

Stay stable, every IV access counts!

Introcan Safety® 3 – Closed IV Catheter
Making IV access safe for your patient



Vascular Access

B | BRAUN
SHARING EXPERTISE



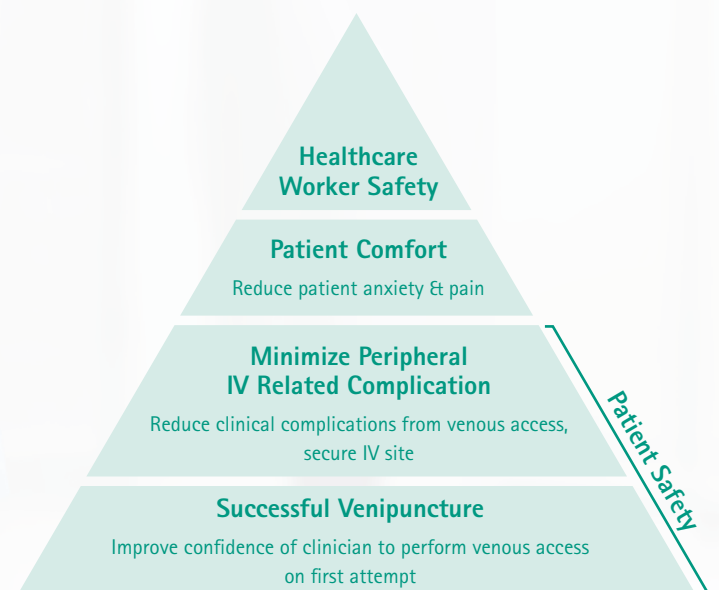
Is your IV process safe for your patient?

Peripheral intravenous catheters (IVCs) are an indispensable element of today's infusion therapy, making IVCs a major component of the nursing practice.

It is estimated that **at least 90% of inpatients have a peripheral intravenous catheter at some point in their stay at the hospital.**

The infusion therapy is one of the more invasive, high-risk procedures healthcare workers (HCWs) perform. Because it is such a common procedure, it is easy to forget the potential for serious patient complications and safety risks to the patient and healthcare professionals.²

An IV catheter should fulfill the following four criteria shown in the pyramid in order to best satisfy the users' expectations when using an IV catheter and to improve patient outcome:



Adapted from: Voice of the Customer Market Research conducted in the USA³

Which risk factors can affect patient safety?

Peripheral intravenous catheter-related complications can be caused by several risk factors not limited to the following:

