PMDA
Medical Safety Information
Pharmaceuticals and Medical Devices Agency

No.23 Revised November 2020

Precautions in Handling of Insulin Vial Preparations (Ensuring the Use of Insulin Syringes)

POINT Key points for safe use

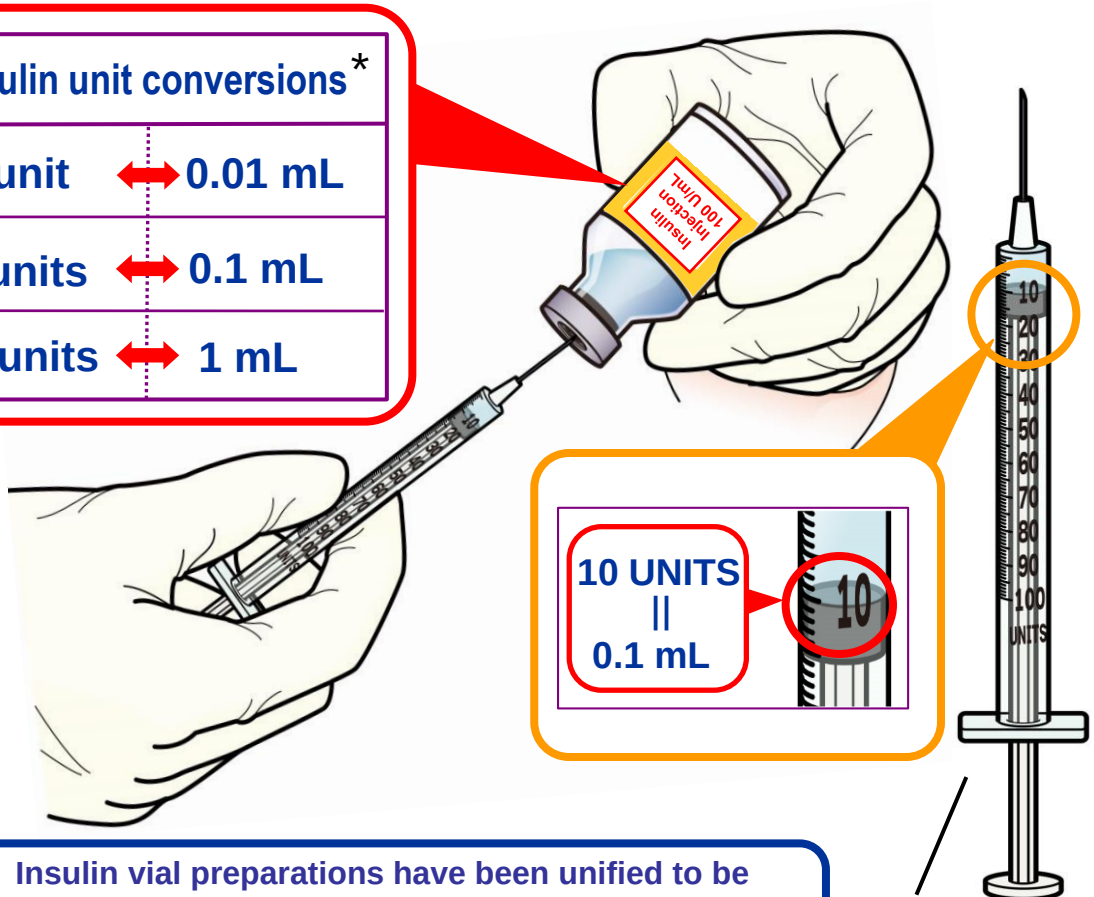
1 Precautions when handling insulin (No.1)

(Case 1) A medical staff member was given the instruction to mix 0.1 mL of insulin into the transfusion. However, the staff member erroneously thought that 0.1 mL was 1 unit and mixed 1 unit of insulin. This caused hyperglycemia in the patient.

- Check to make sure that the unit conversion is correct.

* In Japan, insulin syringes are not necessarily adopted in all medical institutions, and insulin unit conversions are necessary.

