

## REDUCING BLOOD EXPOSURE DURING THE IV PROCESS

Introcan Safety® 3 – Closed IV Catheter

# 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.

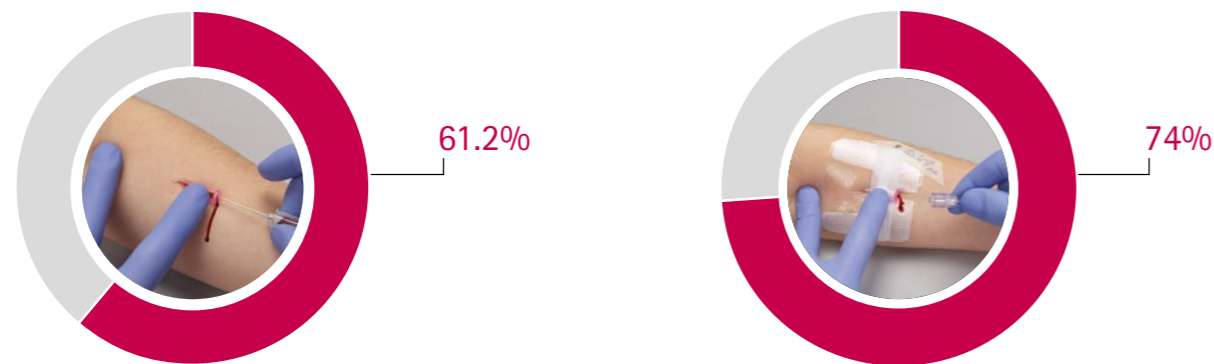
According to research, up to 35.9% of all healthcare workers come into involuntary contact with blood or body fluids at least once a year, with a large share of incidents being unreported.<sup>1</sup>

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).<sup>1</sup>

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.<sup>2</sup>

## 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 one in 7 blood exposures leads to environmental contamination.<sup>2</sup>



61.2% of cases show blood leakage during IVC placement<sup>2</sup>

74% of cases show blood leakage during (dis-)connection<sup>2</sup>

# 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.<sup>1</sup> 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 catheter hub and insufficient compression of punctured vein during connection and disconnection of Luer devices.<sup>1-4</sup>

### Blood spillage can be found on e.g.:<sup>5</sup>

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

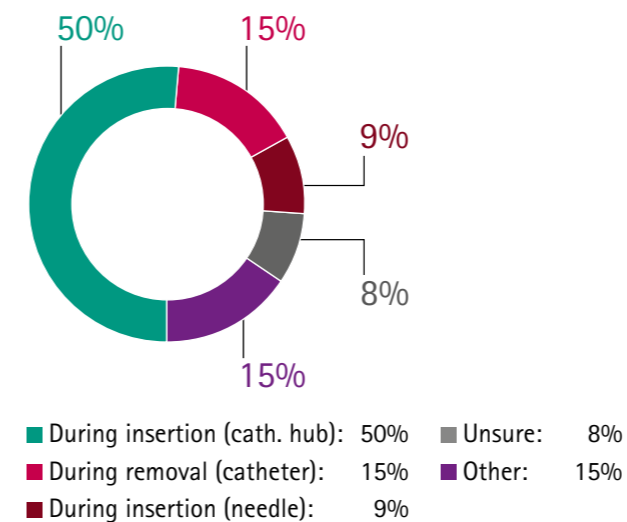
Especially during insertion, handling and disposal of contaminated materials, medical personnel run the risk of unintentional contact with blood. The risk is further increased when catheter placement is performed on an uncooperative, noncompliant or combative patient.<sup>1</sup>

### 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?<sup>4</sup>

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



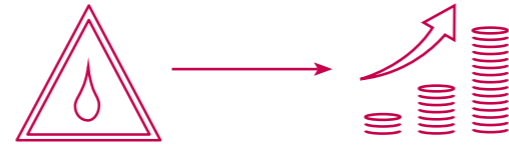
# CONSEQUENCES

Unexpected blood spillage costs time and money

Coming in contact with blood interrupts the clinical process and is therefore a major inconvenience for the medical staff and the 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 exchanged, and skin disinfected.<sup>1</sup> This requires additional time that is usually not available in the daily hospital routine.

