KINGSTON GENERAL HOSPITAL

NURSING POLICY & PROCEDURE

SUBJECT	Intravenous (IV) Access: A. IV Cannula Insertion Advanced Competency (AC) for Nurses (Registered Nurses and Registered Practical Nurses) B. Surveillance C. Care and Maintenance D. Discontinue	**NUMBER**	I-5500
		PAGE	1 of 13
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Introduction:

Peripheral venous catheters are commonly used in hospitals to deliver intravenous therapy. However, there are potential associated consequences. Careful observation and monitoring are crucial to identifying complications at an early stage.

Principles:

1. An intravenous (IV) cannula is inserted to establish an IV infusion or an IV lock device.
   1.1 IV infusions are established to restore or maintain fluid and electrolyte balance, provide basic nutrition, and/or provide a vehicle to administer medications.
   1.2 IV lock devices are inserted to supply a direct route to a vein for intermittent administration of IV medications, or provide IV access for emergency medications.

2. Peripheral IV cannulas should be removed promptly when no longer required or complications arise.

3. Do not use needles to penetrate the needleless injection device.

4. For patients received from outlying centres with needle injection devices switch to needless device as soon as possible.

Selection of Insertion Site

5. For adults:
   5.1. Consult attending service before selecting an insertion in extremities with contraindications (e.g. AV fistula, radical mastectomy, PICC line).
   5.2. IV access in hands produces a lower incidence of infection than the wrist or upper arm.
   NOTE: Attempt all IV access as distal on limb as possible to preserve proximal sites for future use.
   5.3. If a lower extremity is used for cannula insertion, transfer cannula to an upper extremity site as soon as the latter is available.
   5.4. Avoid veins that are at an awkward angle, thrombosed, inflamed, bruised, fragile, rolling, near bony prominences or sites of infection.

6. For paediatric patients:
   6.1. The scalp (in neonates or young infants), hand or foot are preferable to legs, arms or antecubital fossa sites.
   6.2. Choose the site based in part on the infant's history, physical examination and type of medication to be delivered.
   NOTE: Consider the potential for scarring when selecting a scalp vein site.

Cannula Selection

7. Select catheters on the basis of the intended purpose and duration of use, known infectious and non-infectious complications (e.g. phlebitis and infiltration), vein size and experience of individual catheter operators.
   7.1. Choose smallest size cannula possible for the type of infusion.
      7.1.1. a large cannula may restrict the flow of blood through the vein.
   7.2. A large gauge cannula (e.g. #16 or #18) should be selected for administration of blood or irritating solutions.
      NOTE: Paediatric patients – may infuse blood with a #24 gauge cannula if it is the only available vein.

Definitions

Phlebitis: The inflammation of a vein, which may be accompanied by tenderness, warmth, erythema or palpable venous cord.

Infiltration: fluid infuses into the tissues surrounding the venipuncture site. This may occur when the tip of the catheter slips out of the vein, the catheter passes through the wall of the vein, or the blood vessel wall allows part of the fluid to infuse into the surrounding tissue. Symptoms may include localised swelling, blanching, coolness of affected tissue, discomfort.

Extravasation: occurs when there is accidental infiltration of a vesicant or chemotherapeutic drug into the surrounding IV site. Vesicants can cause tissue destruction and / or blistering. Irritants can result in pain at the IV site and along the vein and may or may not cause inflammation. Extravasation can result in tissue sloughing, pain, loss of mobility in the extremity and infection.

Policy:

1. Nurses (RNs and RPNs) may only perform IV therapy following additional education (see Nursing Policies A-1250 and A-1257 for additional educational requirements and competency to perform).

2. Only authorized nurses (RNs and RPNs) may insert an IV cannula for the purpose of establishing an IV infusion or an IV lock device (see Nursing Policies A-1250 and A-1257 for authorization requirements and competency to perform).

