■ Medical Safety Information
Pharmaceuticals and Medical Devices Agency
http://www.pmda.go.jp/english/service/medical_info.html

No. 23 April 2011

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Pharmaceuticals and Medical Devices Agency

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Precautions in Handling of Insulin Syringes

POINT Key points for safe use

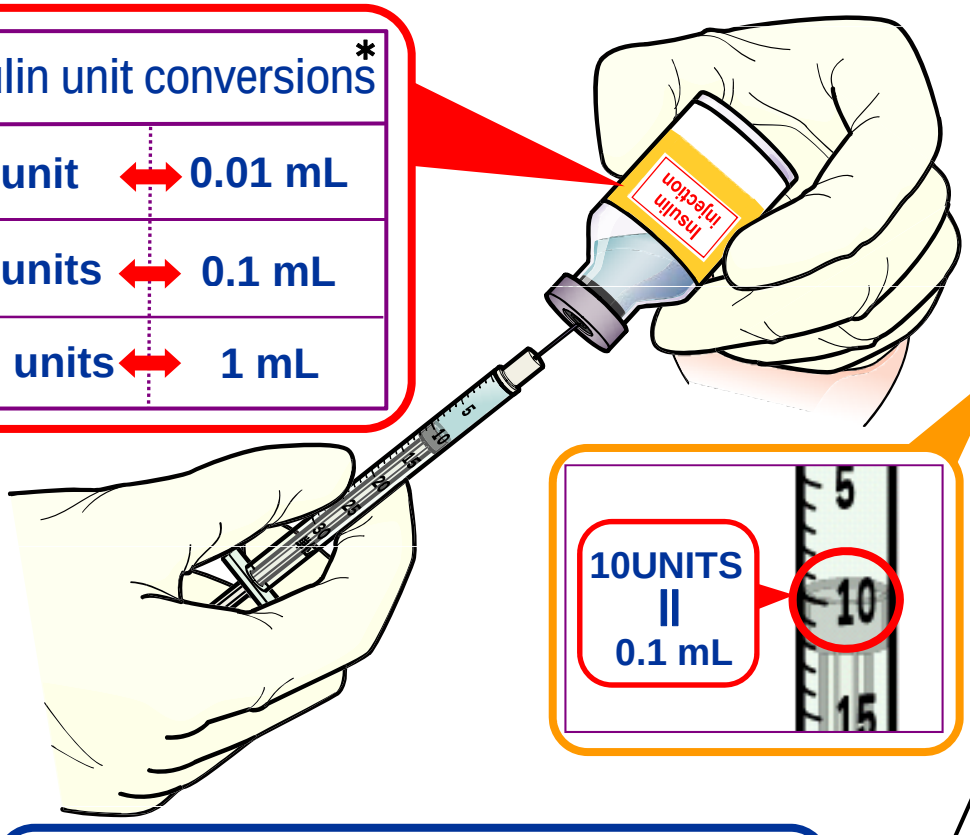
(Case 1) A medical staff member was given the instruction to mix 0.1 mL of insulin into the transfusion. However, the staff erroneously thought that 0.1 mL was 1 unit, and mixed 1 unit of insulin. This caused hyperglycemia to the patient.

1 Precautions when handling insulin (No.1)

- Check to make sure whether the conversions is not incorrect.

∗ In Japan, Insulin syringe is not necessarily adopted in all medical institution, and needs insulin unit conversion.

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



Insulin syringe

With insulin injection solution, 1 mL corresponds to 100 units. When preparing insulin injection, make sure to check how many milliliters correspond to the desired unit of insulin.

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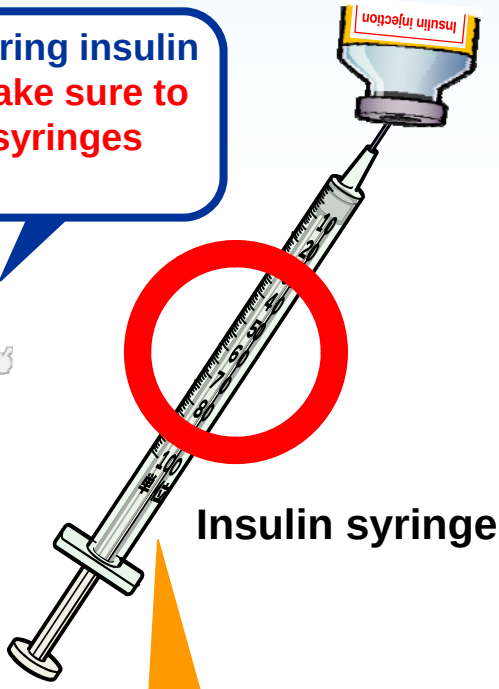
(Case 2) When 4 units of insulin were to be administerd, a medical staff member erroneously thought that 4 units were equivalent to 0.4 mL. Thus, administered 0.4 mL (40 units) of insulin, using a tuberculin syringe. This caused hypoglycemia to the patient.

2 Precautions when handling insulin (No.2)

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

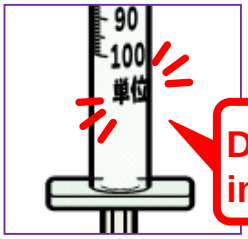
When preparing insulin injection, make sure to use insulin syringes at all times!