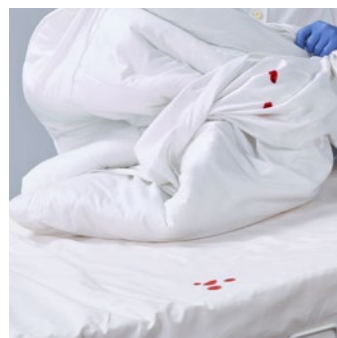
The result is a higher stress level and dissatisfaction among staff, but also a lack of understanding among patients, which in turn can affect the hospital's reputation. The additional tasks resulting from a blood exposure are subsequently lacking in patient care and support.

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.**<sup>1</sup>

## AVERAGE TIMES FOR CLEANING PROCEDURES:



**4 Minutes**

Changing bed linen<sup>1</sup>



**2 Minutes**

Cleaning the workplace<sup>5</sup>



**1.5 Minutes**

Washing and disinfecting hands<sup>7</sup>



**1.5 Minutes**

Changing the dressing<sup>8</sup>

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<sup>2</sup> x 9 min for cleaning (bed linen, work place, washing hands, dressing)<sup>1,5,7,8</sup>

\*\* Assumption based on: 1,000 conventional IV catheters x 74% cases of blood exposure during (dis-)connections<sup>2</sup> x 1.5 min for dressing change<sup>8</sup>

\* Based on 700 bed hospital with 25,000 patients p.a. and 1.37 insertion attempts per patient<sup>6</sup>

# PREVENTIVE STRATEGY

Use of blood-control IV catheters

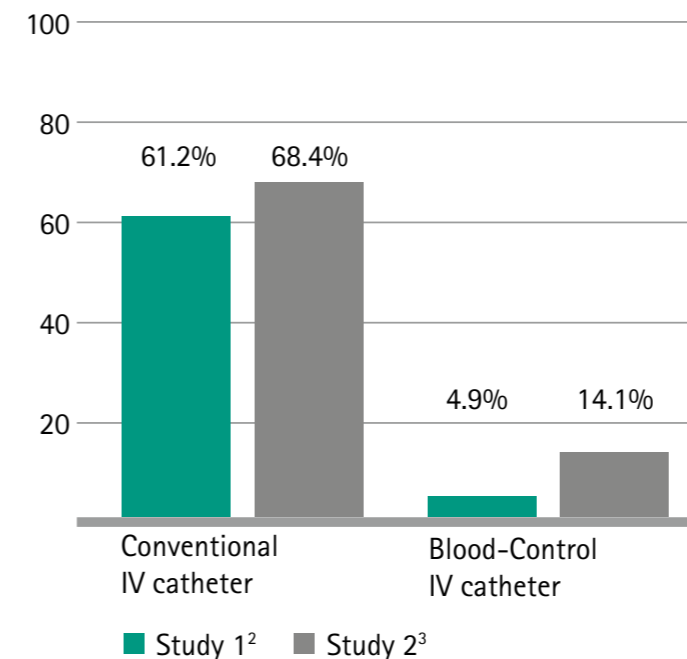
Studies have shown that the use of blood-control IV catheters can not only reduce the risk of blood exposure and related costs (e.g. clean-up material), but also improve the overall process efficiency:

The blood leakage incidence during IV catheter placement can be significantly reduced when using a blood-control IV catheter.<sup>2,3</sup>

