



# Reducing Risks of Misconnections in Regional Anesthesia

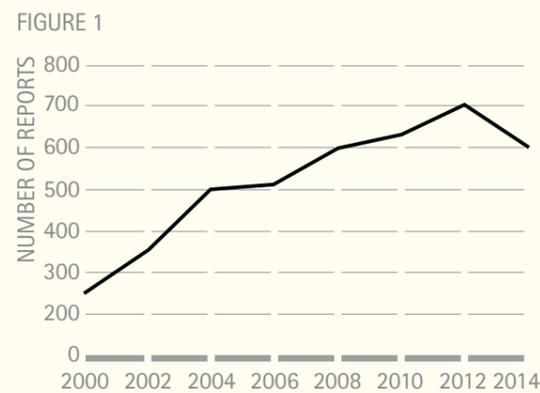
Connecting what belongs together

# 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.<sup>1</sup>

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®

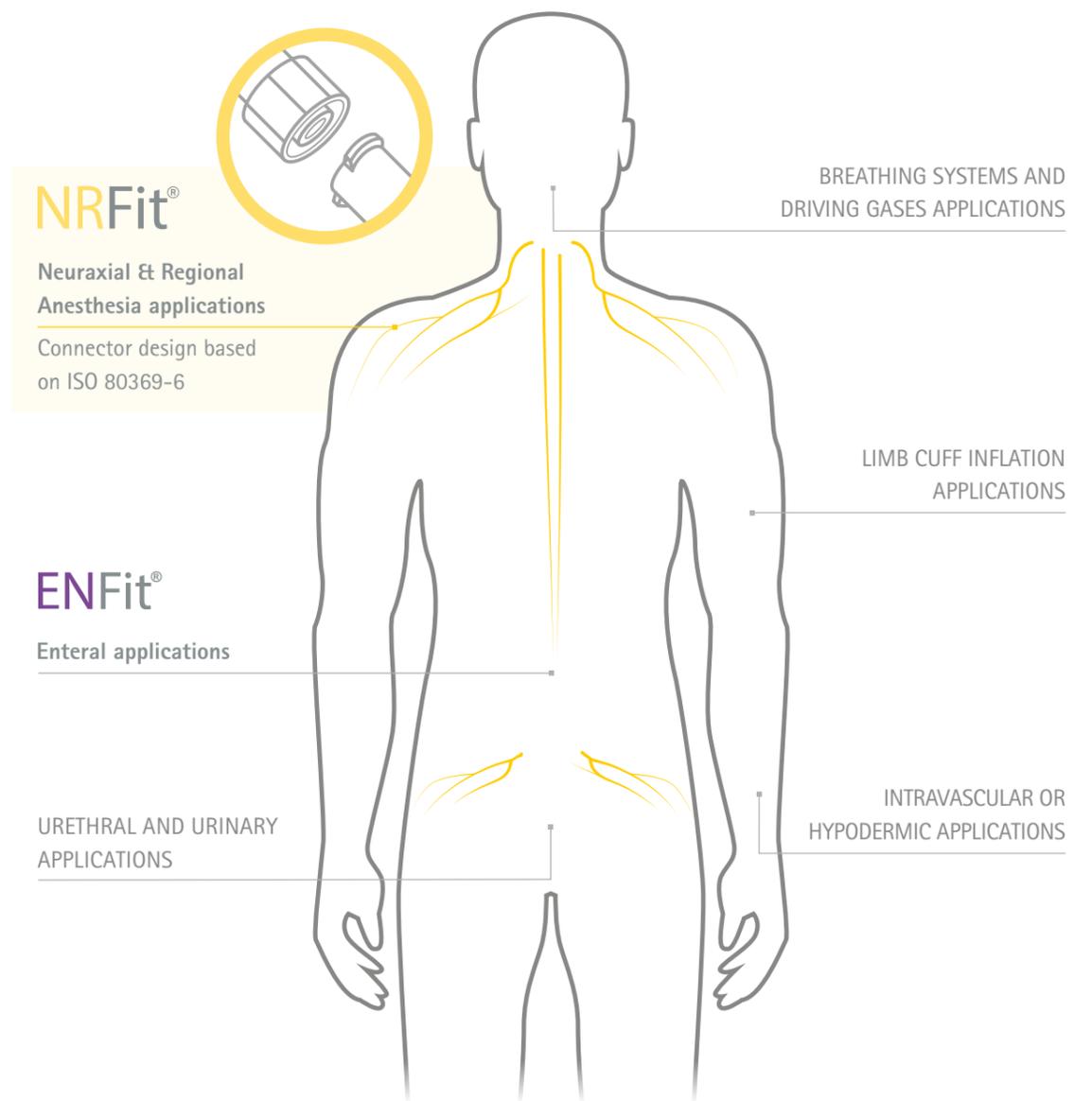
To reduce the risk of wrong route medication errors the International Organization for Standardization (ISO) has developed standards for small-bore connectors, one being in the field of Neuraxial and Regional Anesthesia (ISO 80369-6). The name that will be used to identify devices that comply with the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

