Reducing Risks of Misconnections in Regional Anesthesia

Connecting what belongs together
Medical device connectors for Neuraxial & Regional Anesthesia applications are changing to meet international design standards.

Medication errors during Regional Anesthesia procedures
The universally compatible Luer connector has been identified as a key element in 'wrong route' medication errors. Luer connectors are widely used for delivery of infusions. Literature shows that any patient having multiple access systems in place are exposed to higher risks of misconnections.¹

The increasing sensitivity to medication errors in clinical settings is visible in an increasing number of publications on this subject in Pubmed between 2000 and 2014 (Fig. 1).

Enhancing patient safety with NRFit®
To reduce the risk of wrong route medication errors the International Organization for Standardization (ISO) has developed standards for small-bore connectors, one being in the field of Neuraxial and Regional Anesthesia (ISO 80369-6). The name that will be used to identify devices that comply with the ISO 80369-6 standard is:

ISO 80369-6 in detail
The ISO Standard 'specifies requirements for small-bore connectors intended to be used for connections in Neuraxial applications. Neuraxial applications involve the use of medical devices intended to administer medications to neuraxial sites, wound infiltration anesthesia delivery, and other Regional Anesthesia procedures or to monitor or remove cerebro-spinal fluid for therapeutic or diagnostic purposes.'²
The International Organization for Standardization (ISO) has identified several medical application areas for which an ISO standard will be developed. These standards are part of the ISO 80369 series. Each standard will provide design and performance specifications for the specific connectors.²
Observation, listening, understanding. To find solutions that fit into everyday clinical life, B. Braun conducts a vivid dialog with customers. Learning the importance of clear structures, we identified five major steps that represent customary therapy processes. Each of these steps is mapped with aligned products that are dedicated towards improving comfort and achieving a higher level of safety for users and for patients.

Regional Anesthesia products with NRFit® connector
In line with the ISO Standard for Neuraxial and Regional Anesthesia devices, B. Braun has developed a comprehensive portfolio with NRFit® connectors for the corresponding process steps:

- **PATIENT ACCESS**: Spinal, epidural and PNB needles and LOR syringes
- **PREPARATION**: Filter needles, straws and syringes
- **APPLICATION**: Catheter, syringes, filter, catheter connector, pump disposables
B. Braun, as a true *System Partner*, helps to stay on top of evolving standards and their realization across multiple stakeholders, e.g. nurses, pharmacists and anesthetists. With access to our comprehensive product portfolio in Pain Therapy and through constructive dialogue, our partners benefit from B. Braun’s know-how and expertise.
Therapeutic and anesthetic decisions depend upon a number of factors, including the type and duration of the surgical intervention, patient status and selected postoperative patient management approaches.

Regional Anesthesia can be divided into central and peripheral techniques. When a local anesthetic agent is used next to the spinal cord, this is referred to as Neuraxial Anesthesia. Neuraxial methods include Spinal and Epidural Anesthesia.

**Pencan®** spinal needles have an atraumatic Pencil point bevel, which helps reduce PDPH. They are available in adult and pediatric sizes. A prism included in the spinal needle hub, supports identification of CSF flashback.

**Spinocan®** spinal needles with Quincke bevel provide sharpness for low puncture force. A prism included in the spinal needle hub, supports identification of CSF flashback.

**Perican®** epidural needles with Tuohy bevel are available in different sizes. Their polished inner bevel edge helps to reduce the risk of catheter shearing.
Epican® Paed Caudal needles with 45° Crawford type bevel for caudal Pediatric Anesthesia come in three different needle sizes with adjusted depth markings.

Perifix® LOR is a dedicated device for the loss of resistance technique in Epidural Anesthesia. Suitable for air and saline application. Its parabolic graduation helps to differentiate it from conventional syringes.

Perifix® catheters for Epidural Anesthesia are available in different versions and types – Standard, Soft Tip and ONE.

