Peripheral Intravenous Vascular Catheters

Your partner for safe and innovative vascular access

B|BRAUN
SHARING EXPERTISE

Introduction

IV catheter placement – a daily challenge

Peripheral IV catheters are a crucial element of today's infusion therapy and a regular tool in clinical practice.

Although a routine hospital procedure, the placement of an IV catheter can be a complex process which may lead to complications, such as blood exposure, with according implications.

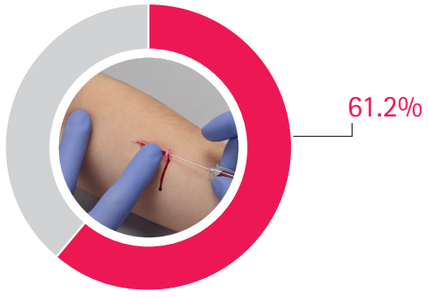
According to research, up to 35.9% of all healthcare workers come into involuntary contact with blood or body fluids at least once a year, with a large share of incidents being unreported[1].

Each time blood leaks, nurses are at risk for exposure to various bloodborne pathogens, including but not limited to HIV, hepatitis B (HBV), and hepatitis C (HCV)[1].

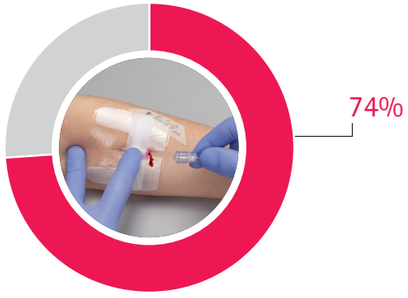
Ideally, healthcare workers should be protected from any blood exposure and environmental contamination by blood should be avoided to reduce the workload associated with cleaning and disinfection[2].

How often does blood spillage during IV catheter placement happen?

When using conventional catheters, blood leakage can occur in up to **61.2% of cases during insertion** and in up to **74% of cases during (dis-)connections.** As a result, about 1 in 7 blood exposures leads to environmental contamination[2].



61.2% of cases show blood leakage during IVC placement[2]



74% of cases show blood leakage during (dis-)connection[2]

Causes and challenges

When does blood exposure happen?

In principle, blood exposure can happen every time a catheter is placed, connected or disconnected to other Luer devices or removed[1]. Blood may spill onto the bed, dressings, floor, clothing, gloves, or unprotected skin.

Main causes identified for blood exposure are blood splashes, blood back-flow from the catheter hub and insufficient compression of the punctured vein during connection and disconnection of Luer devices[1-4].

Blood spillage can be found on e.g.:[5]

- Armrests 1
- Bedding and mattresses 2
- Bed frames and cradles
- Clothes 3
- Blood pressure equipment
- Examination couches
- Dressings 4

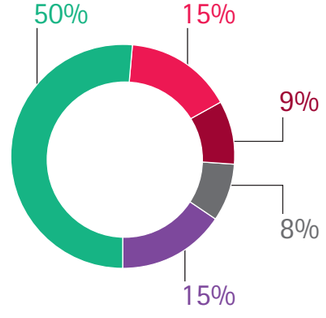
Especially during insertion, handling and disposal of contaminated materials, medical personnel run the risk of unintentional contact with blood. This risk is further increased when catheter placement is performed on an uncooperative, noncompliant or combative patient[1].

In addition, the following (environmental) situations may increase the risk of blood exposure:

- High frequency of catheter insertions
- Hectic work environment, which is especially true in emergency rooms
- Medical staff working under high pressure (stressful situation)
- Low appreciation of the actual work process

When does it happen?[4]

More than **50% of blood leakage** occurs during catheter insertion.



- During insertion (cath. hub): 50%
- During removal (catheter): 15%
- During insertion (needle): 9%
- Unsure: 8%
- Other: 15%

Consequences

Unexpected blood spillage costs time and money

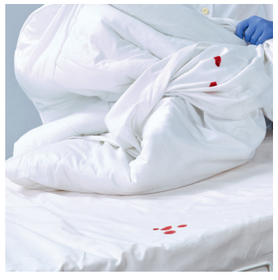
Coming into contact with blood interrupts the clinical process and is therefore a major inconvenience for medical staff and patients. All clinical activities have to be stopped immediately to clean up blood spillages: in addition to bed linen, clothing might have to be changed, the working environment cleaned, contaminated dressings replaced, and skin disinfected[1]. This requires additional time that is usually not available in the daily hospital routine.

The result is a higher stress level and dissatisfaction among staff, but also a lack of understanding among patients, which in turn can affect the hospital's reputation. The additional tasks resulting from a blood exposure are subsequently lacking in patient care and support.

In addition to the factors of time, stress level and dissatisfaction already listed, more material is required, so that overall costs can increase significantly.

The financial consequences for this extra effort can be enormous. For example, the average cost of cleaning and disinfection after a blood exposure in a hospital with 4,000 IV catheters per month is $14,000 US per year[1].

Average times for cleaning procedures:



4 minutes

Changing bed linen[1]

2 minutes

Cleaning the workplace[5]

1.5 minutes

Washing and disinfecting hands[7]

1.5 minutes

Changing the dressing[8]

Additional time for overall cleaning:
+ 21.45 h / 1,000 IV catheters*
+ 734 h / ~30 days p.a. for a 700 bed hospital+

Additional time for dressing changes:
+ 18.5 h / 1,000 IV catheters**
+ 634 h / 26 days p.a. for a 700 bed hospital+

* Assumption based on: 1,000 conventional IV catheters x 14.3% cases of contamination of surroundings[2] x 9 min for cleaning (bed linen, work place, washing hands, dressing)[1,5,7,8]
** Assumption based on: 1,000 conventional IV catheters x 74% cases of blood exposure during (dis-)connections[2] x 1.5 min for dressing change[8]
\+ Based on 700 bed hospital with 25,000 patients p.a. and 1.37 insertion attempts per patient[6]