Insulin unit conversions*	
1 unit	0.01 mL
10 units	0.1 mL
100 units	1 mL



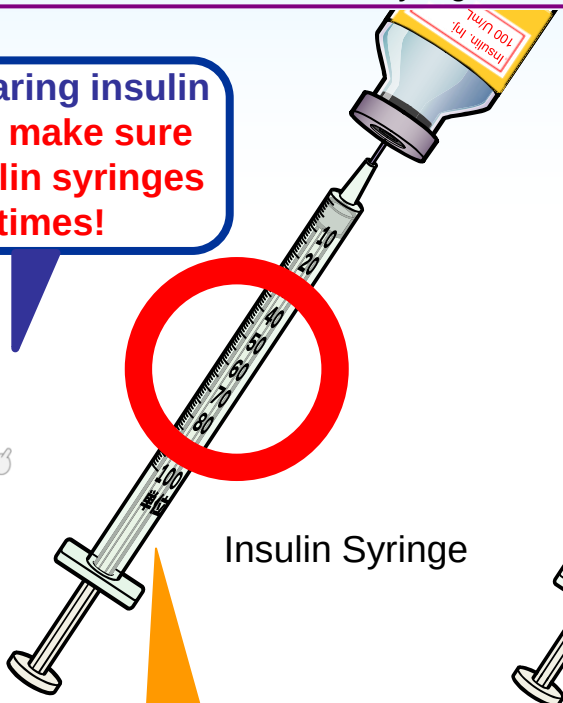
Insulin vial preparations have been unified to be 100 units/mL. When preparing insulin injections, make sure to check whether the unit conversions are correct.

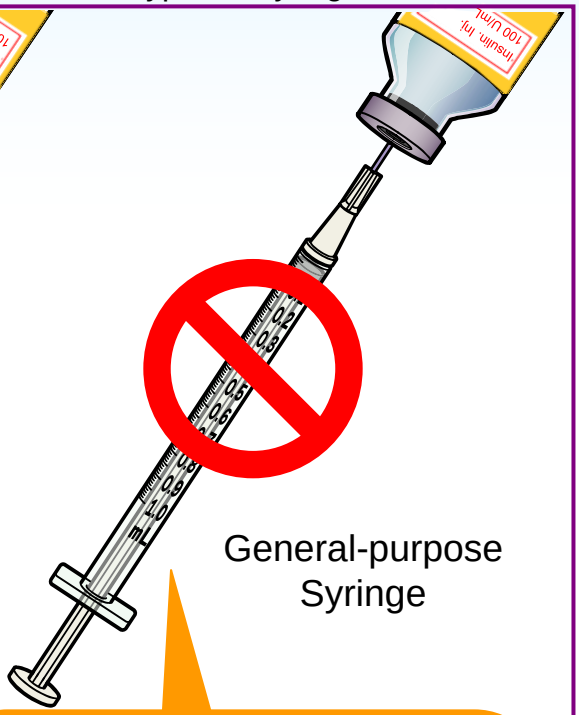
2 Precautions when handling insulin (No.2)

(Case 2) When 4 units of insulin were to be administered, a medical staff member erroneously thought that 4 units were equivalent to 0.4 mL, and administered 0.4 mL (40 units) of insulin, using a tuberculin syringe. This caused hypoglycemia in the patient

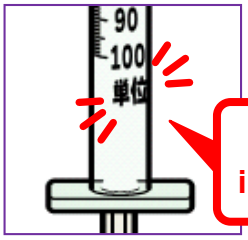
- Be careful not to confuse an insulin syringe with other types of syringes.

When preparing insulin injections, make sure to use insulin syringes at all times!

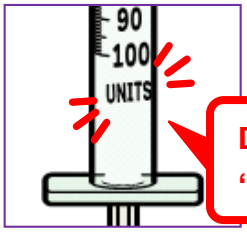




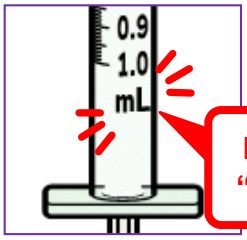
Insulin Syringe



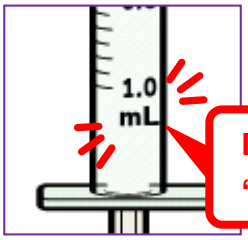
* This display indicated as “単位” means “UNITS” in Japanese.



Tuberculin Syringe



1 mL Plastic Syringe



All insulin syringes have a “単位” or “UNITS” display. However, tuberculin syringes and other general-purpose syringes do not have such a display!