**NRFit®**

## 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.'<sup>2</sup>

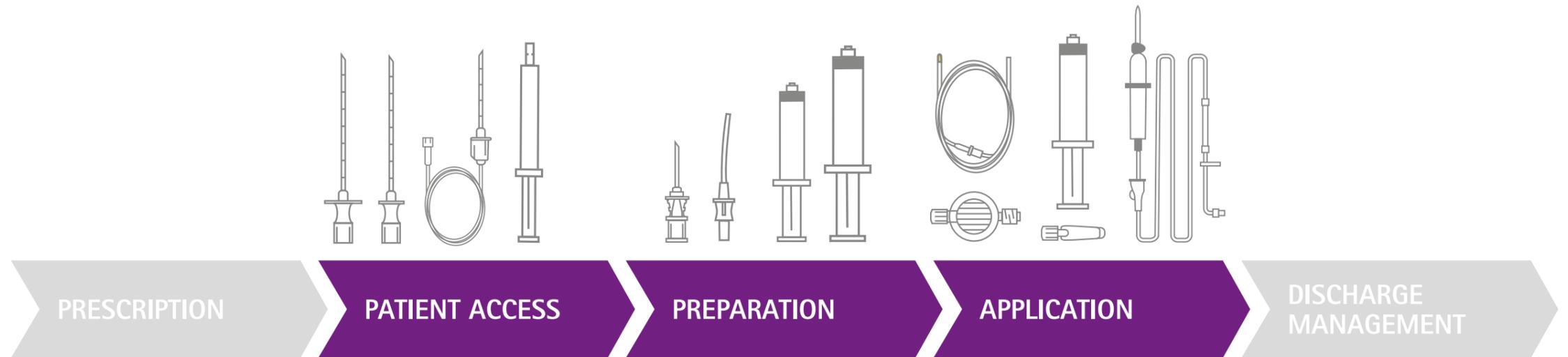
» The International Organization for Standardization (ISO) has identified several medical application areas for which an ISO standard will be developed. These standards are part of the ISO 80369 series. Each standard will provide design and performance specifications for the specific connectors.<sup>3</sup>



# Connector Changes in Regional Anesthesia

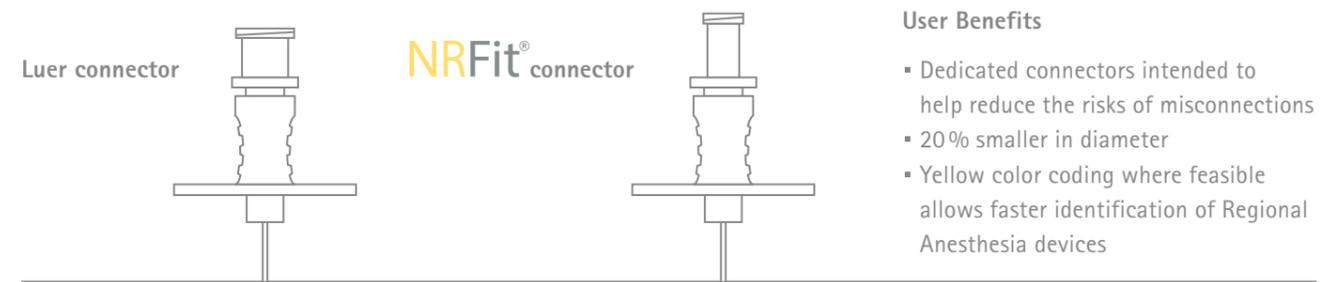
And how it impacts your working process

Observe. Listen. Understand. 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.