Improper dressing application

Improper insertion site selection

Patient vein quality

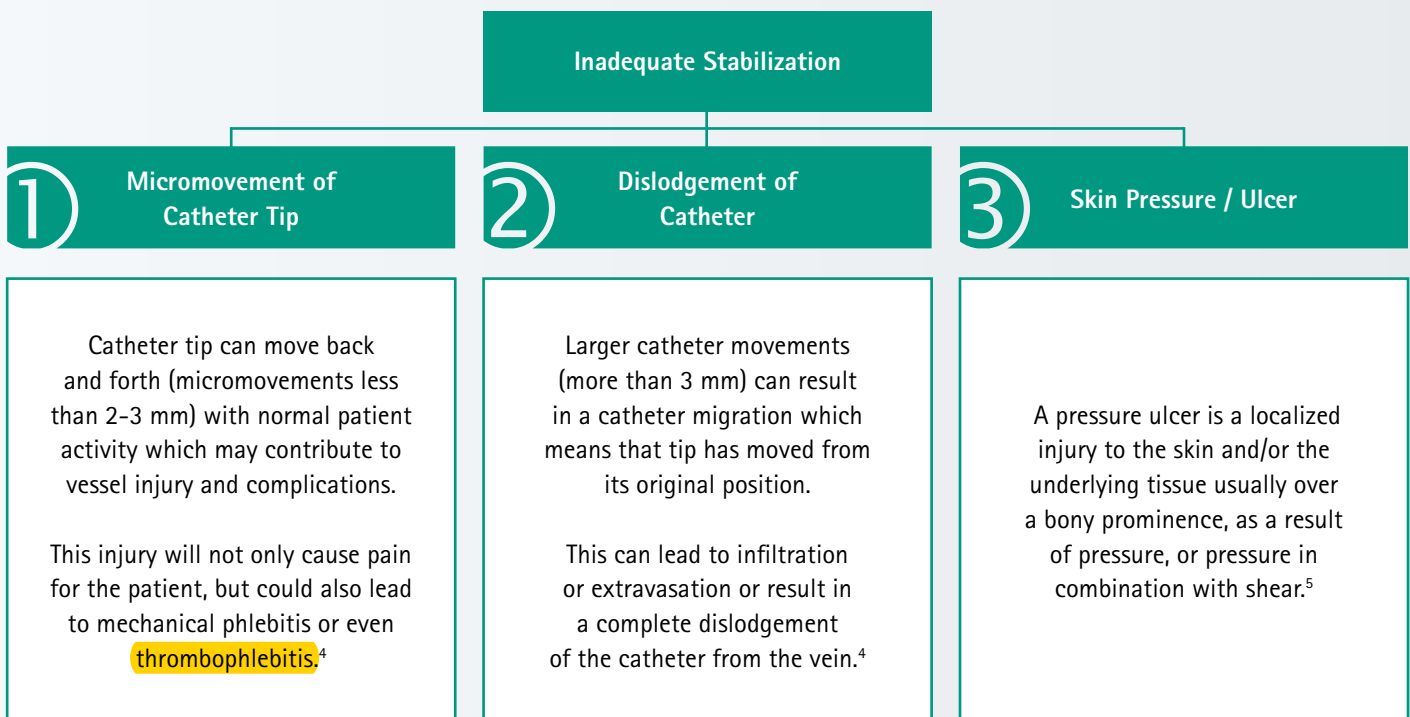
Inadequate stabilization

Type or size of the IVC

Extended dwell time

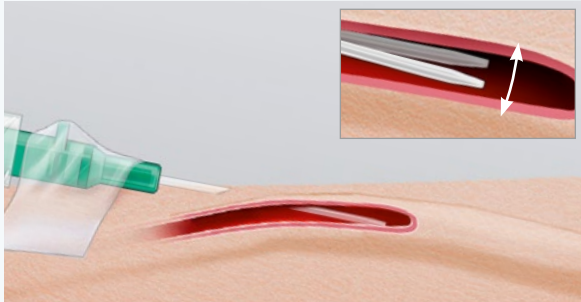
Irritating medication solutions

One of the most common risk factors of IVC related complications is inadequate stabilization (either under-stabilization or over-stabilization) which could result in catheter dislodgement, catheter movement or in skin pressure (see chart below).²



What are the complications related to inadequate stabilization?

Phlebitis

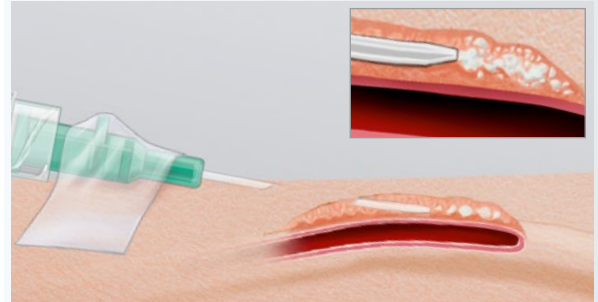


Minor catheter movements can irritate the intima of the vein creating a rough cell wall to which platelets readily adhere and cause mechanical phlebitis.



Phlebitis is an inflammation of the vein, accompanied by pain at site, redness, heat, swelling and/or palpable cord; may result in thrombosis formation.⁷

Infiltration / Extravasation



Larger movements can create catheter dislodgement and cause catheter infiltration or extravasation which could result in under dosage or medication error.⁷



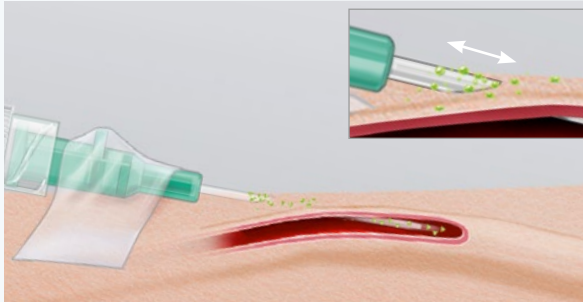
Infiltration is accidental administration of a nonvesicant solution into subcutaneous tissues.¹¹