Preventive strategy

Use of blood-control IV catheters

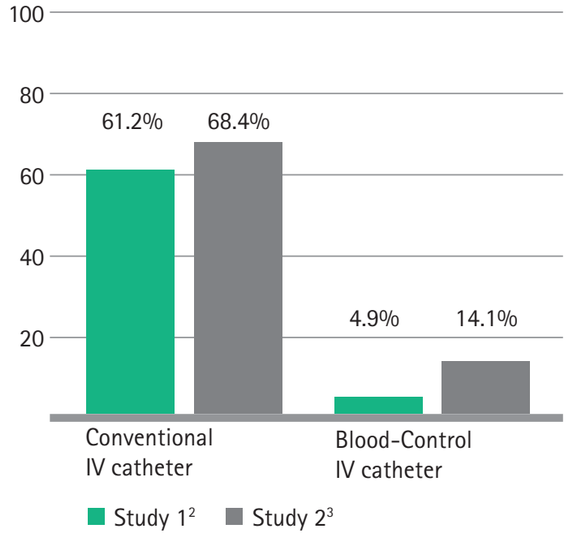
Studies have shown that the use of blood-control IV catheters can not only reduce the risk of blood exposure and related costs (e.g. clean-up material), but also improve the overal process efficiency:

The blood leakage incidence during IV catheter placement can be significantly reduced when using a blood-control IV catheter[2,3].

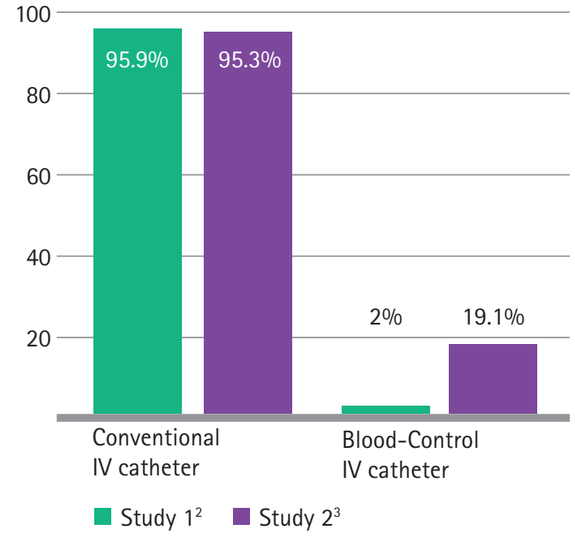
Blood-control IV catheters control the flow of blood coming out of the catheter hub. Depending on the device type, this can work only once or multiple times.

Due to the integrated blood-control feature, clinicans can omit occluding the vein and have their hands free to connect Luer devices. This not only saves time but also makes the whole IV cannulation process easier and more efficient.

Blood leakage incidence during IVC placement (in %)



Need to occlude vein during IVC placement (in %)



Introcan®/Introcan® Certo

The IV catheter

Making IV access ...

... comfortable for patients

The catheter material assures an easy and smooth catheter advancement for a high patient comfort. Availabe in **PUR** (polyurethane) for softer, more comfortable, longer indwelling performance [3] and kink resistance, or **FEP** (Fluorinated Ethylene Propylene) with firmer construction for arterial access.

Radiopaque stripes

- Radiopaque stripes for good visibility under X-rays

PUR

- Softens at body temperature
- Proven to have positive impact on indwell time and phlebitis risk [3]

Wings

- Wing design for easy securement

With and without wings

Removable flash plug

- Hydrophobic membrane avoids blood exposure
- Removable flash plug permits attachment of a syringe for aspiration and other special procedures

... convenient for patients

The unique geometry of the universal back cut bevel aids in accessing difficult veins by providing a highly flexible pathway for easy catheter insertion with less tearing[1].

Universal back cut bevel

- Wide choice of insertion angles
- Designed for minimal puncture trauma [1]
- Insertion with less tissue tearing (V-cut) [1]

... easy to use

Designed to enhance usability during intravenous procedures.

Push-off plate

- Facilitates comfortable and one-handed catheter advancement
- Minimizes incidence of catheter hub touch contamination
- Indicates bevel orientation

... more successful

Multiple attempts to establish an IV access can lead to a delay in treatment. The double flashback technology of Introcan® helps to support first stick success [2] through quick visual confirmation that both - needle and catheter - are successfully in the vein[4].

Needle-flash

Catheter-flash

Double flashback technology

- Supports first stick success [2]
- Needle-flash confirms needle is in the vein
- Catheter-flash confirms catheter placement [4]

Power injectable

Suitable with power injectors set at a maximum pressure of 300 PSI (G18-G24).

Full portfolio

Offering a wide range of gauge sizes (G14-G24) and catheter lengths (19-50 mm).

With wings

Without wings

Easy to use: No extra steps needed to prepare the catheter for insertion.

User benefits:

- Easy puncture at a wide range of angles
- Minimum effort of insertion
- Double flashback technology to provide a quick visual confirmation of vein puncture

Introcan Safety®

The safety IV catheter with automatic needlestick protection

Making safe IV access ...

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Universal back cut bevel

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- Insertion with less tissue tearing (V-cut) [1]

... safer for clinicians

Needlestick injuries (NSI) continue to be one of the highest risks clinicians face during their daily routine: 62% of NSI occur after use, during the disposal of the needle.[4] Studies show that passive, fully automatic safety devices are most effective in NSI prevention. [1,5] With B. Braun's Introcan Safety®, clinicians are protected by a truly automatic safety device.

Passive safety shield

- Deploys automatically
- Cannot be bypassed
- Requires no use activation

... easy to use

Designed to enhance usability during intravenous procedures.

Push-off plate

- Facilitates comfortable and one-handed catheter advancement
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Introcan Safety® 2

Closed IV catheter

IV access is an indispensable element of today's infusion therapy. However, this invasive procedure continues to be associated with potential risks for both patients and clinicians.

Thus we at B. Braun developed a new IV catheter, Introcan Safety® 2, with the guiding principle of

"Making the job of IV access ...

- **Safe for the clinician**[1]
- **Safe and comfortable for the patient**[2]
- **A highly efficient insertion process**[3]

All without sacrificing clinical flexibility."