3. Baccalaureate nursing students may insert an IV cannula for the purpose of establishing an IV infusion or an IV lock device when the following conditions are met:
   3.1. Advanced Competency (AC) theory, including classroom experience, is part of the student's basic curriculum;
   3.2. The AC is commonly practiced by the nurses on the assigned clinical unit;
   3.3. The student is in their consolidating experience at the end of their educational program and is under the direct supervision of the authorized nurse preceptor/delegate; and
   3.4. The student completes a written test with a score of 80%, or greater.
      NOTE: This process will not authorize the student for this procedure. While consolidating students may perform procedures under certain conditions, only nurses are eligible for authorization.

4. Only 2-3 attempts to establish IV access are made before consulting another authorized nurse.

5. Two authorized nurses assess a patient with poor venous access and if they are unable to establish IV access, the physician is notified.

6. The IV cannula/site is changed per Nursing Policy T-7000 Tubing Changes: Intravascualr Catheter and Device Management.

7. A patient care order must be present for:
   7.1. the insertion of an IV cannula, the type of IV solution and rate of IV administration; or
   7.2. the amount and type of flush used to keep an IV lock device patent.

Procedure A: IV Cannula Insertion

Equipment:
chlorhexidine 2% aqueous solution (preferred) or alcohol swab
tourniquet
clean gloves
transparent semipermeable dressing
non allergic tape
prefilled syringe with sterile 0.9% sodium chloride for injection (e.g. BD Posiflush ™ 3ml, 6ml or 10ml)
vascular closed IV catheter system (e.g. BD Nexiva ™ Closed IV Catheter System)

EXCEPTION: Equipment for OR, Same Day Admission Centre, Peadiatrics and NICU
over the needle catheter with safety device (e.g. BD Insyte™ Autoguard™)
Injection site adapter for needleless system.

For IV Infusions
IV administration set
solution prescribed
NOTE: Type and volume of solution may vary depending upon the physician order
NOTE: Sterile 0.9% sodium chloride only is used for neonates

For IV Lock Devices
needleless IV access device (e.g. microCLAVE Clear Connector ®)

Additional Equipment for Paediatrics:
skin closure application e.g. Steri Strips™
armboard
house (1/2 a medicine cup),
T-piece (only needed if using BD Insyte™ Autoguard™)
gauze bandage role e.g. Kerlex™
buretrol
infusion pump

Procedure:
1. Verify patient care order.

2. Perform hand hygiene.

3. Verify patient's identity using two identifiers (see KGH Administrative Policy 13-10 Patient Identification).

4. Assess for clinical factors and conditions that may respond to or be affected by IV fluid.

5. Determine gauge of IV catheter required.

6. Assess extremities for appropriate placement of IV catheter.
   NOTE: Identify contraindications for insertion.

7. Prepare IV solution (if ordered).

8. Perform hand hygiene and don clean gloves.

9. Apply a tourniquet 8 to 10 cm above the selected insertion site.
   NOTE: for paediatric patients have a second person hold the limb.
   9.1. Activities to dilate veins may include:
      9.1.1. lowering extremity
      9.1.2. tapping gently over vein or
      9.1.3. applying warm compress to extremity for 15 minutes

10. Cleanse skin at selected vein using chlorhexidine 2% (preferred) or an alcohol swab in a back and forth motion for at least 30 seconds, and allow to dry.
    10.1. Maintain aseptic technique for insertion.
    NOTE: If vein must be palpated again, cleanse site.

11. Prepare catheter system following appropriate product directions for:
    11.1. BD Nexiva ™ Closed IV Catheter System (See Appendix A) or
    11.2. BD Insyte™ Autoguard BC™ Shielded IV Catheter (See Appendix B)
    EXCEPTION: For paediatric and neonates prime catheter system. This population do not have enough pressure to create sufficient blood backflow into the catheter.