Extravasation is an inadvertent administration of a vesicant medication or solution that causes destruction by chemical injury and/or severe vasoconstriction leading to necrosis.⁷

After IV catheters are placed, an appropriate securement is required in order to prevent catheter micromovement, migration, pistoning or dislodgement.⁵ Consequences of inadequate stabilization can be serious if another vein cannot be immediately accessed especially in an emergency situation or if the infiltrated infusate leads to tissue necrosis.⁶

Site Infection

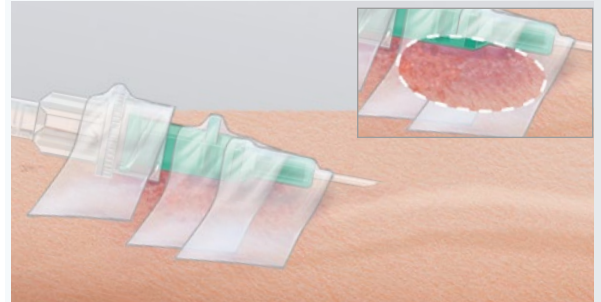


Invasion of the venipuncture site/bloodstream by pathogens can come from four sources: contamination on insertion of the device, bacterial migration down the catheter tract from the skin, contamination through the hub of the catheter or seeding from another site of infection.⁸



Seeding results from bacterial invasion from the catheter entry site along the external surface of the catheter and leads to bacteremia most often during the week following catheter placement.^{9, 10}

Skin Ulcers / Pressure



IV pressure ulcers are compressed areas between bony prominences and hard surfaces. In addition to pressure, moisture friction and shear forces contribute to the development of pressure ulcers.¹¹



Too high pressure causes tissue ischemia in the skin, muscle, and the fascia between the skin surface and bone. This pressure compresses small vessels and prevents both supply of oxygen and nutrients at the capillary interface. This can generate edema and local tissue death resulting in a pressure ulcer.¹¹

	Inadequate Stabilization	Complication	Consequences for Hospital	Consequences for Patients
1	Micromovement of catheter (tip remains inside the vein)	<ul style="list-style-type: none"> Phlebitis / Thrombophlebitis Thrombotic catheter occlusion 	<ul style="list-style-type: none"> Costs for longer hospitalization Costs of additional drugs / treatment Costs for resulting operations Unscheduled restart Nursing interruptions Other related costs Hospital reputation / brand image 	<ul style="list-style-type: none"> Delay in patient treatment Loss of IV Access Prolonged hospitalization Extended use of IV antibiotic therapy Possible surgical intervention Patient discomfort / pain Patient dissatisfaction / emotional stress Death due to blood-stream-infection
2	Catheter dislodgement (catheter tip moves outside the vein)	<ul style="list-style-type: none"> Infiltration / Extravasation Site Infection (septicemia) Leaking at insertion site 		
3	Skin pressure / Ulcer	<ul style="list-style-type: none"> Skin ulcers Loss of skin integrity 		

What are the consequences for the hospital?

- The most frequent complication of IVC infusion is phlebitis¹⁴
- Phlebitis may occur at rates as high as 50% or even as high as 75% (in patients with infectious diseases)^{14, 15}
- Thrombophlebitis occurs in 25% up to 35% of hospitalized patients with peripheral intravenous catheters²²
- The average cost per episode, in 1991 was \$4,830, including laboratory tests, additional therapy, delay in intravenous therapy and extended hospital stay of 2 to 5 days¹⁵

When a peripheral intravenous (PIV) catheter is not properly secured, motion and micromotion within the vessel cause injury to the vein.