User benefits

- Reduced needlestick injuries
- Reduced blood exposure during insertion and handling
- Improved insertion efficiency

Making safe IV access ...

... safe for clinicians

Needlestick injuries continue to be one of the highest risks clinicians will face during their daily routine. Studies show that passive, fully automatic safety devices are most effective for needlestick injury prevention[1].

With B. Braun's Introcan Safety® 2, you are protected by a truly automatic safety device.

Passive safety shield

- Deploys automatically
- Cannot be bypassed
- Stays in place throughout disposal

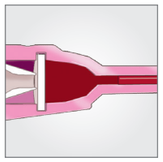
... more successful

Multiple attempts to establish IV access can lead to a delay in treatment plus an increase in material cost and time.

The double flashback technology of Introcan Safety® 2 supports first stick success through quick visual confirmation that both needle and catheter are successfully in the vein.

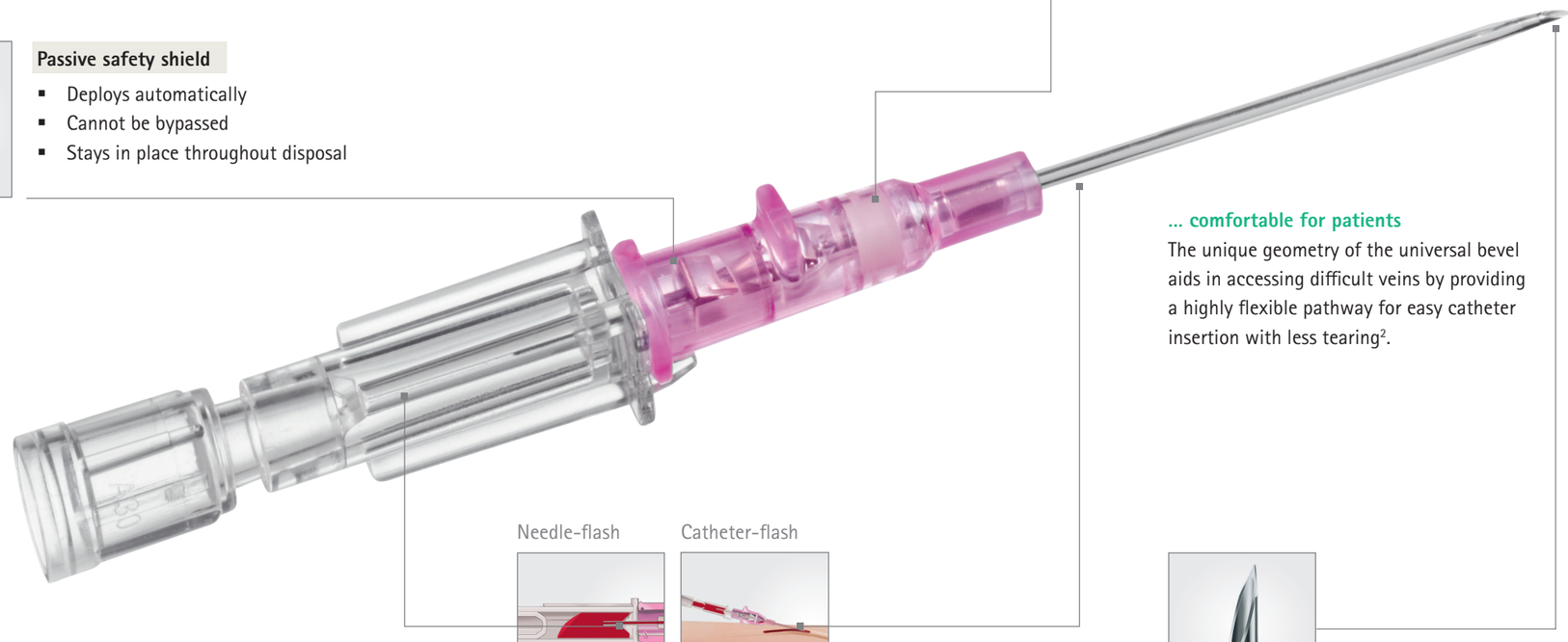
... convenient

The multi-access blood control septum is designed to control the flow of blood from the catheter hub after needle removal and during subsequent (dis-)connections of Luer access devices, helping to reduce blood exposure[3].



Multi-access blood control septum

- Minimizes the need for venous compression
- Reduces clean-up time and materials
- Less blood keeps patients and families relaxed
- Helps to prevent blood exposure



Needle-flash

Catheter-flash

Double flashback technology

- Needle-flash confirms needle is in the vein
- Catheter-flash confirms catheter placement

... comfortable for patients

The unique geometry of the universal bevel aids in accessing difficult veins by providing a highly flexible pathway for easy catheter insertion with less tearing[2].

Universal back cut bevel

- Wide choice of insertion angles
- Smooth catheter insertion
- Minimal puncture trauma

Power injectable

- Suitable for use with power injectors set at a maximum pressure of 325 psi

Introcan Safety® 3

Making IV access safer, more comfortable and successful

Making safe IV access ...

... convenient for patients

The unique geometry of the Universal back cut bevel aids in accessing difficult veins by providing a highly flexible pathway for easy catheter insertion with less tearing[2].

Universal back cut bevel

- Wide choice of insertion angles
- Designed for minimal puncture trauma[2]
- Insertion with less tissue tearing (V-Cut)[2]

Power injectable

- Suitable for use with power injectors set at a maximum pressure of 300 psi (G18 - G24)

Full portfolio

- Offering a wide range of gauge sizes (G14 - G24) and catheter lengths (19 - 50mm)

... safer for patients

A poorly secured IV catheter poses a risk for IV complications such as dislodgements, infiltration, extravasation or phlebitis. The integrated Stabilization Platform of Introcan Safety® 3 is designed to minimize catheter movement to help reduce catheter-related complications[7,8,9].