12. Stabilize the blood vessel and perform venipuncture following appropriate product directions for:
    12.1. BD Nexiva ™ Closed IV Catheter System (See Appendix A) or
    12.2. BD Insyte™ Autoguard™ Shielded IV Catheter (See Appendix B)
    NOTE: Pulsations in the blood return indicate that the IV cannula is in an artery. If this occurs, release tourniquet, and remove needle. Apply pressure over site a minimum of 5 minutes.

13. Release the tourniquet.

14. <u>For IV infusions:</u>
    14.1. attach primed IV administration set, infuse IV solution slowly and observe IV site.
       14.1.1. if swelling or severe pain occurs, discontinue IV.
       14.1.2. if no swelling or severe pain occurs, regulate IV flow rate as prescribed.
    NOTE: For paediatric patients and neonates (with use of BD Insyte™ Autoguard ™ Catheters) apply a T-piece that has been flushed with sterile 0.9% sodium chloride for injection and secure the IV access site with a skin closure application (e.g. Steri-Strips™) and a transparent semipermeable dressing. Flush the T-piece intermittently until the administration set, which is attached to a buretrol, is connected).

15. <u>For IV lock devices:</u>
    15.1. attach needleless IV access device (e.g. microCLAVE Clear Connector ®) and flush per Nursing Procedure I-5600 Intravenous Lock Device.
    NOTE: For paediatric patients and neonates (with use of BD Insyte™ Autoguard ™ Catheters), a pre-flushed T-piece is attached to the IV cannula and the pre-flushed lock device is connected to the T-piece)

16. Cover IV cannula insertion site with a transparent semipermeable dressing (preferred) or sterile gauze. Label dressing with date, time and nurses initials.
    16.1. If site is bleeding or oozing, use sterile gauze until resolved.
    NOTE: For paediatric patients – secure site with a skin closure application (e.g. Steri-Strips™) and a transparent semipermeable dressing.

17. Tape IV cannula and tubing in place, as appropriate.

18. If necessary, apply arm board.
    18.1. secure arm board in a manner that permits visualization of the IV insertion site.

    NOTE: For paediatric patients apply a 'house' if patient is prone to hitting the IV insertion site (usually used with smaller children and infants).

19. Dispose of sharps in appropriate containers.

20. Perform hand hygiene.

Reporting and Recording:
1. Document on the Continuous Parenteral Therapy Record or unit-specific flowsheet:
   1.1. IV cannula insertion site
   1.2. gauge, length and type of cannula inserted
   1.3. IV solution, volume and rate

2. Document on the MAR or unit-specific flowsheet:
   2.1. IV solutions with medications/additives
   2.2. IV lock device flushes

3. Document in the Interprofessional Progress Notes:
   3.1. number of attempts to insert cannula
   3.2. patient's response to the procedure

4. Communicate in the Interprofessional Patient Profile (Kardex):
   4.1. date of insertion
   4.2. site
   4.3. infusion and rate
   4.4. change due date(s)

Procedure B: Surveillance

1. Inspect the site regularly for signs of phlebitis, infiltration and extravasation.
   NOTE: If dressing prevents palpation or visualisation of catheter insertion site, remove dressing and visually inspect site then replace with new dressing.
   NOTE: Have extravasation supplies available when irritant fluids, vesicant or vasoconstrictors are infused.
   1.1. If thrombophlebitis present:
      1.1.1. assess for alternate access
      1.1.2. promptly remove cannula
      1.1.3. apply cold or warm compresses, dependant on classification of medication infiltrate
      1.1.4. notify physician
      1.1.5. monitor patient's temperature and
      1.1.6. avoid affected vein until phlebitis has resolved

   1.2. If infiltration present remove cannula and consider:
      1.2.1. elevating affected limb
      1.2.2. applying pressure
      1.2.3. splinting and/or
      1.2.4. application of heat or cold dependent on classification of medication infiltrate

2. Regularly monitor cannula insertion site and patient's circulatory, neurological, and motor function in the affected limb.

Reporting and Recording
1. Document site checks on the Continuous Parenteral Therapy Record or unit-specific flowsheet.

