

Steering Clear of Danger

By Ron Stoker

IV Infection Prevention

More people die every year from hospital infections than from automobile crashes, drowning, falls, burns, and poisonings combined. A hospital-acquired infection is usually one that first appears three days after a patient is admitted to a hospital or other healthcare facility. Infections acquired in a hospital are also called nosocomial infections. It has been estimated that as many as 1% of all patients with a nosocomial infection die as a direct result of the infection and that nosocomial infections contribute to the death of 2.7% of patients admitted to hospitals. Today, about 2 million patients each year, or 6%, of all hospital patients will contract a hospital-acquired infection among 35 million admissions annually, CDC records show. This accounted for more than 103,000 deaths in 2000¹.

Nosocomial or hospital-acquired infections may develop from a variety of procedures including:

- ▶ Surgery,
- ▶ Foley catheters placed in the urinary tract or blood vessels, or
- ▶ Material from the nose or mouth that is inhaled into the lungs.

The most common types of hospital-acquired infections are:

- ▶ urinary tract infections (UTIs),
- ▶ pneumonia, and
- ▶ surgical wound infections.

This article will focus on reducing the risk of IV infection while protecting healthcare workers as well, and will point out national statistics that indicate that there are some specific items that need to be worked on in order to reduce nosocomial infections.

Several years ago I had to have surgery and was in the hospital for a few days. On my arrival, after filling out mountains of paperwork, I was taken to my room where I was dressed in one of those lovely hospital gowns. My wife was with me and, as I turned to grab something, she told me that my outfit was a little “breezy” on the backside and that I might want to cover up. As I did so, I told her that hospital gowns were a lot like our insurance plan—it doesn’t quite cover everything. But then, I digress.

After settling in the pre-surgical area a nurse walked in and indicated that she needed to start an IV in order to have me prepared for surgery. This was not unusual. More than 85% of hospitalized patients will receive some type of IV therapy. Of the

180 million vascular access devices inserted, 118 million are peripheral IV catheters and 34 million are winged stainless-steel needles. Peripheral IVs become infected much less than central venous catheters.

Pathogens from hospital surroundings, contaminated equipment, and hands of healthcare workers can invade the site where IV catheters are inserted. Infections may develop in the skin around the catheter or can enter the bloodstream causing a generalized infection. The longer a catheter is in place, the greater the risk of infection.

The following are guidelines that should be followed in order to reduce nosocomial infections and protect healthcare workers as well as during the placement of IV catheters.

1. Wash hands thoroughly before attempting any procedure²

I was pleased to see my nurse wash her hands in my room. This is one of the most important aspects of reducing nosocomial infection. (More on this will be included in next month’s article.) Here’s a step-by-step procedure:

- ▶ Wash your hands well before placing an IV.
- ▶ Use a liquid antibacterial soap, and rub to create friction for at least 15 seconds.
- ▶ Use a paper towel or clean hand towel to first dry your hands, and
- ▶ Turn off the faucet using the towel to protect your hand.

It is important to wash your hands before and after palpating, inserting, replacing, or dressing any intravenous device.

2. Don gloves before placing an IV

It is important for the clinician to exercise proper barrier precautions prior to cannula insertion of an IV. This can give protection to both patient and clinician. Wearing gloves should be standard practice when inserting an IV device or changing the dressing on IV devices. The wearing of sterile gloves is not always required; a new pair of disposable non-sterile gloves can be used in conjunction with a “no-touch” technique for the insertion of peripheral venous catheters. However, gloves are required by the Occupational Safety and Health Administration as standard precautions for the prevention of bloodborne pathogen exposure.³ I have

often witnessed individuals inserting IV catheters without any gloves. This is dangerous to both patient and clinician.

3. Properly cleanse the skin site prior to insertion of IV

Before cannula insertion, cleanse the skin site with an appropriate antiseptic. In the past the solutions that have most commonly been used have been 70% alcohol or 10% povidone-iodine. These are still allowed, but the CDC recently changed their recommendations to the use of a 2% chlorhexidine-based preparation as the skin prep for intravascular catheters. Clinical data demonstrates chlorhexidine-based solutions reduce catheter colonization and catheter-related bloodstream infection by 50%, which is not only a major cost savings for hospitals, but most importantly, reduces morbidity and mortality, which equates to better patient care.