Stabilization platform

- Designed to improve catheter stability
- Raised Luer thread to help connection away from patient skin

... safer for clinicians

Needlestick injuries (NSI) continue to be one of the highest risks clinicians face during their daily routine: 62% of NSI occur after use, during disposal[5]. Studies show that passive, fully automatic safety devices are most effective in NSI prevention[1,6]. With B. Braun's Introcan Safety® 3, clinicians are protected by a truly automatic safety device.

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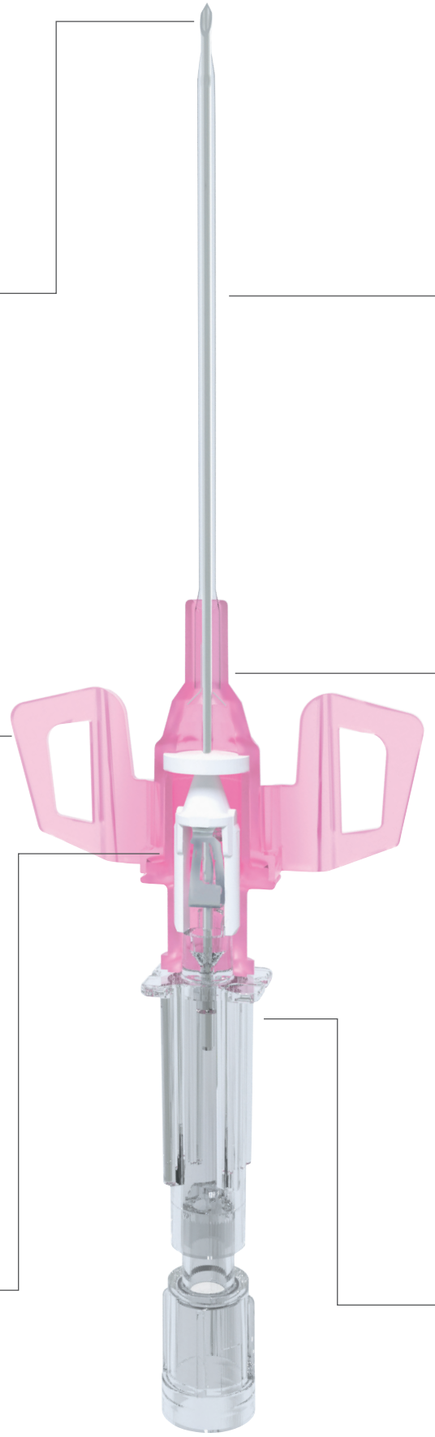
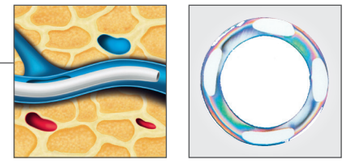


... comfortable for patients

Compared to FEP, PUR material softens at body temperature and is proven to have a positive impact on indwell time and phlebitis risk.[12]



PUR

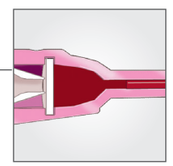
- For a softer and more comfortable in-dwelling performance[12]

Radiopaque stripes

- Good visibility under X-ray

... convenient for clinicians

Blood leakage from an IV catheter can happen every time a catheter is placed, connected or disconnected to other Luer devices. Blood spillage interrupts the clinical process and tight workflow, resulting in additional clean-up time and cost[10,11]. The Multi-access septum is designed to control the flow of blood from the catheter hub during needle withdrawal and while replacing subsequent Luer connections.



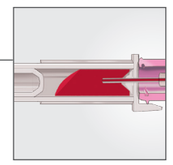
Multi-access blood control septum

- Helps to prevent blood exposure[3]
- Works multiple times
- Reduces need for venous compression[3]
- Improves process efficiency[3,4]

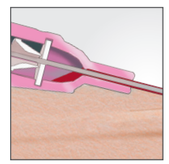
... more successful

Multiple attempts to establish an IV access can lead to a delay in treatment. The double flashback technology of Introcan Safety® 3 helps to support first stick success[3] through quick visual confirmation that both – needle and catheter – are successfully in the vein.

Needle-flash



Catheter-flash



Double flashback technology

- Supports first stick success
- Needle-flash confirms needle is in the vein
- Catheter-flash confirms catheter placement

User benefits

- Reduced needlestick injuries
- Improved insertion efficiency[3,4]
- Reduced blood exposure during insertion and handling[3,4]
- Support in reducing catheter-related complications

Introcan Safety® 2

Closed IV catheter with multi-access blood control – Calculated power injection flow rates

The information detailed in the table provides maximum achievable contrast media flow rates for each gauge size of Introcan Safety® 2 used with a power injector set at a maximum pressure of 325 psi[1].