2. Document any significant findings or IV cannula removal in the Inteprofessional Progress Notes.

Procedure C: Care and Maintenance

1. Change IV cannula/site, dressing, administration set and solution per Nursing Policy T-7000 Tubing Changes: Intravascualr Catheter and Device Management.
   1.1. Cleanse the area around the cannula insertion site with 2% chlorhexidine (preferred) or alcohol during dressing changes.

Reporting and Recording

1. Document on Continuous Parenteral Therapy Record or unit-specific flow sheet, as required.

2. Document on the MAR, as required.

3. Document on the Interprofessional Progress Notes, as required.

Procedure D: Discontinue

1. If IV cannula site is compromised and requires removal or if removal ordered:
   1.1. stop IV infusion and clamp tubing
   1.2. remove IV cannula and inspect for damage
   1.3. apply pressure until bleeding stops
   1.4. apply gauze dressing

Reporting and Recording
1. Document on Continuous Parenteral Therapy Record or unit-specific flow sheet.
2. Document Interprofessional Progress Notes, as required.

Related Policies and Procedures:
KGH Administrative Policy 13-10 Patient Identification
Nursing Policy A-1250 Clinical Nursing Procedures - Designation, Authorization and Education, and Competency to Perform
Nursing Policy A-1257 Clinical Nursing Procedures - Advanced Competency Procedures Approved for Nurses (RN and RPN), Authorization/Challenge/Re-authorization Requirements, and Basic Procedures for Which Additional Education is Required
Nursing Procedure T-7000 Tubing Changes: Intravascualr Catheter and Device Management
Nursing Procedure I-5600 Intravenous Lock Device

References:
BD Insyte Autoguard. Shielded IV Catheters. Retrieved December 4, 2014 from http://www.bd.com/ca/pdfs/safety/products/infusion/iv_catheters/BDM0060-CE.pdf

BD Nexiva. Catheter Advancement. Retrieved December 4, 2014 from file:///C:/Users/halls/Downloads/Nexiva_Advancement_Tips_Poster%20(1).pdf

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O'Grady, NP. (2011). Guidelines for the Prevention of Intravascular Catheter-Related Infections, 2011. *Department of Health and Human Service: Centers for Disease Control and Prevention (CDC).* Atlanta: GA.