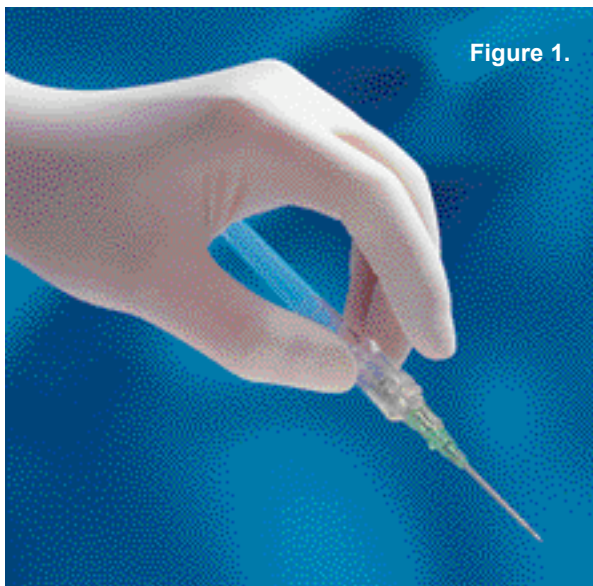
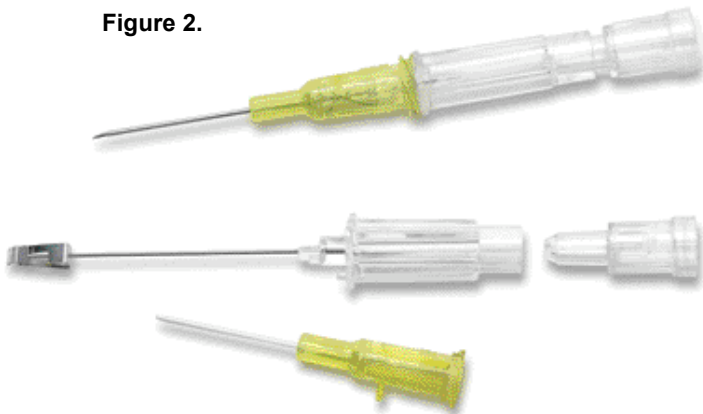


Figure 1.

Figure 2.



When 70% alcohol or 10% povidone-iodine are used the swab is started at the insertion site and is scrubbed in increasingly larger circles. The recommended technique for applying 2% chlorhexidine-based solutions is a “back and forth” scrub.

4. Do not palpate the insertion site after the skin has been cleansed with antiseptic unless working in a sterile field ⁴

This is of concern particularly if you are wearing “clean” and not sterile gloves. Standard protocols indicate that wearing clean rather than sterile gloves when inserting peripheral intravascular catheters is OK *only* if the access site isn’t touched after the skin antiseptic is applied.

5. Use safety IV products only

One of the more risky procedures that clinicians perform in relationship to protecting their own health is the insertion of an IV into a patient. There are just too many variables that cannot be controlled. These include patient frame of mind, reaction to pain, external distractions, etc. The use of a safety IV product can minimize the risk associated with these types of procedures.

One such product is the BD Insyte™ Autoguard™ (See Figure 1). In order to use this product for venipuncture the catheter hub is rotated 360 degrees. This breaks a seal of the catheter/needle. The needle is placed at a low angle as it approaches the vein. Flashback of blood is observed. Once the flashback of blood is observed the catheter is lowered almost parallel to the skin. The catheter and needle are then advanced slightly to ensure catheter tip is in the vein. The catheter is then advanced into the vein while maintaining skin traction. Apply pressure with the fingers just beyond the catheter tip while stabilizing the catheter hub. The white button is then pressed. This causes the needle to be retracted into the hub. Place the needle/hub into an approved sharps container.

A second example of a safety IV catheter is the Introcan Safety® IV Catheter manufactured by B. Braun (See Figure 2). The Introcan Safety IV Catheter is a passive design that requires no user activation of safety mechanism. Following the insertion of the needle into the patient, the catheter is advanced into the patient. The passive Introcan Safety IV Catheter incorporates a safety clip that is pre-assembled in the catheter hub. The safety clip automatically engages when the needle bevel exits the catheter hub. The safety clip attaches to the needle bevel to minimize accidental needlestick injuries. The innovative design of the Introcan Safety IV Catheter eliminates risk of inadvertent activation. Compliance is virtually assured because the safety mechanism cannot be bypassed.

6. Secure the catheter to prevent it from pistoning in and out of insertion site

It is important to properly secure a catheter to prevent it from moving in and out of the insertions site. The growth

of skin organisms can contaminate the external portion of the catheter. As it ratchets in and out of the insertion site, pathogens can be introduced directly into the blood stream.

Catheter securement products can eliminate the traditional, ineffective taping methods that have been used in the past. The newer securement products can

help reduce the incidence of complications from migration, dislodgment, disconnection, phlebitis, and infiltration. Use transparent dressing or sterile gauze to cover the insertion site.

Summary

By following these six recommendations clinicians can help to reduce nosocomial infections as well as protect themselves from needlesticks injuries. This is an area that the federal government as well as large organizations such as Joint Commission of Accreditation of Hospitals (JCOAH0) are concerned. Each of us can help by making sure that we as clinicians or clinicians that are working on us follow these simply guidelines.

References

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