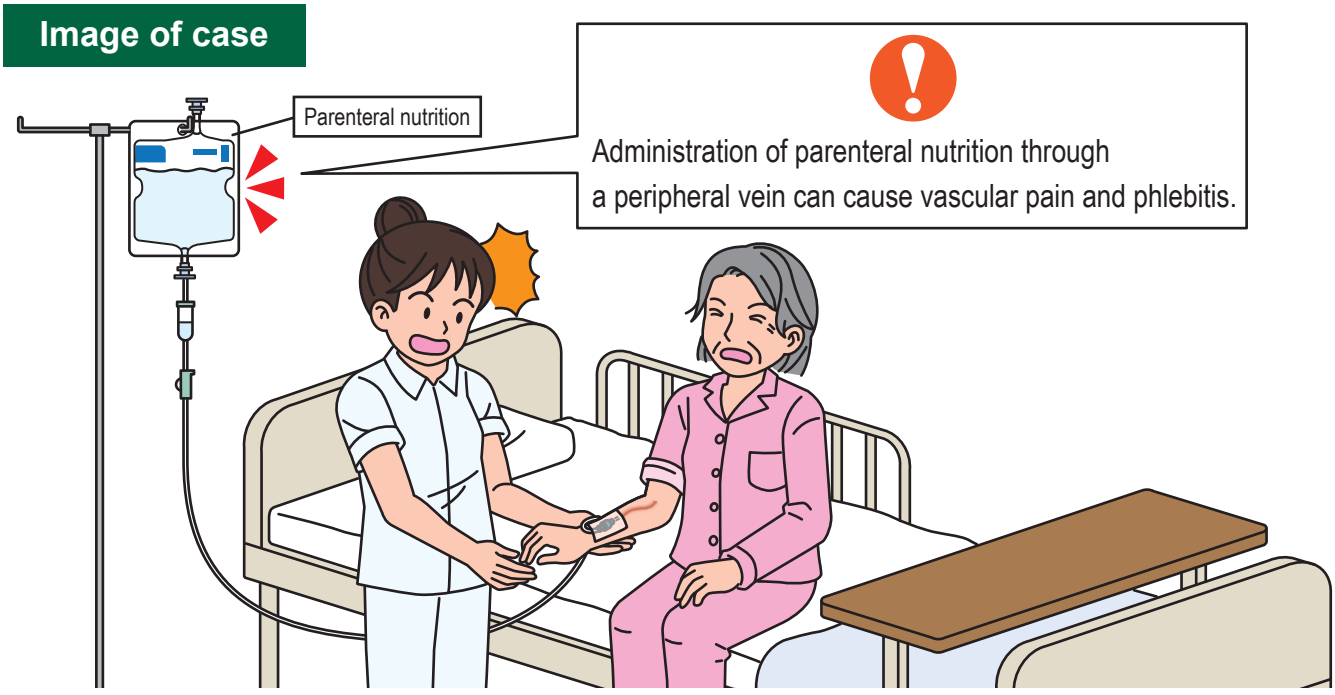
Use of a Peripheral Vein to Administer an Infusion That Should Be Administered through a Central Vein

Cases have been reported in which a peripheral vein was used to administer parenteral nutrition, a high-concentration glucose solution, or another infusion that should be administered through a central vein.

Eight such cases were reported between January 1, 2020 and February 29, 2024. This information was compiled on the basis of the content featured in the Details of Events section of the 52nd Quarterly Report.

Outline of Reported Event	Main Background Factors
A peripheral vein was used to administer an infusion that the physician had ordered to be infused through a central vein.	-The nurse overlooked the order concerning the administration route.
After removal of the central venous catheter, the physician ordered the infusion that was being administered via the catheter to be administered through a peripheral vein.	-As few patients on the ward had a central venous catheter, both the physician and the nurse lacked sufficient knowledge.
The physician made an error in ordering an infusion to be administered through a peripheral vein and prescribed an infusion that should be administered through a central vein.	-When issuing the order, the physician copied the order that had been issued when the patient had a central venous catheter inserted. -The nurse did not have any doubts about the content of the order.

Image of case



Use of a Peripheral Vein to Administer an Infusion That Should Be Administered through a Central Vein

Case 1

The patient was receiving a continuous intravenous infusion of an antihypertensive via a peripherally inserted central catheter (PICC) line, and was also being administered an infusion through a peripheral vein. The physician issued an order to administer parenteral nutrition via the PICC line. Without checking the administration route, day shift Nurse A changed the infusion that was being administered through a peripheral vein to parenteral nutrition and began its administration. Subsequently, night shift Nurse B noticed that parenteral nutrition was being administered through a peripheral vein.

Case 2

There were signs of infection at the insertion site of the patient's central venous catheter, so, after removing the catheter, the physician ordered parenteral nutrition to be administered through a peripheral vein. The nurse began administering parenteral nutrition through a peripheral vein, as ordered. After subsequently noticing that the patient was experiencing vascular pain in the peripheral vein and swelling at the insertion site, the nurse halted administration. As few patients on the ward had a central venous catheter, both the physician and the nurse lacked sufficient knowledge.

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

-Inform all staff at the medical institution that parenteral nutrition and other infusions that should be administered through a central vein cannot be administered via a peripheral vein.

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

A list of infusions that should be administered through a central vein is provided in PMDA Medical Safety Information No. 67 January 2024 "Precautions for Route of Administration of Total Parenteral Nutrition."
https://www.pmda.go.jp/files/000266168.pdf

Key Preventive Measures

○ **Also ensure widespread awareness that, as central veins are wide and have a lot of blood flowing through them, parenteral nutrition and high-concentration glucose solutions are quickly diluted, whereas the smaller blood flow through peripheral veins means that such infusions are not quickly diluted and there is a risk of causing vascular pain and phlebitis, among others.**

(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.

Department of Adverse Event Prevention
Japan Council for Quality Health Care
1-4-17 Kandamisaki-cho, Chiyoda-ku, Tokyo 101-0061 JAPAN
Direct Tel: +81-3-5217-0252 Direct Fax: +81-3-5217-0253
https://www.med-safe.jp/