**Purpose**
We elucidated the state of coming into contact with blood and related issues by observing nurses’ intravenous placement skills with the peripheral-short catheter.

**Methods**
Subjects comprised 90 Japanese nurses. Videos of actual intravenous placement of catheters were recorded with qualified nurses taking on the roles of both the nurse performing the intravenous placement and of the patient. Direct contact of the patient’s blood with the skin of the nurse was defined as contact with blood. Data regarding the part of the process of intravenous placement during which the nurse was exposed to the spilled blood and whether or not the nurse was wearing gloves is gathered.

**Results**
Contact with blood was observed in the video recordings of 13 of the 90 subjects (14%). Gloves were worn from placement of the needle to clean-up up by 34 of the 90 subjects (38%). Results of a chi-squared test revealed a correlation between contact with blood and whether or not gloves were worn (level of significance: 5%). Twelve of the 13 subjects who came into contact with blood were exposed to blood that flowed out of the catheter hub during the period between removal of the stylet and connection of the stylet to the infusion route (Photograph 1). Contact with blood during clean-up occurred in 2 of the 13 subjects. One nurse came into contact with blood twice; once when blood flowed out of the hub and once during clean-up.

Gloves were removed partway through the procedure by 35 of the 90 nurses (39%), and of these 35 nurses, 28 removed their gloves during dressing of the venipuncture access site or during clean-up (Table 1). Thirty-five of the 90 nurses (39%) applied pressure to the needle including the tip of the catheter (22 G catheter 25 mm in length) and no bleeding was seen from the catheter hub (Table 2).

**Discussion**
The Centers for Disease Control and Prevention guidelines stipulate that gloves should be worn during placement of intravascular catheters to prevent infection with blood-borne pathogens. Meanwhile, the Infusion Nursing Standards of Practice (2011) by the Infusion Nurses Society stipulate that gloves should be worn when there is a possibility of contact with blood and that gloves should only be removed after destroying the items used. However, only 34 of the 90 nurses (38%) in this study were wearing gloves throughout needle placement and clean-up. Results revealed a correlation between contact with blood and whether or not gloves were worn. Only 34 of the 90 nurses (38%) wore gloves throughout needle placement and clean-up during the needle placement and clean-up period. Contact with blood was observed in 6 of the 35 nurses (17%; Table 1). There is a risk of blood adhering to the fingers during actions such as wiping up blood with a cotton swab soaked in alcohol with bare hands. Gloves need to be worn until clean-up is finished. This study revealed that nurses tend to remove their gloves for dressing of the puncture site once the needle has been placed. This is likely due to a lack of awareness of countermeasures for contact with blood in vascular access. An effective method of applying pressure to prevent outflow of blood during removal of the stylet is to estimate where the tip of the catheter is and to press down on the skin in the area including the catheter tip. Learning this method (Photograph 2) can reduce the chance of contact with blood. Using a device with a hemostasis valve and closed IV catheter system is also considered effective.

**Conclusion**
1. 14% nurses contact with blood.
2. Contact with blood that flowed out from the catheter hub accounted for 92% of all contact.
3. In the future, nurses should wear gloves throughout catheter placement and clean-up and use techniques to prevent outflow of blood such as pressing down on the skin where the catheter tip is located during stylet removal.

**Ethical considerations**
Subjects gave their written informed consent after being given an explanation of the study protocol, their guaranteed rights as a subject and of plans to publish the results. Considering safety, a system was set up whereby subjects could visit doctors if any neurological symptoms developed. The ethics committee of this university approved the legal defense interpretation etc. in the study methods.