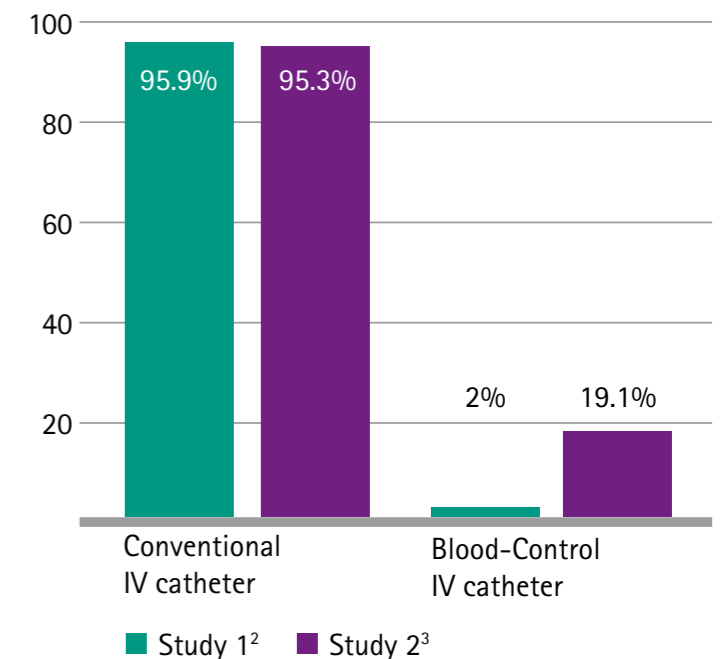
Blood-control IV catheters control the flow of blood coming out of the catheter hub. Depending on the device type, this can work only once or multiple times.

Due to the integrated blood-control feature, clinicians 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 %)

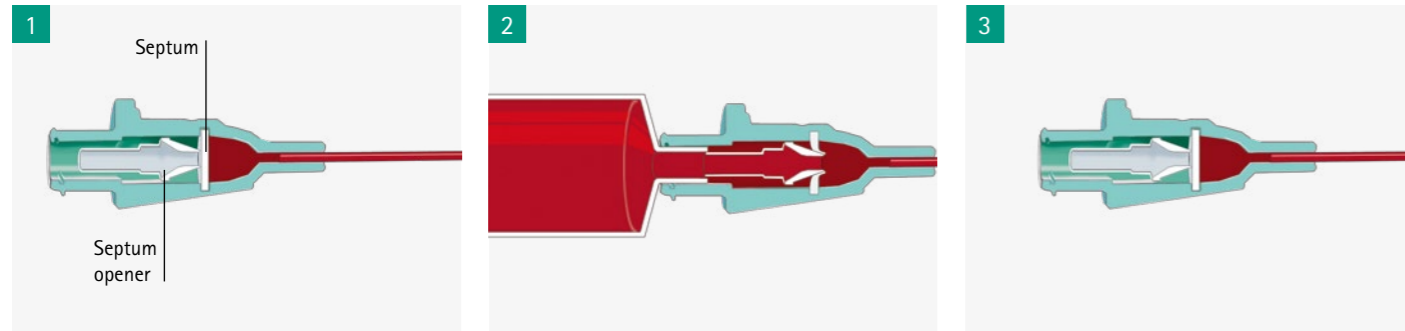


# INTROCAN SAFETY® 3

Closed IV catheter with multi-access blood control septum

## MULTI-ACCESS BLOOD CONTROL SEPTUM

The multi-access blood control septum of Introcan Safety® 3 controls the flow of blood coming out of the catheter hub. The blood control feature works multiple times, thus reducing contact with patient blood along the entire IV process.



### 1 Septum closed

- Septum closes when the needle is removed from the catheter hub.
- The septum opener is therefore moved behind the septum and blood flow is controlled.

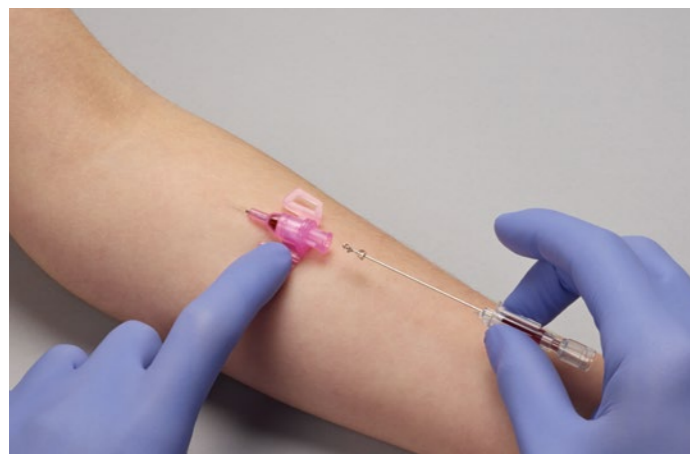
### 2 Septum opened

- Septum opens by attaching a Luer connection (syringe, IV line, extension line, blood collection device, etc.) to the back of the catheter hub.
- The Luer connection pushes the septum opener, opening the septum completely. Flow rate results are not affected.