	Room temperature					Body temperature				
	Viscosity mPas/cP	Flow rate ml/s				Viscosity mPas/cP	Flow rate ml/s			
	20°C (*25°C)	24G	22G	20G	18G	**37°C**	24G	22G	20G	18G
Contrast Agent										
Optiray® 160	2.7*	5.0	6.9	9.4	12.4	1.9	5.0	7.0	9.5	12.5
Optiray® 240	4.6*	4.8	6.7	9.0	11.8	3.0	4.9	6.9	9.3	12.3
Optiray® 300	8.2*	4.4	6.2	8.2	10.7	5.5	4.7	6.6	8.8	11.5
Optiray® 320	9.9*	4.2	5.9	7.8	10.2	5.8	4.7	6.5	8.7	11.5
Optiray® 350	14.3*	3.8	5.3	6.9	8.9	9.0	4.3	6.1	8.0	10.5
Ultravist® 150	2.3	**5.0**	**7.0**	**9.5**	**12.5**	1.5	**5.0**	**7.0**	**9.5**	**12.5**
Ultravist® 240	4.9	4.7	6.6	8.9	11.7	2.8	5.0	6.9	9.4	12.4
Ultravist® 300	8.9	4.3	6.1	8.1	10.5	4.7	4.8	6.7	9.0	11.8
Ultravist® 370	22.0	3.0	4.3	5.2	6.6	10.0	4.2	5.9	7.8	10.2
Omnipaque™ 140	2.3	5.0	7.0	9.5	12.5	1.5	5.0	7.0	9.5	12.5
Omnipaque™ 180	3.1	4.9	6.9	9.3	12.3	2.0	5.0	7.0	9.5	12.5
Omnipaque™ 240	5.8	4.7	6.5	8.7	11.5	3.4	4.9	6.8	9.3	12.2
Omnipaque™ 300	11.8	4.1	5.7	7.4	9.7	6.3	4.6	6.4	8.6	11.3
Omnipaque™ 350	20.4	3.2	4.5	5.5	7.1	10.4	4.2	5.9	7.7	10.1
Visipaque™ 270	12.7	4.0	5.6	7.2	9.4	6.3	4.6	6.4	8.6	11.3
Visipaque™ 320	26.6	2.6	3.6	4.2	5.3	11.8	4.1	5.7	7.4	9.7
Isovue® 200	3.3	4.9	6.9	9.3	12.2	2.0	5.0	7.0	9.5	12.5
Isovue® 250	5.1	4.7	6.6	8.9	11.7	3.0	4.9	6.9	9.3	12.3
Isovue® 300	8.8	4.4	6.1	8.1	10.6	4.7	4.8	6.7	9.0	11.8
Isovue® 370	20.9	3.2	4.4	5.4	7.0	9.4	4.3	6.0	8.0	10.4
Oxilan® 300	9.4	4.3	6.0	8.0	10.4	5.1	4.7	6.6	8.9	11.7
Oxilan® 350	16.3	3.6	5.1	6.4	8.3	8.1	4.4	6.2	8.2	10.8
Iomeron® 300	8.1	4.4	6.2	8.2	10.8	4.5	4.8	6.7	9.0	11.8
Iomeron® 350	14.5	3.8	5.3	6.8	8.9	7.5	4.5	6.3	8.4	11.0
Iomeron® 400	27.5	**2.5**	**3.5**	**4.0**	**5.0**	12.6	**4.0**	**5.6**	**7.3**	**9.4**

[1]Please note that the above flow rates for different contrast media are calculated based on the viscosities indicated in the respective SPC. The flow rate calculation is based on the tested viscosities as indicated in the instruction for use. The flow rates do not constitute guarantees, warranties or predictions regarding the outcome of your case (due to variations in terms of accessories used, type and length of tubing, contrast media, contrast media temperature and power injector settings). In any case it is the responsibility of the user to accomodate the flow rates to each patient's conditions and/or therapy needed.
For further information, please consult the instruction of use of Introcan Safety® 2.

Bold marked flow rates and viscosities have been tested (see instructions of use of Introcan Safety® 2)

Reference

Tyco Healthcare/Mallinckridt (2006). SPC Optiray 160. Guerbet (2022). SPC Optiray 240-350, retrieved 10-2023 from: https://www.guerbet.com/de-de/produkte-und-losungen/kontrastmittel/optiray/

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Introcan Safety® 3

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Optiray® 300	8.2*	4.4	6.9	9.0	11.9	13.2	13.9	5.5	4.7	7.4	9.7	12.9	14.2	15.1
Optiray® 320	9.9*	4.2	6.6	8.5	11.3	12.5	13.2	5.8	4.7	7.4	9.6	12.8	14.1	15.0
Optiray® 350	14.3*	3.8	5.9	7.4	9.7	10.7	11.3	9.0	4.3	6.8	8.8	11.6	12.8	13.6
Ultravist® 150	**2.3**	**5.0**	**8.0**	**10.5**	**14.0**	**15.5**	**16.5**	1.5	5.0	8.0	10.5	14.0	15.5	16.5
Ultravist® 240	4.9	4.7	7.5	9.8	13.1	14.5	15.4	2.8	5.0	7.9	10.4	13.8	15.3	16.3
Ultravist® 300	8.9	4.3	6.8	8.8	11.6	12.9	13.6	4.7	4.8	7.6	9.9	13.1	14.5	15.5
Ultravist® 370	22.0	3.0	4.5	5.4	7.0	7.7	7.9	10.0	4.2	6.6	8.5	11.3	12.4	13.1
Omnipaque™ 140	2.3	5.0	8.0	10.5	14.0	15.5	16.5	1.5	5.0	8.0	10.5	14.0	15.5	16.5
Omnipaque™ 180	3.1	4.9	7.9	10.3	13.7	15.2	16.2	2.0	5.0	8.0	10.5	14.0	15.5	16.5
Omnipaque™ 240	5.8	4.7	7.4	9.6	12.8	14.1	15.0	3.4	4.9	7.8	10.2	13.6	15.1	16.0
Omnipaque™ 300	11.8	4.1	6.3	8.0	10.6	11.7	12.4	6.3	4.6	7.3	9.5	12.6	13.9	14.8
Omnipaque™ 350	20.4	3.2	4.8	5.8	7.5	8.3	8.6	10.4	4.2	6.6	8.4	11.1	12.3	13.0
Visipaque™ 270	12.7	4.0	6.1	7.8	10.3	11.4	12.0	6.3	4.6	7.3	9.5	12.6	13.9	14.8
Visipaque™ 320	26.6	2.6	3.7	4.2	5.3	5.9	5.9	11.8	4.1	6.3	8.0	10.6	11.7	12.4
Isovue® 200	3.3	4.9	7.8	10.2	13.6	15.1	16.1	2.0	5.0	8.0	10.5	14.0	15.5	16.5
Isovue® 250	5.1	4.7	7.5	9.8	13.0	14.4	15.3	3.0	4.9	7.9	10.3	13.8	15.2	16.2
Isovue® 300	8.8	4.4	6.8	8.8	11.7	12.9	13.7	4.7	4.8	7.6	9.9	13.1	14.5	15.5
Isovue® 370	20.9	3.2	4.7	5.7	7.4	8.1	8.4	9.4	4.3	6.7	8.7	11.5	12.7	13.4
Oxilan® 300	9.4	4.3	6.7	8.7	11.5	12.7	13.4	5.1	4.7	7.5	9.8	13.0	14.4	15.3
Oxilan® 350	16.3	3.6	5.5	6.9	9.0	9.9	10.4	8.1	4.4	7.0	9.0	11.9	13.2	14.0
Iomeron® 300	8.1	4.4	7.0	9.0	11.9	13.2	14.0	4.5	4.8	7.6	9.9	13.2	14.6	15.5
Iomeron® 350	14.5	3.8	5.8	7.4	9.6	10.7	11.2	7.5	4.5	7.1	9.2	12.1	13.4	14.2
Iomeron® 400	**27.5**	**2.5**	**3.5**	**4.0**	**5.0**	**5.5**	**5.5**	12.6	4.0	6.2	7.8	10.3	11.4	12.0