Insulin syringe

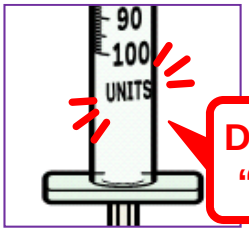
Commonly-used syringe

Insulin Syringe



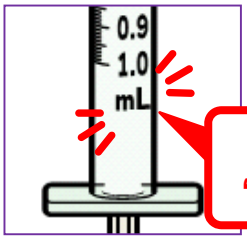
Display in “単位”*

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



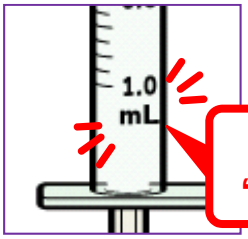
Display in “UNITS”

Tuberculin Syringe



Display in “mL” only!

1 mL Plastic Syringe



Display in “mL” only!

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

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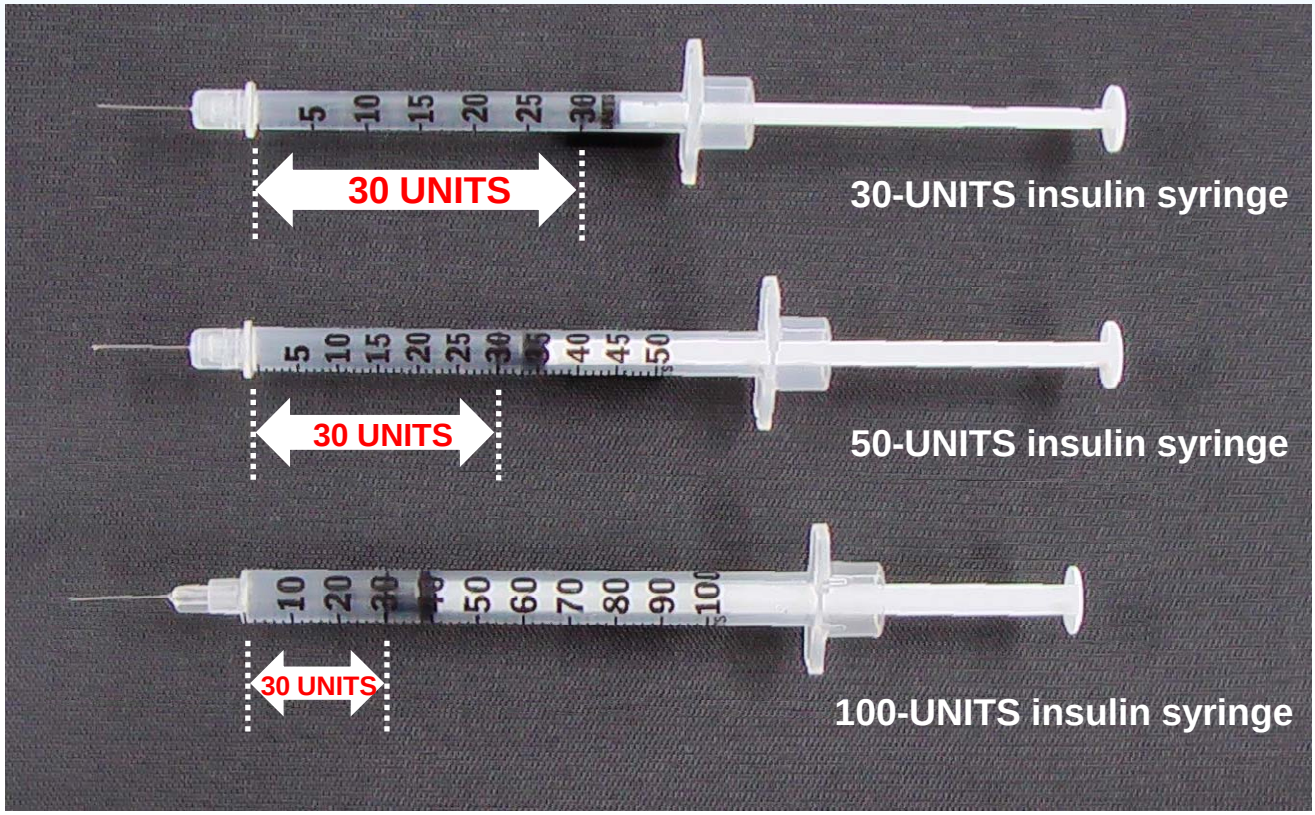
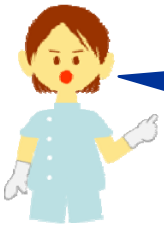
(Case 3) A medical staff member usually had mixed the maximum dose of 30 units' insulin, measured with 30-UNITS insulin syringe. However, on the particular day, the staff erroneously took a 50-UNITS insulin syringe, and mixed the maximum dose as usual.

3 Precautions when handling insulin syringes

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





Insulin syringes are delivered in several sizes, each with different maximum dose of the unit. If there are different sizes of syringes in your institution, check the maximum limit of the unit carefully and review the parallel use to prevent a mix-up.

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 Pharmaceutical Affairs Law.
* 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.

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