Filters provide an additional degree of safety and control to reduce the risk of bacterial infections. The design of the Perifix® catheter connector and its ‘click and ready’ mechanism ensure easy use in daily practice.
Peripheral Nerve Blocks with NRfit®
Connecting what belongs together

Peripheral and Plexus Nerve Blocks are one of the segments of Regional Anesthesia, where a local anesthetic agent is used next to a nerve to provide sensory and motor blockades. Peripheral nerve blocks can be employed for Anesthesia and for Postoperative Analgesia in order to support early patient mobilization and rehabilitation. PNBs are also used in combination with other forms of Anesthesia and where volatile anesthetics are contraindicated.

Products with NRfit® connector

PATIENT ACCESS: SINGLE SHOT PNB PRODUCTS

Stimuplex® Ultra 360® needles

Stimuplex® Ultra 360® is designed to perform an ultrasound guided peripheral nerve block and nerve stimulation. Due to high visibility of the X-pattern, the needle is easy to visualize under ultrasound with few artefacts.

Ultraplex® 360 needles

Ultraplex® 360 is a non-stimulating ultrasound needle, equipped with improved product properties to perform ultrasound guided peripheral nerve blocks, when nerve stimulation is not indicated (e.g. transversus abdominalplane block).

Stimuplex® A

Stimuplex® A is a single shot unipolar needle, providing the basic nerve stimulation-supported anesthesia for short-term interventions or additional single nerve blocks in continuous techniques.
Contiplex® S Ultra 360® needles

Contiplex® S Ultra 360® is a continuous technique needle with a 20° facet bevel, designed to perform ultrasound guided peripheral nerve blocks in combination with nerve stimulation.

Contiplex® Tuohy Ultra 360® needles

Contiplex® Tuohy Ultra 360® is a continuous technique needle with Tuohy bevel, designed to perform ultrasound guided peripheral nerve blocks in combination with nerve stimulation.

Contiplex® C

Contiplex® C is a patented catheter placement system with the innovative catheter-over-needle design. It is designed to help overcome the limitations associated with peripheral catheters, such as complexity of catheter placement, leakage and catheter displacement.
Sterifix® filter straws for Regional Anesthesia with a 5 μm integrated filter allow for the withdrawal of solutions whilst filtering particles.

Equipped with a 5 μm filter, Sterifix® filter needle allows for filtering particles during the injection or the withdrawal of medication for Regional Anesthesia.

Perifix® filters for Regional Anesthesia are pressure resistant up to 7 bar. In combination with Perifix® PinPad, a self-adhesive fixation device, they can easily be attached to the patient’s skin.

Perifix® catheter connectors are available in two sizes (19G and 20/24G). A viewing window allows for catheter insertion control to ensure successful connection.
Omnifix® 3-piece syringes are available in a broad portfolio. 3–20 ml lock versions can be used in combination with compatible syringe pumps.

Omnifix® 50 ml syringes with NRFit® lock connector can be used in combination with compatible syringe pumps.

The Original Perfusor® Line equipped with the NRFit® connector enables compatibility to NRFit® syringes for pump applications. The translucent yellow tubes help to visually differentiate from other lines.

Dedicated Infusomat® Space Lines have a piercing spike and an NRFit® patient connector. The translucent yellow tubes help to visually differentiate from other lines.

The method of drug application depends on the chosen technique of anesthesia and on the selected post-OP pain management approach. Different options require dedicated systems. Whether the chosen method of delivery is a bolus or a continuous application, the variety of B. Braun’s portfolio ensures flexibility.

The yellow product color coding of syringes and lines helps to visually differentiate between regular and NRFit® dedicated equipment.

Dedicated pump disposables with NRFit® connectors are pressure resistant and suitable for use with compatible electronic pumps.

Products with NRFit® connector

APPLICATION: SYRINGES AND PUMP DISPOSABLES

Omnifix® 1–20 ml

Omnifix® 50 ml

Original Perfusor® Line

Infusomat® Space Lines

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LITERATURE

3. For information please visit: https://www.iso.org/standard/50734.html