Needle Protection Devices (NPD): Potential Risk of Surface Contamination During Activation.

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ABSTRACT

Some NPD require activation by snapping a contaminated needle into a protective cap or sleeve. Implementation of one such NPD during 1999 resulted in a dramatic reduction in blood-borne needlestick injuries during procedures requiring the use of these devices. However, the theoretical possibility of surface contamination by fluid during activation of the NPD was raised by several health care workers (HCO). Therefore a study was designed to determine 100 NPDs not exposed to any needle which were primed with gamma-irradiated solution. A glass template was prepared with 10 such concentric squares and the NPD was activated directly into the center square. Surface contamination was then assessed by magnified visual inspection of the template.

Results: Surface contamination was found only in 3.3% of the NPDs. It was present in only 30 out of 3,000 needle sleeves, and confined to the surface near the center needle. Gamma-irradiated NPDs within the needle sleeves were released within the cap 44% of the time.

Conclusion: NPDs do not appear to serve as a significant source of environmental contamination, but provide protection to HCO when used with unannealed needles.

MATERIALS

Venipuncture Needle Protection Device

PROCEDURE DESCRIPTION:

1. Insert needle into Venipuncture Needle-Pro device. Insert until firmly seated.
2. Insert tube into holder. Advance no further than the guide line on the holder.
3. Remove needle sheath and retract needle protection device away from needle sleeve to desired position prior to recap.
4. Perform venipuncture as per normal procedure.
5. Upon completion of specimen collection, press the needle into the sheath using a one-handed technique. Perform the one-handed technique by gently pressing the sheath against a hard surface. As the sheath is pressed, the needle is firmly snapped into the sheath. (DO NOT use the needle to press sheath against the needle.
6. Dispose of venipuncture device and needle cap in sharps container.

Needle Protection Devices with Pre-attached Needle

Repeat intramuscular/intravenous procedure using the Needle-Pro needle protection device

PRODUCTS RECOMMENDED:

* For use with all needles
* 30 gauge needle with SIMS Needle-Pro device
* 22 gauge needle with SIMS Needle-Pro device

PROCEDURE DESCRIPTION:

1. Use a 30 gauge needle (no needle attached).
2. Attach a SIMS Needle-Pro device to a 20 gauge needle (11/4" needle to the sleeve and clean up medication.
3. Engage the protection mechanism and discard needle.
4. Attach a second SIMS Needle-Pro device with the appropriate size needle. 20 gauge x 1 1/2" for intramuscular and 25 mm x 1/2" for subcutaneous.

METHODOLOGY

PROCEDURE (Wet gloves and gown):

1. Attach NPD to Needle-Pro device.
2. Prime needle with gamma-irradiated solution.
3. Remove cap, wipe needle clean before activating cap in place.
4. Place Needle-Pro cap over center point on glass surface and snap the cap over the needle.
5. Take the magnifying glass and examine the Needle-Pro cap and needle for the presence of gamma-irradiated solution. If present, note the amount and location.
6. Record the position of the level, the amount and location of visible gamma-irradiated solution on the data collection tool (see attached).
7. Examine the glass surface for the presence of gamma-irradiated solution. If present, record the location and amount on the data collection tool.
8. Discard the needle into the needle box, clean the glass surface of gamma-irradiated solution.

RESULTS

SURFACE CONTAMINATION FREQUENCY OF SURFACE CONTAMINATION

Within 1 inch 3 inches 6 inches > 6 inches

Overall rate of surface contamination 3.3%

CONCLUSION

NPDs do not appear to serve as a significant source of environmental contamination, but provide protection to HCO when used with unannealed needles.

DISCUSSION

A question was raised by several healthcare workers at Massachusetts General Hospital concerning the theoretical possibility of surface contamination of fluid on the NPD when activating the Needle-Pro device. The study described here was conducted to provide evidence to support the use of Needle-Pro devices.

ADDENDUM

Needlestick Reduction Rates for IM/IV Injections

The study was funded by the Massachusetts General Hospital Foundation.