This damage to the vein is a primary cause of phlebitis, a distressing complication of PIV therapy.⁶

Table 1: Phlebitis Scale¹⁶

Grade I	Grade II	Grade III	Grade IV	Grade V
No symptoms	Erythema at access site with or without pain	Pain at access site with erythema and/or edema	Pain at access site with erythema; streak formation; palpable venous cord	Pain at access site with erythema; streak formation; palpable venous cord > 1 inch in length; purulent drainage



Phlebitis & Thrombophlebitis

- Infiltration rates vary from 22% to 36%⁶
- Extravasation injury from cancer chemotherapy is reported to be 11% in children and 22% in adults¹³
- Both infiltration and extravasation can have serious consequences including full-thickness skin loss and muscle and tendon necrosis
- The patient may need surgical intervention resulting in large scars, experience limited function, or even require amputation¹³



Infiltration & Extravasation

Guidelines²¹

Recognizing the early signs and symptoms of infiltration can limit the amount of fluid that escapes into the tissue.

Signs & Symptoms

1. Local edema
2. Skin blanching
3. Skin coolness
4. Leakage at the puncture site
5. Pain
6. Feelings of tightness

Infiltration and extravasation occur when the venous access device either partially or completely dislodges from the vein or perforates it.⁷

Although CLA-BSI (Central line-associated bloodstream infection) gets the most attention from researchers and clinicians, BSI (bloodstream infection) and other types of infections can occur with short peripheral catheters.

BSI is gaining importance and represents a big financial impact for hospitals.²¹

- Intravascular (IV) catheters are the most frequent cause of bloodstream infection
- In the US it is the 8th leading cause of death¹⁹

Table 2: Cost of CRBSIs²⁰

Unit	Cost Range
General adult ICU	\$33,000 and \$44,000
Adult surgical ICU	\$54,000 and \$75,000
Pediatric ICU	\$49,000

Site Infection & Sepsis

Skin Ulcers & Loss of Skin Integrity

Table 3: Cost of Pressure Ulcers

Conditions and Measures	Cost Range
Preventing and treating pressure ulcers in a 600-bed general hospital	£600,000 - £3 million per year ¹⁸
Treating a patient with a Grade IV pressure ulcer	£40,000 ¹⁷

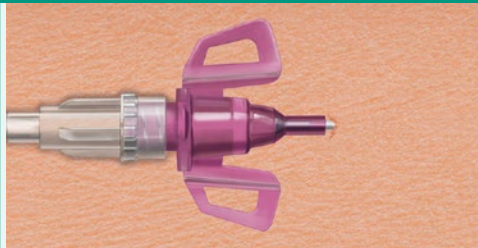
Table 4: Ulcer Scale

Grade I	Grade II	Grade III	Grade IV	Grade V
Closed/Resurfaced: wound is completely covered with epithelium (new skin)	Epithelial Tissue: for superficial ulcers, new pink or shiny tissue (skin) that grows in from the edges or as islands on the ulcer surface	Granulation Tissue: pink or beefy red tissue with a shiny, moist, granular appearance	Slough: yellow or white tissue that adheres to the ulcer bed in strings or thick clumps, or is mucinous	Necrotic Tissue (Eschar): black, brown, or tan tissue that adheres firmly to the wound bed or ulcer edges and may be either firmer or softer than surrounding skin ⁵

Applying the dressing on too tight will increase the pressure on the patient's skin and can cause some skin damage etiologies such as moisture-associated skin damage (skin maceration), contact dermatitis and trauma from adhesive.²²

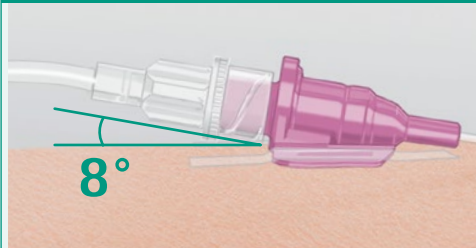
Best practice and preventive strategies with Askina Secure® IV

