

# IV catheter innovation improves care quality

Good catheter design can significantly reduce risks and complications, while ensuring compliance with national guidelines.

The likelihood of being admitted to hospital and needing an Intra-Venous (IV) Peripheral Cannula is estimated between 60% to 90%<sup>1</sup> for patients. Therefore, most of us, if needing hospital treatment, may have a peripheral cannula inserted. But, as clinicians are aware, there are risks associated with IV cannulae. The procedure, while seemingly straightforward, carries the potential for complications, including catheter-related blood stream infection (CRBSI), phlebitis, extravasation, infiltration, haematoma and occlusion.

BD considers all angles of patient safety at every stage of the cannulation procedure, from insertion to removal and everything in-between, through the breadth of products offered and our associates' expert support of the vascular access healthcare professional. BD Vascular Access Management is an integrated approach to vascular access device (VAD) selection, site preparation, placement, care and maintenance built around evidence based practice.

Good catheter design can significantly reduce risks and complications: ports of ported-peripheral cannula, for example, have been identified as potential entry points for microorganisms,<sup>2</sup> prompting the development of national guidance, aimed at improving care quality. EPIC3<sup>3</sup> (2014) guidelines recommend the use of polyurethane or fluorinated polymer catheters and both EPIC3 and Royal College of Nursing<sup>4</sup> (2016) state that it is essential to use a catheter with the minimum required ports or lumens essential for management of the patient.

CRBSI is not the only concern, however. Rates of intravenous peripheral cannula insertion failure and unscheduled restarts remain unacceptably high, ranging from 33% to 69%.<sup>5</sup> A market survey revealed that gaining vascular access, conducting a successful cannulation, and preventing infection were among clinicians' top concerns.<sup>6</sup> Understandably so – indeed, which other industry would accept such a failure rate?

To help acute care hospitals comply with

the latest guidance, improve clinicians' confidence, and enhance safety – for both patients and staff – BD has recently launched an innovative range of non-ported, passive safety IV peripheral cannulas: BD Cathena™, suitable for adult patients and Neoflon Pro Safety™, designed specifically to reduce the risk of complications in vulnerable neonatal and paediatric patients.

Vascular access can prove particularly challenging in some patient groups – such as the elderly, young children and neonates – which can be stressful for both the patient and the clinician. In addition, with few options on the market for neonatal and paediatric patients featuring safety mechanisms, clinicians have previously relied on non-safety peripheral cannula that are less than optimal and increase the risk of injury to healthcare staff.

Improved peripheral cannula design can tackle these concerns by facilitating optimal technique, reducing repeated attempts at cannulation, and minimising the potential ingress of pathogens.

## Reasons to make a change

Hospitals across the UK and Ireland are choosing the BD portfolio of non-ported devices in a bid to reduce infection rates and comply with best practice guidelines. To help clinicians better understand how catheter



design can make a difference, BD provides below the answers to some commonly asked questions:

## How can BD Cathena increase clinician's confidence during cannulation and improve technique?

BD Cathena safety IV peripheral cannulae incorporate a triple flash confirmation system for accuracy and control, which can reduce the chance of a painful missed insertion. The BD Instaflash™ notched needle technology, visible in the cannula, provides the first and immediate confirmation of vein entry. Secondary confirmation occurs when blood appears in the flash chamber after lowering and advancing the cannula, re-assuring the clinician that the cannula is still in the vein. The third flashback occurs when blood flows into the coloured cannula hub as the needle is removed, providing another point of confirmation. This is particularly beneficial during challenging insertions and increases the confidence of the practitioner.

BD Cathena is designed ergonomically to work with the clinician's natural movement and insertion technique. Supplied with or without wings, to meet the clinician's preference grip, the device features a primary tab and secondary anti-rotation tab, which provides tactile engagement during insertion.

By providing a clear confirmation of successful insertion and potential to improve first stick success, BD Cathena can reduce complications associated with skin and vein damage, caused by repeated insertion attempts, while preventing delays in medication or therapy delivery.