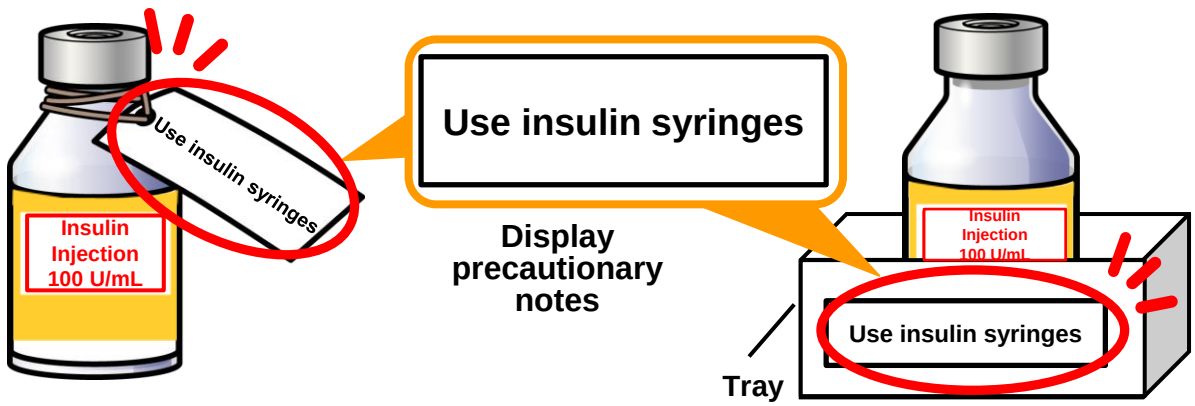
3 Ensuring use of insulin syringes

(Case 3) A medical staff member was new to handling insulin and did not know that there are dedicated syringes for insulin. The staff member used a general-purpose syringe and prepared 7 mL (700 units) of insulin when he or she should have prepared 7 units of insulin.

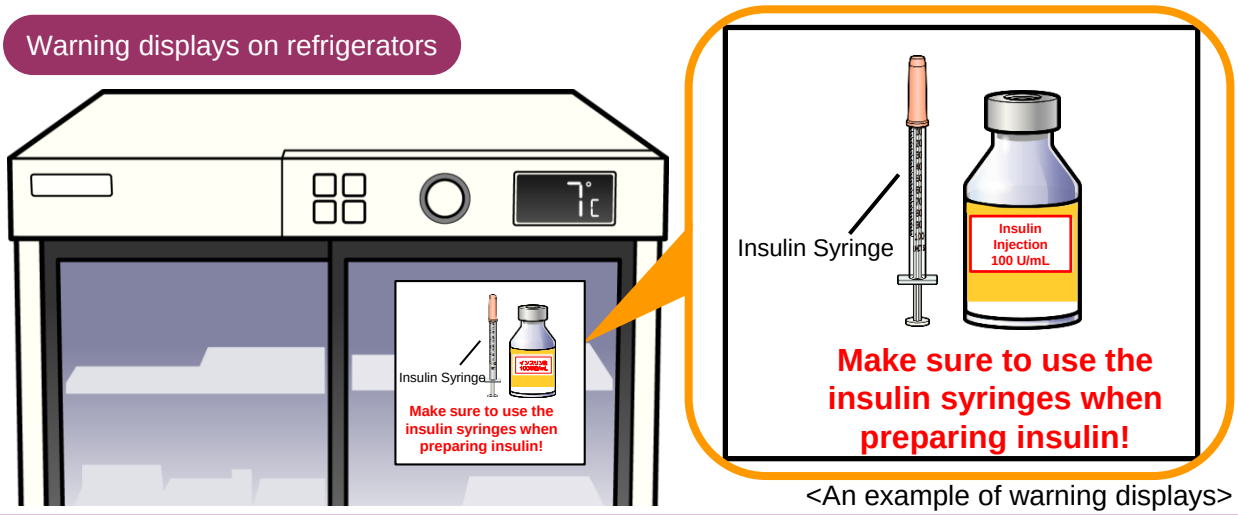
- **Take necessary steps to ensure use of insulin syringes**