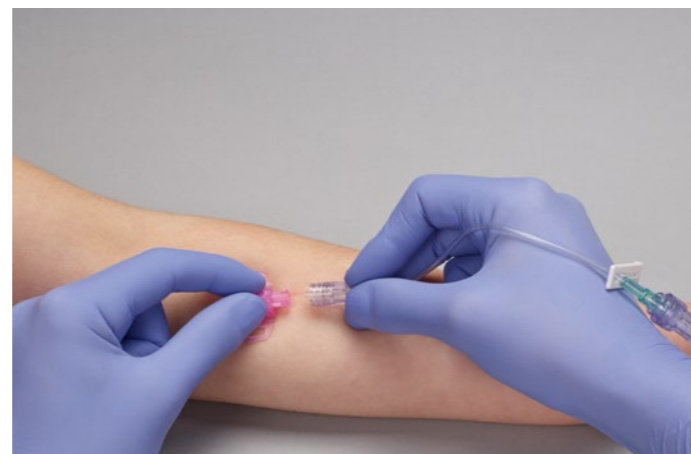
### 3 Septum closed

- Septum closes when the connecting device is removed from the catheter hub.
- The septum opener is therefore moved behind the septum and blood flow is controlled again.

Introcan Safety® 3 is B. Braun's closed IV catheter with a multi-access blood control septum, developed to make IV access safer and more comfortable for both clinicians and patients.



The safety mechanism of Introcan Safety® 3 is activated when the needle is removed. As septum closes when needle is removed, need for vein compression is reduced.



Since the septum is closed, blood flow is controlled – even when connecting and disconnecting a Luer device.

# INTROCAN SAFETY® 3

Advantages at a glance

Introcan Safety® 3, as a blood-controlling IV catheter, controls the flow of blood coming out of catheter hub. It reduces both blood exposure during insertion and the need for vein compression, can save cleaning time and supplies, and shortens the time required for IV catheter placement.

Overall, Introcan Safety® 3 makes the entire process of IV cannulation easier and more efficient.<sup>2,9</sup>



## MULTI-ACCESS BLOOD CONTROL SEPTUM

- helps to prevent blood exposure during catheter insertion and while disconnecting a device from the catheter hub
- reduces the need for vein compression<sup>2,9</sup>
- improves process efficiency
- supports a reduction in the overall duration of IV catheter placement<sup>2</sup>
- helps to reduce cleaning time and associated costs
- works multiple times

## PRODUCT ORDERING INFORMATION

Gauge	(inch)	Catheter Length (mm)	Catheter ø (mm)	Flow Rate (ml/min)	Flow Rate (ml/hour)	Article Code (EU)
24	3/4	19	0.7	22	1320	4251127-01
22	1	25	0.9	35	2100	4251128-01
20	1	25	1.1	65	3900	4251129-01
20	1 1/4	32	1.1	60	3600	4251130-01
20	2	50	1.1	55	3300	4251137-01
18	1 1/4	32	1.3	105	6300	4251131-01
18	1 3/4	45	1.3	100	6000	4251132-01
16	1 1/4	32	1.7	195	11700	4251136-01
16	2	50	1.7	185	11100	4251133-01
14	1 1/4	32	2.2	325	19500	4251135-01
14	2	50	2.2	310	18600	4251134-01

Sales units: 200 pcs. (4 boxes x 50 pcs.)

Not made with DEHP, Latex/Natural Rubber, PVC.

# REFERENCES

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