[1]Please note that the above flow rates for different contrast media are calculated based on the viscosities indicated in the respective SPC. The flow rate calculation is based on the tested viscosities as indicated in the instruction for use. The flow rates do not constitute guarantees, warranties or predictions regarding the outcome of your case (due to variations in terms of accessories used, type and length of tubing, contrast media, contrast media temperature and power injector settings). In any case it is the responsibility of the user to accomodate the flow rates to each patient's conditions and/or therapy needed.
For further information, please consult the instruction of use of Introcan Safety® 3.

Bold marked flow rates and viscosities have been tested (see instructions of use of Introcan Safety® 3)

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Introcan Safety® Deep Access

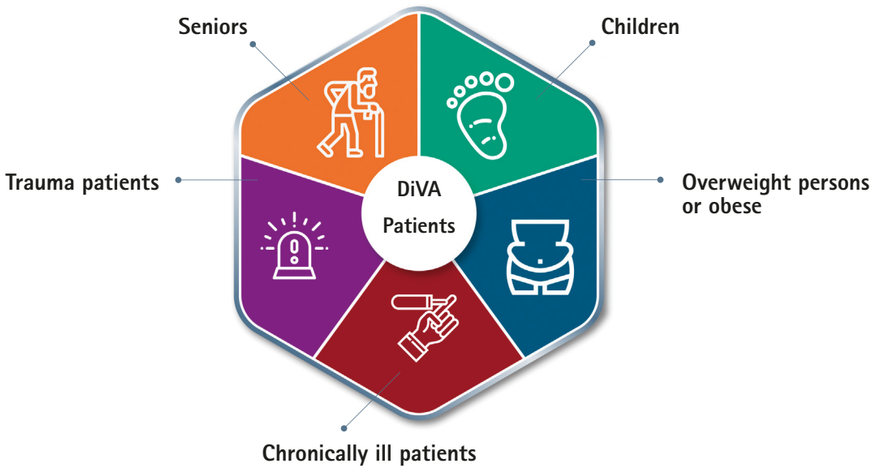
Longer length for longer dwell

Introcan Safety® Deep Access is a longer-length peripheral intravenous catheter designed specifically for patients with difficult intravenous access (Difficult Venous Access patients or DiVA patients).

DiVA-patients can be classified as follows:

- pediatric or neonate patients,
- overweight or obese patients,
- geriatric patients or patients with a chronic disease (e.g., diabetes),
- emergency/acute patients (e.g., skin burns, hematoma, dehydration).

DiVA Patients
A broad typology



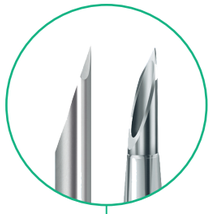
The longer length of Introcan Safety® Deep access (G18-22 x 64 mm; G24 x 32 mm):

- allows ultrasound-guided access of deeper veins[1,2,3,4,5]
- helps prevent catheter dislocation and infiltration[1,3,4,5,6]
- provides longer length of stay compared to a standard peripheral catheter[7]

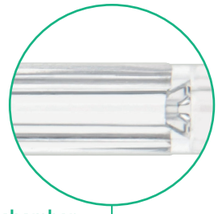
Polyurethane catheter
For a softer, more comfortable indwelling performance.

64 mm catheter
Improves the likelihood of achieving > 27.5 mm of catheter in the vein supporting optimal survival[5].

Passive safety needle shield
Aids in the prevention of needlestick injuries.



Universal bevel
Wide choice of insertion angles for accessing difficult veins.



Magnified flashback chamber
Enabling ease of verification of needle being in the vein.

Electropolished bevel
Making Introcan Safety® Deep Access highly visible under ultrasound.

Suitable for use up to
300 psi

Highly visible under
ultrasound

Vasofix® Safety

Safety IV catheter with injection port and automatic needlestick protection

Making safe IV access ...

... comfortable for patients

The catheter material assures an easy and smooth catheter advancement for a high patient comfort. Availabe in **PUR** (polyurethane) for softer, more comfortable, longer indwelling performance [4] and kink resistance, or **FEP** (Fluorinated Ethylene Propylene) with firmer construction.

Radiopaque stripes

- Radiopaque stripes for good visibility under X-rays

PUR

- Soft at body temperature
- Proven to have positive impact on indwell time and phlebitis risk [4]