Director, Professional Practice – Nursing Signature

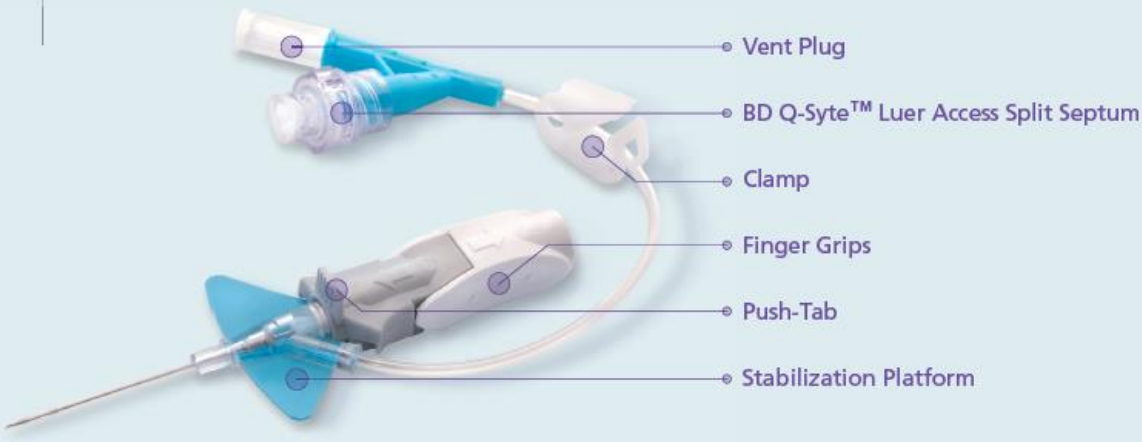
Date

Appendix A

BD NEXIVA™ CLOSED IV CATHETER SYSTEM

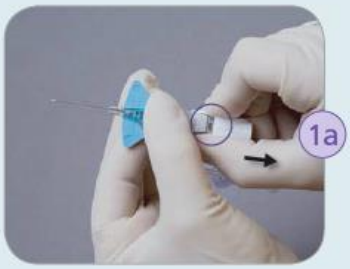
> > >

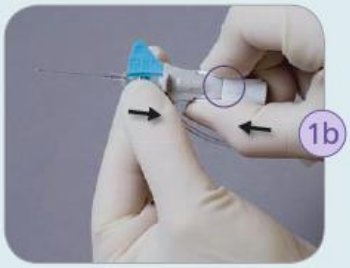
A NEW STANDARD IN IV THERAPY.



POINTS TO PRACTICE

Refer to package insert for complete instructions for use.





PREPARATION:

> Secure vent plug and BD Q-Syte™ Luer Access Split Septum.
> Clamp should not be engaged.
> Twist to remove needle cover.
> Holding as shown, pull back approximately 1/8" on finger grips *(fig. 1a)*.
> Push finger grips back to their original position so the securement platform and finger grips are snugly together *(fig. 1b)*.

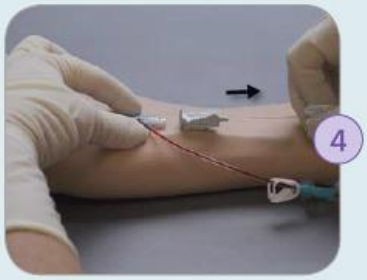
INSERTION AND FLASHBACK:

> Hold the system as shown and access the vessel *(fig. 2)*.
> Initial blood return is along the catheter, then up the extension tube. Look at catheter for initial blood return.
> Lower and advance the entire catheter and needle unit slightly, to ensure the catheter tip is within the vessel.

Appendix A

ADVANCEMENT:
> Place pad of index finger behind the push-tab and push the catheter off the needle into the vessel *(fig. 3)*.

TIP: *Do not pull back on the needle during advancement.*



NEEDLE REMOVAL:
> Stabilize the system and pull back until the push-tab component releases from the securement platform *(fig. 4)*.
> Discard the shielded needle into a puncture-resistant, leak-proof sharps container.

TIP: *Do not hold onto the push-tab component of the device as this will prevent the release of the needle shield.*

PREPARATION FOR USE:
> Engage the clamp.
> Remove the vent plug and attach the other BD Q-Syte™ device *(fig. 5)*.

ACCESS AND FLUSHING:
> Disinfect the BD Q-Syte device with an appropriate antiseptic.
> Insert the male luer using a straight-on approach. *(fig. 6)*.
> Release the clamp and flush or start infusion.
> Clamp before disconnecting to minimize the reflux of blood.
> Hold the BD Q-Syte device during disconnection and use a straight-off approach.

STABILIZATION:
> Apply a transparent dressing to cover the septum, allowing maximum use of extension tubing *(fig. 7)*.

NOTE: *Single lumen. Compatible meds only.*

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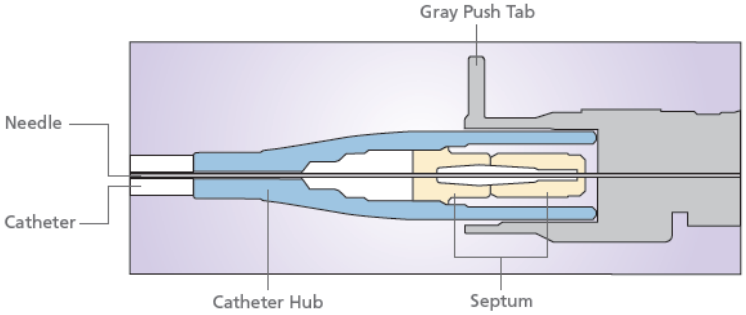
Appendix A