Example of ensuring the use of insulin syringes

Warning displays with tags and trays



Warning displays on refrigerators



<An example of warning displays>

Other steps

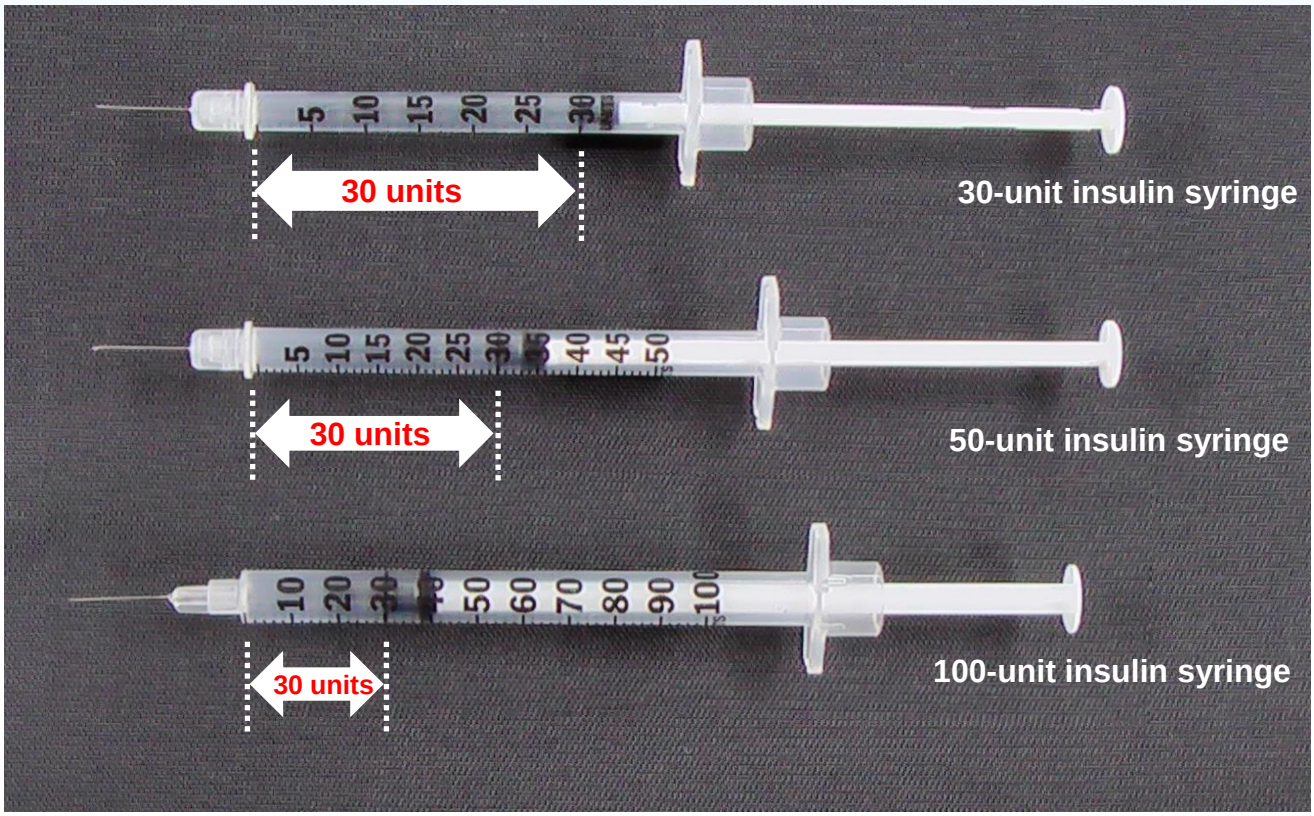
- **Store insulin syringes near insulin**
- **Prepare manuals on handling of insulin**

There have been frequent reports of instances where use of general-purpose syringes instead of insulin syringes led to dosage mistakes due to confusion of "unit" and "mL." Make sure to use insulin syringes! Also, please consider ensuring use of insulin syringes at your facility.

4 Precautions when handling insulin syringes

(Case 4) A medical staff member usually administered mixed insulin measured up to the maximum dose of a 30-unit insulin syringe. However, on that day, the staff member erroneously took a 50-unit insulin syringe and mixed the maximum dose as usual.

- Make sure to confirm the size (unit) of insulin syringes.



Insulin syringes are delivered in several sizes, each with different maximum doses of the unit. Review the unit of insulin syringes to be used to prevent a mix-up. For example, by unifying the unit of insulin syringes used.

The Ministry of Health, Labour and Welfare (MHLW) issued a notification related to PMDA Medical Safety Information No. 23:

●PSEHB/PSD Notification No. 0519-1 dated on May 19, 2020 Revision of Precautions

About this information

* PMDA Medical Safety Information is issued by the Pharmaceuticals and Medical Devices Agency for the purpose of providing healthcare providers with clearer information from the perspective of promoting the safe use of pharmaceuticals and medical devices. The information presented here has been compiled, with the assistance of expert advice, from cases collected as Medical Accident Information Reports by the Japan Council for Quality Health Care, and collected as Adverse Drug Reaction and Malfunction Reports in accordance with the Law on Securing Quality, Efficacy and Safety of Pharmaceuticals and Medical Devices.
* We have tried to ensure the accuracy of this information at the time of its compilation but do not guarantee its accuracy in the future.
* This information is not intended to impose constraints on the discretion of healthcare professionals or to impose obligations and responsibility on them, but is provided as a support to promote the safe use of pharmaceuticals and medical devices by healthcare professionals.

Access to the most up-to-date safety information is provided via the PMDA Medi-navi service.

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