1. Preventive Strategy: Use IVCs with Wings



Preventive strategy: Use IVCs with stabilization platform.¹⁶

2. Preventive Strategy: Elevation of Patient Connector

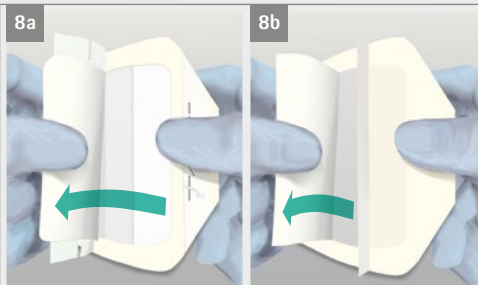


Preventive strategy: Patient connector should be elevated off the skin.¹⁶

3. Preventive Strategy: Use Clippers

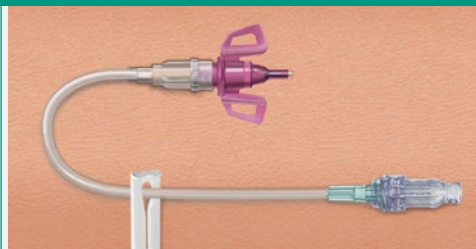


Preventive strategy: Hair at the insertion site should only be removed by the clinician (prior to antiseptic application), using clippers (not shaved) to improve adherence of the dressing.¹⁶



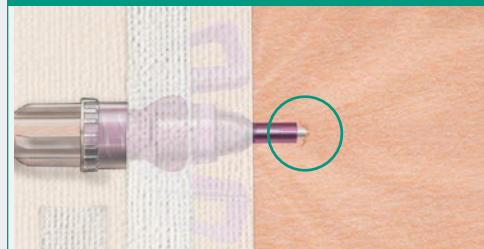
Apply dressing: Peel and remove the center window with the three pre-cut strips. Place on a sterile area for use later. Turn around dressing. Peel the release liner to expose adhesive.

9. Preventive Strategy: Use Sterile Transparent Dressing

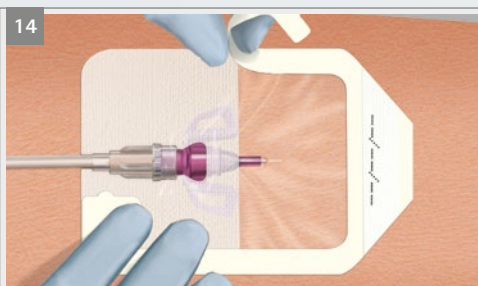


Preventive strategy: Using a short extension set attached to the catheter can reduce complications associated with catheter movement.¹²

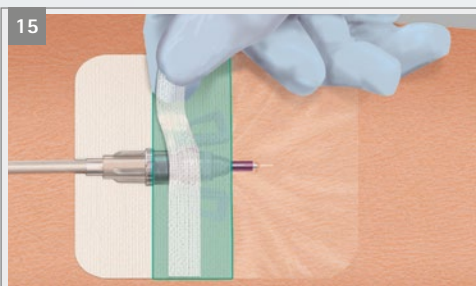
10. Preventive Strategy: Use Sterile Transparent Dressing



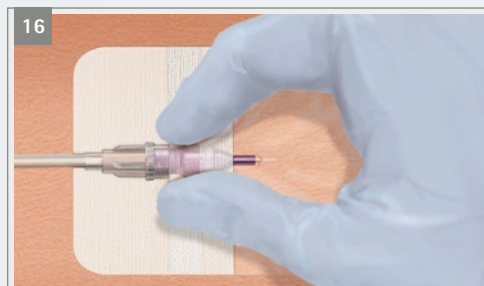
Preventive strategy: Use a sterile dressing that allows moisture to pass through the dressing away from the skin while preventing external moisture from contacting the insertion site of the vascular access device.¹⁶



Apply dressing: Slowly peel frame away from border edge while simultaneously applying firm pressure to border edge. Smooth entire dressing into skin to ensure optimal adhesion.



Apply securement strip (optional): Align securement strip over catheter hub / Luer connection as indicated (green area). Loosely place securement strip on catheter hub / Luer connection.



Apply securement strip (optional): Pinch securement strip around catheter hub / Luer connection.
Attention: Avoid downward pressure on the catheter hub / Luer connection.

Properly stabilized devices can preserve site integrity and improve patient satisfaction.