BD Nexiva™

Closed IV Catheter System

CATHETER ADVANCEMENT

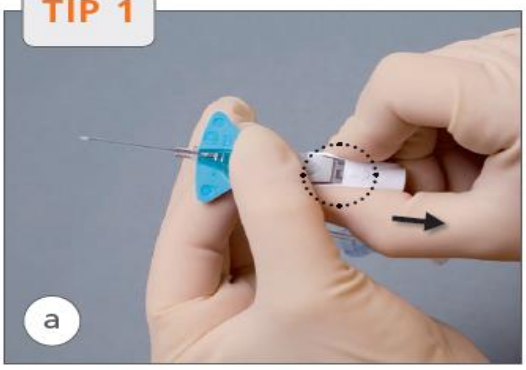
Tips for Success

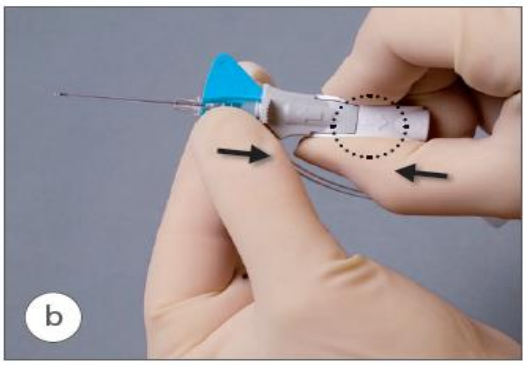


CATHETER ADVANCEMENT WILL ALWAYS FEEL DIFFERENT THAN A TRADITIONAL CATHETER

> The needle passes through a septum
- Prevents blood leakage
- Wipes the needle free of visible blood
- Withstands high pressure injection

TIP 1

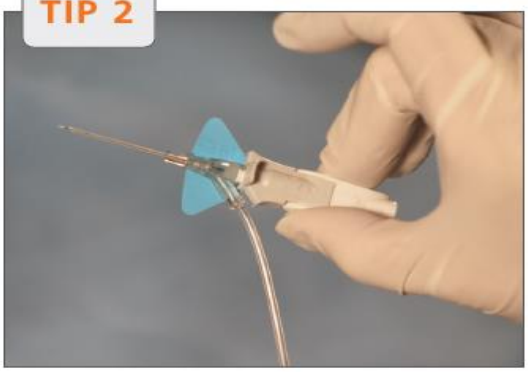




> Release the seal prior to insertion

Refer to instructions for use, inservice guide or points to practice for directions on how to do this

TIP 2



> Keep a loose hold on the white finger grips
> Position middle finger and thumb on white finger grips

TIP 3

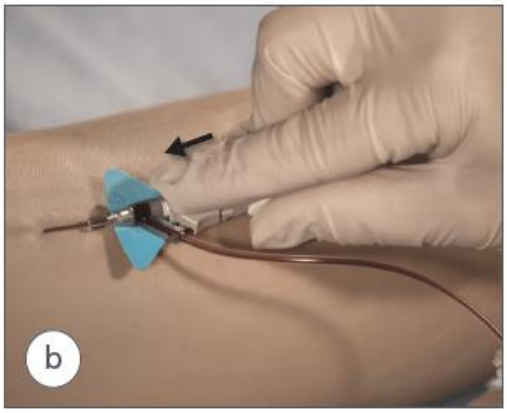
> Keep the index finger flat behind the gray push tab

Appendix A

TIP 4 Utilize a modified one-hand advancement technique.