... safer for patients

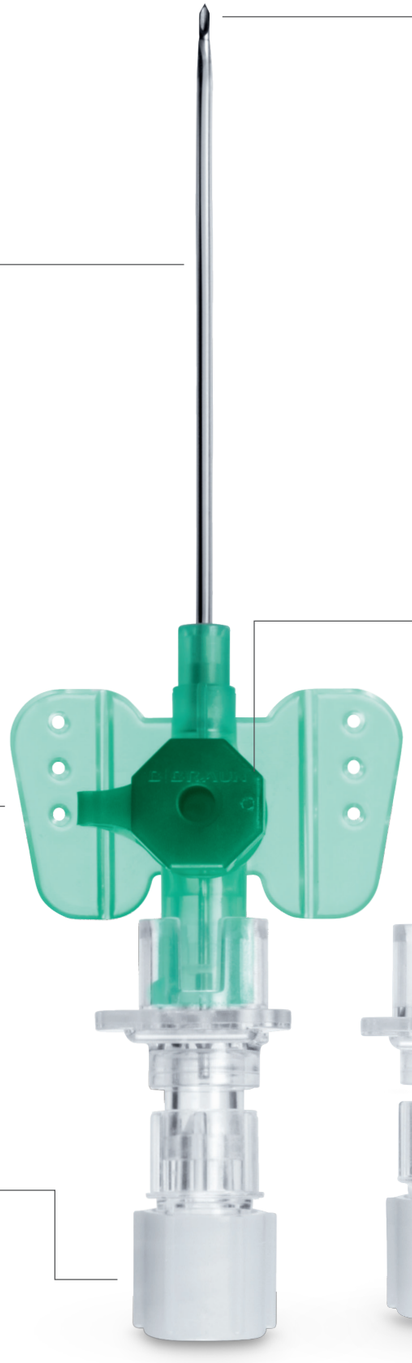
A poorly secured IV catheter poses a risk for IV complications such as dislodgement, infiltration, extravasation or phlebitis. The integrated fixation wings are designed to minimize catheter movement to help reduce catheter-related complications[5,6,7].

Fixation wings

- Designed to improve catheter stability
- Flexible wings adapt to skin surface for highest patient comfort
- Holes for ventilation

Removable flash plug & removable closing cone

- Hydrophobic membrane avoids blood exposure
- Removable flash plug permits attachment of a syringe for aspiration and other special procedures
- Removable closing cone allows to directly close off the catheter with one hand



... convenient for patients

The unique geometry of the universal back cut bevel aids in accessing difficult veins by providing a highly flexible pathway for easy catheter insertion with less tearing[2].

Universal back cut bevel

- Wide choice of insertion angles
- Designed for minimal puncture trauma [2]
- Insertion with less tissue tearing (V-cut) [2]

... safer for clinicians

Needlestick injuries (NSI) continue to be one of the highest risks clinicians face during their daily routine: 62 % of NSI occur after use, during disposal[10]. Studies show that passive, fully automatic safety devices are most effective in NSI prevention[1,3]. With B. Braun's Vasofix® Safety, clinicians are protected by a truly automatic safety device.

Passive safety shield

- Deploys automatically
- Cannot be bypassed
- Requires no use activation

... user-friendly

Designed for a precise medication administration and a high versatility in intravenous treatment.

Injection port

- For a quick and easy injection without interruption of infusion [9]
- Allows needle-free injection
- Grip edges for an easy opening
- Possibility to close-off injection port to inhibit patient's access by turning the protective cap 180 degrees

... more successful

Multiple attempts to establish an IV access can lead to a delay in treatment. The double flashback technology of Vasofix® Safety helps to support first stick success [9] through quick visual confirmation that both – needle and catheter – are successfully in the vein[8].

Needle-flash

Catheter-flash

... effortlessly adaptable to user needs

Handling flexibility

Unparalleled flexibility is achieved by offering distinct handling and insertion possibilities for diverse needs, a secure hold and precise control.

1 **Grip plate and port**

2 **Wings and closing cone**

3 **Closing cone and port**

Easy to use

No extra steps needed to prepare the catheter for insertion.

Full portfolio

Offering a wide range of gauge sizes (G14-G24) and catheter lengths (19-50mm)

Double flashback technology

- Supports first stick success [9]
- Needle-flash confirms needle is in the vein
- Catheter-flash confirms catheter placement [8]

Features intravenous catheters	Introcan®/ Introcan® Certo	Introcan Safety®	Introcan Safety® 2	Introcan Safety® 3	Introcan Safety® Deep Access	Vasofix® Safety
Passive safety system A safety system that activates automatically. Always protected against needlestick injuries.	–	✓	✓	✓	✓	✓
Safety clip Self-activating clip for reliable protection against needlestick injuries.	–	✓	✓	✓	✓	✓
Blood control septum The septum prevents blood leakage from the catheter. Priming of the blood vessel is no longer necessary.	–	–	✓	✓	–	–
Arterial Suitable for arterial use. For continuous bladder pressure measurement and continuous access to arterial blood for monitoring.	–	–	✓	✓	✓	–
Wings Wings provide a stable position for the catheter. They thereby prevent irritation of the blood vessel. Introcan Safety® 3 has the only flexible wings that adapt to the skin surface for optimal patient comfort.	✓	✓	✓	✓	–	✓
Double flashback The 1st flashback of blood (in the transparent chamber at the back of the needle) confirms that the needle is in the blood vessel. The 2nd flashback (between needle and catheter) confirms that the catheter is in the blood vessel.	✓	✓	✓	✓	✓	✓
Universal sharpening of the needle The needles have a three plane sharpening. This allows you to use the needle with a puncture angle of 15° to 45°. Every B. Braun intravascular catheter has the same puncture angle.	✓	✓	✓	✓	✓	✓
Suitable for pediatrics/neonatology Small, safe versions suitable for the youngest.	✓	✓	✓	✓	✓	✓
Neonatology Additional length sizes for neonatology. Additional choice for this specific target group.	✓	✓	–	–	✓	–
Needle-free syringe tip Needle-free syringe tip for rapid and safe (bolus) injection without interruption of intravenous administration.	–	–	–	–	–	✓
PUR The catheter is made of 100% polyurethane, a thermosensitive material. More comfort for the patient and less irritation of the blood vessel.	✓	✓	✓	✓	✓	✓
FEP The catheter is made of 100% fluoride ethylpropylene.	✓	✓	–	–	–	✓