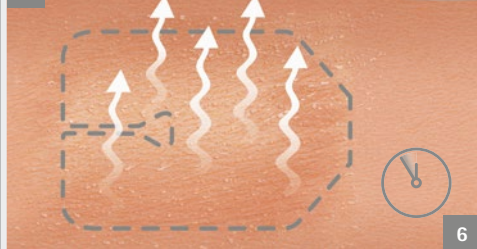
While "stabilization" is often equated with applying a dressing and tape, the newly released Infusion Nurses Society Guidelines (Standard 36) says stabilization is best achieved with the use of a "catheter stabilization device" defined as "a device/system specifically designed and engineered to control movement at the catheter hub, thereby decreasing catheter movement within the vessel and risk of catheter malposition."¹⁶

4. Preventive Strategy: Avoid Ointment and Creams



Preventive strategy: Clinicians should not use antimicrobial ointment or creams under the dressing at the insertion site.¹²

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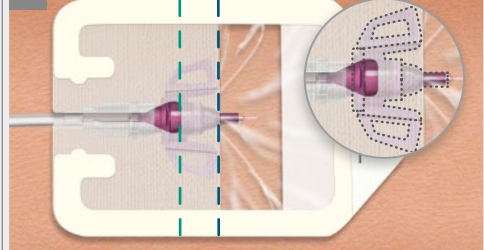
Prior to venipuncture: Prep skin including entire area where the dressing will be applied. Allow all preps and skin protectants to air dry completely.

7. Preventive Strategy: Avoid Tape, Use IV Dressing



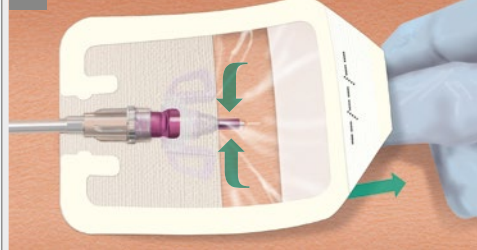
Preventive strategy: Clinicians should not: use adhesive tape directly on the insertion site, apply non-sterile adhesive tape under the transparent dressing, obscure the ability to visualize the IVC site and surrounding tissues with adhesive tape.¹²

11



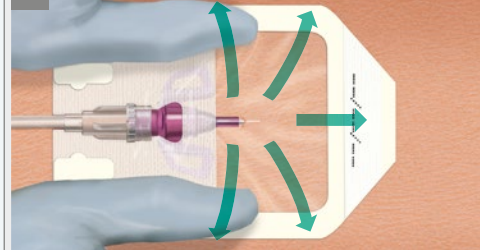
Apply dressing: Position clear window over insertion site with edge aligned to catheter's stabilization platform (**blue line**). Align top of notch in front of catheter's push-off plate (**green line**).

12



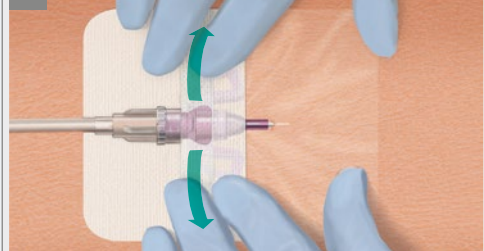
Apply dressing: Loosely place dressing on catheter hub. Remove second release liner and continue applying the dressing. Pinch dressing and notch ends in place around the catheter hub.

13



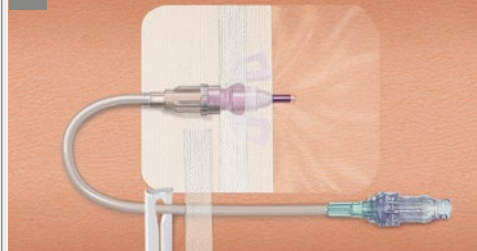
Apply dressing: Starting at the center of dressing and work outwards, apply firm pressure over film to establish adhesion to skin and catheter hub.

17



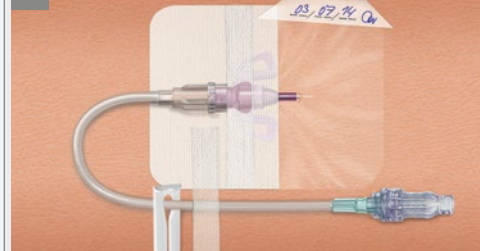
Apply securement strip (optional): Starting from the catheter hub, smooth down securement strip to ensure all edges are adhered well. Apply firm pressure to entire strip to ensure optimal adhesion.