### How can BD Cathena help reduce infection risk for patients and staff?

The design of BD Cathena not only eliminates the potential infection risk associated with ports, but also reduces accidental blood exposure for patients and healthcare workers through the unique BD Multiguard technology. Indeed, this multi-use blood control technology helps prevent blood leakages, thereby decreasing the associated risk of exposure to blood borne pathogens. A passive needle shield also automatically covers the needle after use, protecting healthcare workers against needle-stick injuries and exposure to blood.

### How can BD Cathena improve the overall patient experience?

BD Vialon™ biomaterial softens and becomes more pliable while in the vein, which can lead to a reduced number of additional devices required and an enhanced patient experience. The use of this highly flexible polymer material makes the catheter easier to place and advance on a wider cross-section of patients,<sup>7,8</sup> with the potential to reduce risk of vein wall penetration. The combination of the ultra-smooth surface and lubrication process also helps reduce the risk of mechanical phlebitis and infiltration, while fewer restarts due to kinking is a further advantage.<sup>7,9</sup> Ultimately, this design increases dwell time<sup>7</sup> and helps avoid the pain caused by repeated peripheral cannula placement thus improving the patient's experience.

### How can the solution reduce costs and improve efficiency for your hospital?

BD Cathena has the potential to deliver significant time savings for busy healthcare professionals. The average time to clean up a blood leakage is 2.5 minutes.<sup>10</sup> However, as BD Multiguard™ technology decreases such leakages, the device has the potential to save valuable time for patient care. This is in addition to a 29% reduction in the time taken to place the cannula<sup>11</sup> – with rates of intravenous catheter insertion failure and unscheduled restarts reported to range from 33% to 69%, the efficiencies created can be significant.<sup>12</sup>

Hospitals have a duty of care to take action to protect staff and patients from needle-stick injury, but there are also financial implications associated with time off work and increased costs of treating infection. This is in addition to potential litigation and loss of reputation. The mean aggregate (direct and indirect) costs of one needle-stick injury is estimated to cost around £596 (range £159–£1,350),<sup>13</sup> while the cost savings from managing fewer needle-stick injuries can generate a five-year overall saving of £46,494.<sup>14,15</sup> This makes imperative the adoption of safety devices such as BD Cathena, with its compact passive safety mechanism offering a protection against needle-stick injuries.

Ultimately, both BD Cathena and Neoflon



## Protecting vulnerable neonatal patients

Neonatal patients have immature immune systems, making them particularly vulnerable in the event of infection. The non-port design of Neoflon Pro Safety helps protect the catheter from ingress of microorganisms – reducing the risk of potentially devastating catheter-related bloodstream infections. The 24-gauge, safety shielded IV cannula is specially designed for smaller, fragile veins – making the challenging task of insertion much easier and less stressful for both patients and clinicians. First attempts at cannula insertion fails in 24-54% of children.<sup>16</sup> However, Neoflon Pro Safety device shares many of the innovative design features incorporated in the BD Cathena range that help achieve successful vein entry, first time, as well as improving safety. These include:

- BD Instaflash™ notched needle technology,

for immediate confirmation of vein entry.

- Anti-rotation tab, to enhance cannulation control and provide tactile feedback during insertion.
- BD Vialon biomaterial, making it easier to insert and place the cannula. This also ensures longer dwell times and reduces the risk of mechanical phlebitis by up to 50%.<sup>17</sup>
- BD Multiguard technology to decrease blood leakages.
- Passive needle shield technology, which automatically covers the needle after cannulation, protecting against needle-stick injuries.

At hospitals where the device is now in use, clinicians have commented that the ease in which Neoflon Pro Safety is inserted has reduced unnecessary distress to this vulnerable population of patients.

Pro Safety will help hospitals reduce rates of catheter-related complications, improve safety for staff and patients, increase clinicians' confidence in performing cannulation, while answering national guidelines requirements on minimum number of ports and lumen.

### References

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