Product overview

Introcan®/Introcan® Certo

Introcan®/Introcan® Certo	Gauge	Catheter length (inch)	Catheter length (mm)	Catheter ø (mm)	Straight (S) or wing (W)	Flow rate (ml/min)	Units per box	Code no. REF	
								FEP*	PUR*
	24	¾	19	0.70	S	22		4252071B	4251300
	24	¾	19	0.70	W	22		4254074B	4253302
	22	1	25	0.90	S	35		4252098B	4251318
	22	1	25	0.90	W	35		4254090B	4253310
	20	1 ¼	32	1.10	S	60		4252110B	4251326
	20	1 ¼	32	1.10	W	60		4254112B	4253329
	20	2	50	1.10	S	55		-	4055764
	18	1 ¼	32	1.30	S	105	50	4252322B	4251342
	18	1 ¼	32	1.30	W	105		4254325B	4253345
	18	1 ¾	45	1.30	S	100		4252136B	4251334
	18	1 ¾	45	1.30	W	100		4254139B	4253337
	16	2	50	1.70	S	210		4252160B	4251350
	16	2	50	1.70	W	210		4254171B	4253353
	14	2	50	1.80	S	345		4252217B	4251369
	14	2	50	1.80	W	345		4254210B	4253361

Introcan Safety®

Introcan Safety®	Gauge (G)	Catheter length (inch)	Catheter length (mm)	Catheter ø (mm)	Straight (S) or wing (W)	Flow rate (ml/min)	Unity per box	Code no. (REF)	
								Catheter material	
								FEP	PUR
	22	1	25	0.9	S	35		4252519-01	4251628-01
	22	1	25	0.9	W	35		4254511-01	4253540-01
	20	1	25	1.1	S	65		4252543-01	4251652-01
	20	1	25	1.1	W	65		4254546-01	4253574-01
	20	1 ¼	32	1.1	S	60		4252535-01	4251644-01
	20	1 ¼	32	1.1	W	60		4254538-01	4253566-01
	20	1 ¾	45	1.1	S	57		4252527-01	–
	18	1 ¼	32	1.3	S	105		4252560-01	4251687-01
	18	1 ¼	32	1.3	W	105	50	4254562-01	4253604-01
	18	1 ¾	45	1.3	S	100		4252551-01	4251679-01
	18	1 ¾	45	1.3	W	100		4254554-01	4253590-01
	16	1 ¼	32	1.7	S	215		4252586-01	4251709-01
	16	2	50	1.7	S	210		4252578-01	4251695-01
	16	2	50	1.7	W	210		4254570-01	4253612-01
	14	1 ¼	32	2.2	S	350		4251890-01	–
	14	2	50	2.2	S	345		4252594-01	4251717-01
	14	2	50	2.2	W	345		4254597-01	4253639-01

Product overview

Introcan Safety® 2

Introcan Safety® 2	Gauge (G)	Catheter length (mm)	Catheter length (inch)	Catheter ø (mm)	Flow rate (ml/min)	Flow rate (ml/hour)	Catheter material	Code no. (REF) wingless	Code no. (REF) winged
	24	14	5/9	0.7	25	1560	PUR	4242000-01	4242001-01
	24	19	3/4	0.7	22	1320		4242002-01	4242003-01
	22	25	1	0.9	35	2100		4242004-01	4242005-01
	20	25	1	1.1	65	3900		4242006-01	4242007-01
	20	32	1 1/4	1.1	60	3600		4242008-01	4242009-01
	20	50	2	1.1	55	3300		4242010-01	4242011-01
	18	32	1 1/4	1.3	103	6300		4242012-01	4242013-01
	18	45	1 3/4	1.3	90	5900		4242014-01	4242015-01

Sales units: 200 pcs. (4 boxes x 50 pcs).
All products are PVC-, DEHP- and later/natural rubber-free.

Introcan Safety® 3

Introcan Safety® 3	Gauge (G)	Catheter length (inch)	Catheter length (mm)	Catheter ø (mm)	Flow rate (ml/min)	Unity per box	Code no. (REF)
	24	3/4	19	0.7	22	50	4251127-01
	22	1	25	0.9	35		4251128-01
	20	1	25	1.1	65		4251129-01
	20	1 1/4	32	1.1	60		4251130-01
	18	1 1/4	32	1.3	105		4251131-01
	18	1 3/4	45	1.3	100		4251132-01
	16	1 1/4	32	1.7	195		4251136-01
	16	2	50	1.7	185		4251133-01
	14	1 1/4	32	2.2	325		4251135-01
	14	2	50	2.2	310		4251134-01

Introcan Safety® 3	Gauge (G)	Catheter length (inch)	Catheter length (mm)	Catheter ø (mm)	Flow rate (ml/min)	Unity per box	Code no. (REF) Catheter material FEP*	Code no. (REF) Catheter material PUR
	20	2	50	1.1	22	50	4251144-01	4251137-01

Sales units: 200 pcs. (4 boxes x 50 pcs).
All products are PVC-, DEHP- and later/natural rubber-free.
*FEP as alternative firmer material[12], e.g. for arterial access.

Product overview

Introcan Safety® Deep Access

Introcan Safety® Deep Access	Gauge (G)	Catheter length (inch)	(mm)	Catheter ø (mm)	Flow rate (ml/min)	Unity per box	Code no. (REF)	
							Catheter material	
							FEP	PUR
	24	1¼	32	0.7	17	50	-	**4251623-01**
	22	2½	64	0.9	24		-	4251622-01
	20	2½	64	1.1	51		-	4251621-01
	18	2½	64	1.3	85		-	4251620-01

Vasofix® Safety

Vasofix® Safety	Gauge (G)	Catheter length (inch)	(mm)	Catheter ø (mm)	Flow rate (ml/min)	Unity per box	Code no. (REF)	
							Catheter material	
							FEP	PUR
	24	¾	19	0.7	22	50	-	**4269071S-01**
	22	1	25	0.9	36		4268091S-01	4269098S-01
	20	1	25	1.1	65		-	4269217S-01
	20	1¼	33	1.1	61		4268113S-01	4269110S-01
	18	1¼	33	1.3	103		4268334S-01	4269330S-01
	18	1¾	45	1.3	96		4268130S-01	4269136S-01
	17	1¾	45	1.5	128		4268156S-01	4269152S-01
	16	2	50	1.7	196		4268172S-01	4269179S-01
	14	2	50	2.2	343		4268210S-01	4269225S-01

Sales units: 200 pcs. (4 boxes x 50 pcs).
All products are PVC-, DEHP- and later/natural rubber-free.

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Causes, consequences, prevention

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