18



Post Dressing: Loop IV tubing and secure with tape strip.

19



Post Dressing: Record information on documentation label. Apply label on edge of dressing.

Introcan Safety® 3 keeps your IV access stable!

Introcan Safety® 3 is the third generation of IV catheters, which was developed with the guiding principle of:

"Making the job of IV access ...

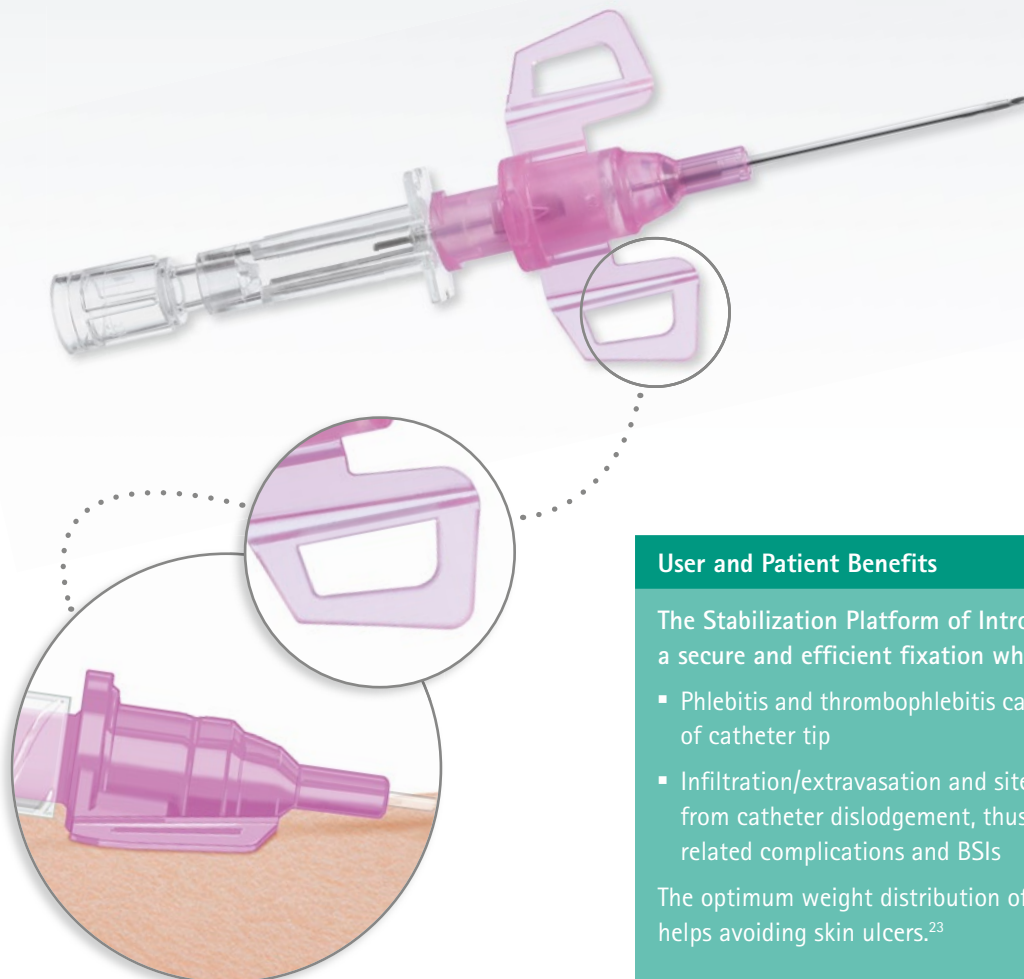
- safe and comfortable for the patient
- with less complications
- while saving costs

all without sacrificing clinical flexibility."

Safe and efficient IV access
from start to finish

Stabilization Platform

The integrated Stabilization Platform of the Introcan Safety® 3 is designed to minimize catheter movement to help reduce irritation and restarts.