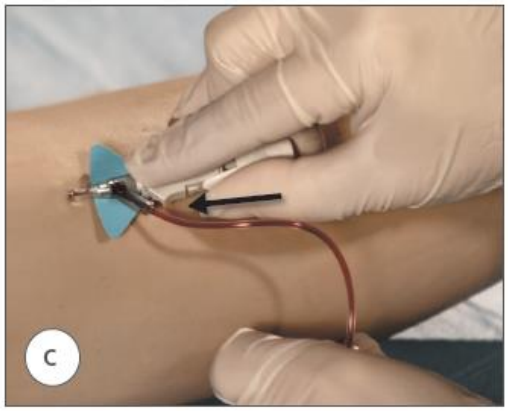
> Once initial flashback is seen in the catheter tubing, lower and advance the entire device just slightly

This ensures the catheter tip and not just the needle tip is within the vessel



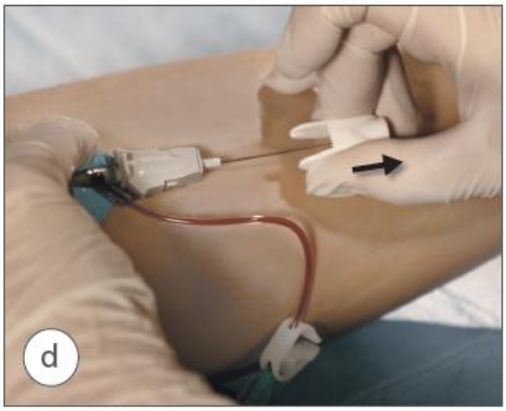
> With the pad of your index finger behind the gray push tab, push the catheter forward about 1/4 inch while holding the white finger grips stationary

Pulling back on the finger grips could displace the catheter



> Holding both the gray and white pieces stable, advance the catheter as one all the way into the vessel

Keep watching for blood flow along the extension to confirm you're still in the vessel



> Stabilize the system and pull back on the white finger grips to remove the needle

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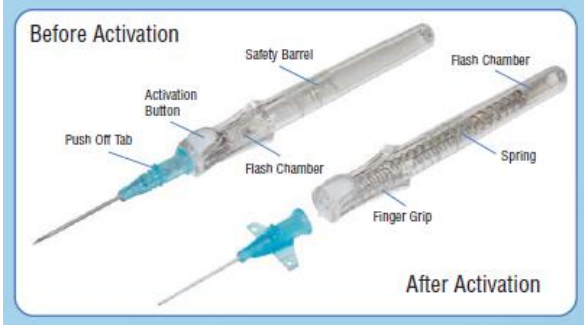
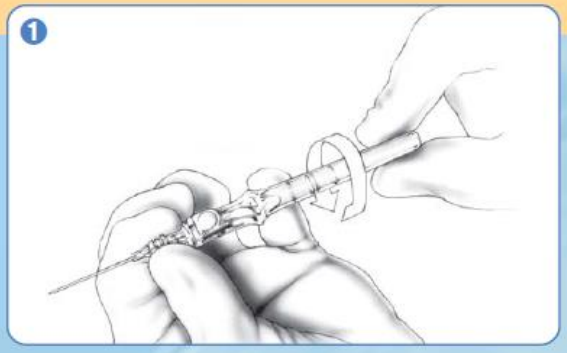
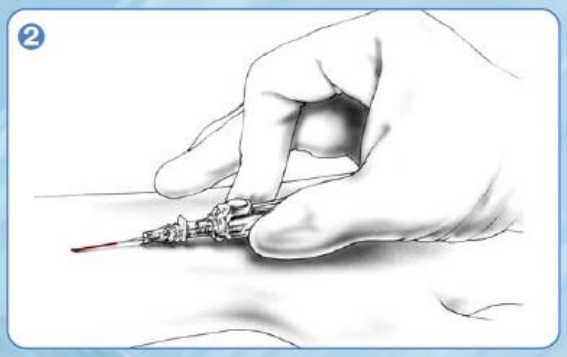
Appendix B