User and Patient Benefits

The Stabilization Platform of Introcan Safety® 3 guarantees a secure and efficient fixation which helps reducing:²³

- Phlebitis and thrombophlebitis caused by micro-movements of catheter tip
- Infiltration/extravasation and site infection which result from catheter dislodgement, thus minimizing catheter related complications and BSIs

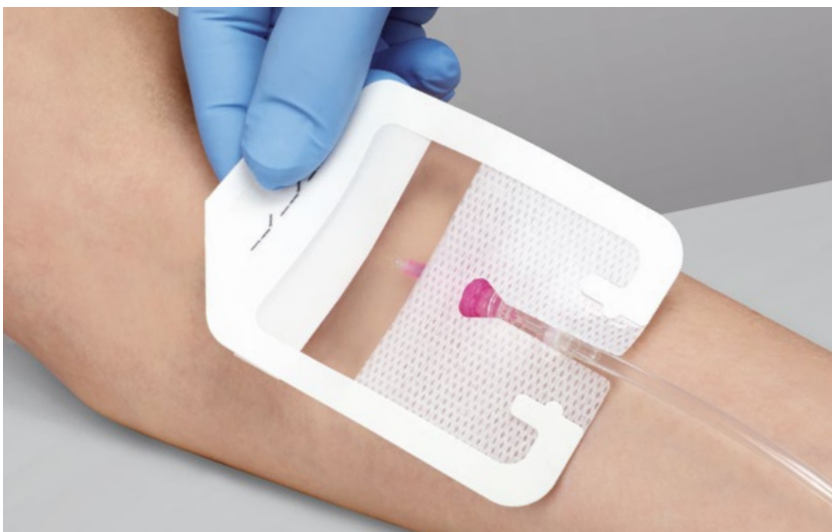
The optimum weight distribution of Introcan Safety® 3 helps avoiding skin ulcers.²³

B. Braun solutions



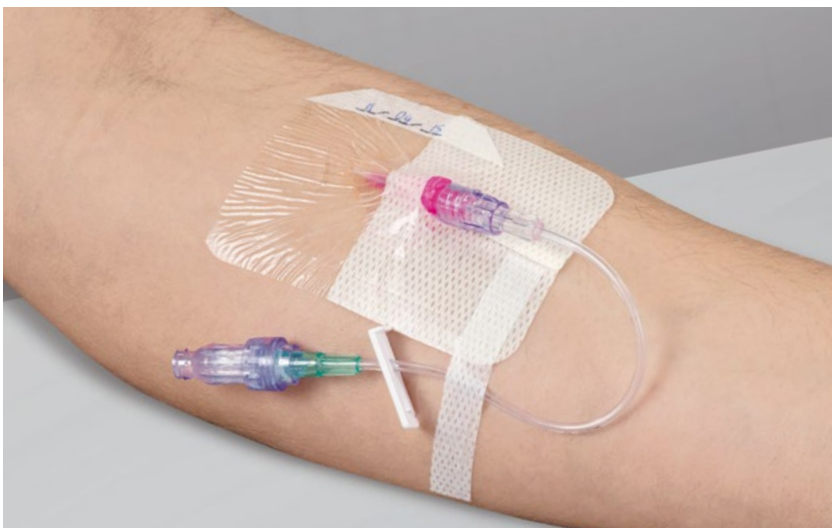
Introcan Safety® 3 - Closed IV Catheter

- Multiple use blood control septum aids in prevention of blood exposure
- Passive safety technology protects against needlestick injuries and related infections
- Fully automatic protection – cannot be bypassed
- Innovative, integrated catheter stabilization platform to reduce catheter related complications



Askina Secure® IV - Transparent IV Dressing

- Self adhesive transparent film dressing with border for easy application
- Stabilizes catheter and minimizes catheter movement
- Transparent portion allows inspection of IV site at any time without removing the dressing
- Sterile, waterproof barrier prevents contamination / infection of IV site
- Long wear time, gentle to the skin and thus easy to remove



Caresite - Extension Line

- Caresite extension line allows manipulation of the IV catheter away from the insertion site
- Reduces movement of IV catheter inside the vein
- The positive displacement of Caresite prevents catheter occlusion

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