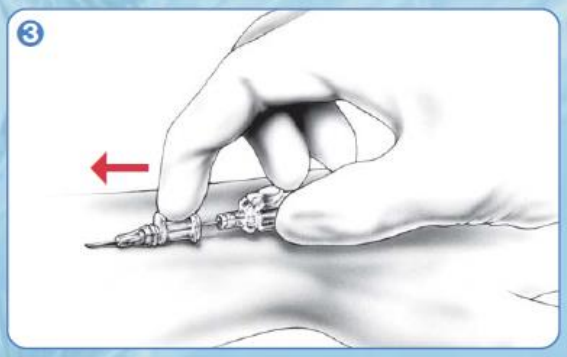
BD Insyte™ Autoguard™

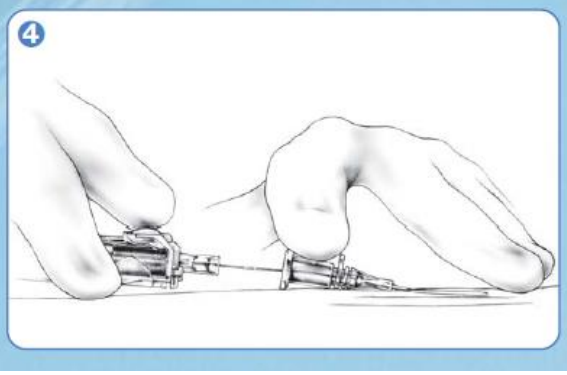
Shielded IV Catheters











POINTS TO PRACTICE

1 PREPARATION
- Make sure all items are accessible throughout the procedure
- Prepare site according to your facility's policy and procedure
- Prior to venipuncture hold catheter hub and **rotate barrel 360 degrees**
- Make sure catheter is seated back in the notch

2 VENIPUNCTURE
- Approach vein slowly at a low angle
- Observe early flashback along the catheter (20, 22, 24 gauge only)
  In larger gauge sizes observe flash behind white button

3 ADVANCEMENT
- Upon flashback visualization, lower catheter almost parallel to the skin
- Advance *entire unit* slightly before threading catheter
- Thread catheter into vein while maintaining skin traction

4 NEEDLE REMOVAL
Before Pressing the Button
- Release tourniquet
- Apply digital pressure beyond the catheter tip
- Gently stabilize catheter hub
- Press the white button

5 SECUREMENT
- Secure catheter and apply sterile dressing according to your facility's policy and procedure

CAUTION REMINDERS
- **Do Not** withdraw needle from catheter hub before pressing the white button.
- **Needle should be retracted prior to disposal** in a puncture-resistant, leak-proof sharps container.
- **Never Reinsert Needle** into the catheter as this could shear the catheter.
- **Do Not Use Scissors** at or near the insertion site.

Refer to package insert for complete instructions for use.

Appendix B

BD Insyte™ Autoguard™

Shielded IV Catheters

TIPS FOR SUCCESS

INSERTION SUCCESS

- Make sure tip seal is released before insertion, by **rotating the barrel 360°**
- Make sure catheter is seated back in the notch
- Slow down the speed of insertion
- Use less force to penetrate the skin
- Lower the initial insertion angle keeping the elbow low
- After flash, lower the angle and advance 1/8 inch

SEEING THE FLASH

- Trust your instinct and take a pause
- Look for the flash along the catheter
- Be aware of patient factors such as small veins, small patient, blood pressure, condition of vein, dehydration, etc., that may impact flash

THREADING WITH EASE

- After flash, lower the angle and advance 1/8 inch
- Avoid the push-pull technique when advancing
- Make sure tip seal is released before insertion, by **rotating the barrel 360°**
- Maintain traction on the skin

RETRACTING THE NEEDLE

- Make sure tip seal is released before insertion, by **rotating the barrel 360°**
- Make sure to place digital pressure **beyond** the tip of the catheter
- Make sure needle is not being inadvertently bent while attempting to activate the button

MINIMIZING THE BLOOD

- Release tourniquet *before* pressing the button
- Place digital pressure **beyond** the catheter tip
- Have IV connector or tubing close by and ready

AVOID EARLY ACTIVATION

- Be aware of where your fingers are
- Remove needle cover in a straight, outward motion

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http://www.bd.com/ca/pdfs/safety/products/infusion/iv_catheters/BDM0060-CE.pdf