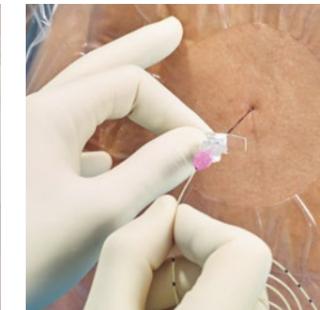
# Neuraxial Anesthesia with NRFit®

Connecting what belongs together



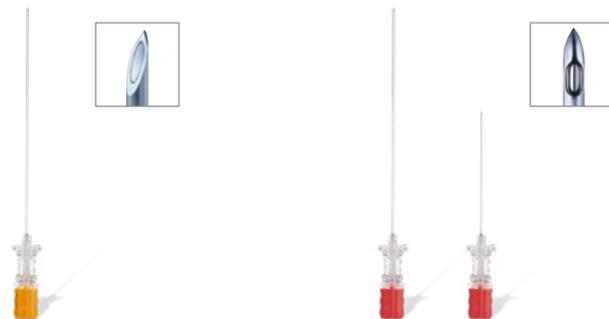
Therapeutic and anesthetic decisions depend upon a number of factors, including the type and duration of the surgical intervention, patient status and selected postoperative patient management approaches.

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.



## Products with NRFit® connector

### PATIENT ACCESS: SPINAL ANESTHESIA PRODUCTS



Spinocan®

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.

Pencan® and Pencan® Paed

Pencan® spinal needles have an atraumatic Pencil point bevel, which helps reduce PDPH.<sup>4</sup> They are available in adult and pediatric sizes. A prism included in the spinal needle hub, supports identification of CSF flashback.

### PATIENT ACCESS: EPIDURAL ANESTHESIA PRODUCTS



Perican®

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

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 syringe

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.

### APPLICATION: EPIDURAL ANESTHESIA PRODUCTS



Perifix® catheters

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



Perifix® filter and Perifix® catheter connector

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.

PRESCRIPTION

PATIENT ACCESS

PREPARATION

APPLICATION

DISCHARGE MANAGEMENT

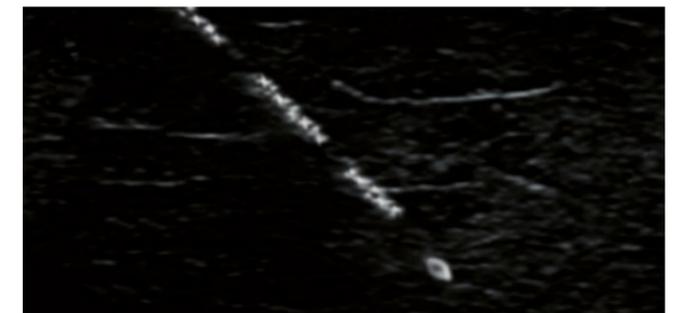
# Peripheral Nerve Blocks with NRFit®

Connecting what belongs together



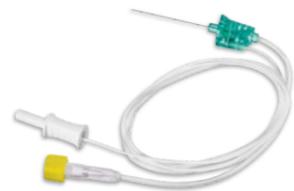
Peripheral and Plexus Nerve Blocks are one of the segments of Regional Anesthesia, where a local anesthetic agent is used next to a nerve to provide sensory and motor blockades.

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).

### PATIENT ACCESS: CONTINUOUS PNB PRODUCTS



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.

PRESCRIPTION

PATIENT ACCESS

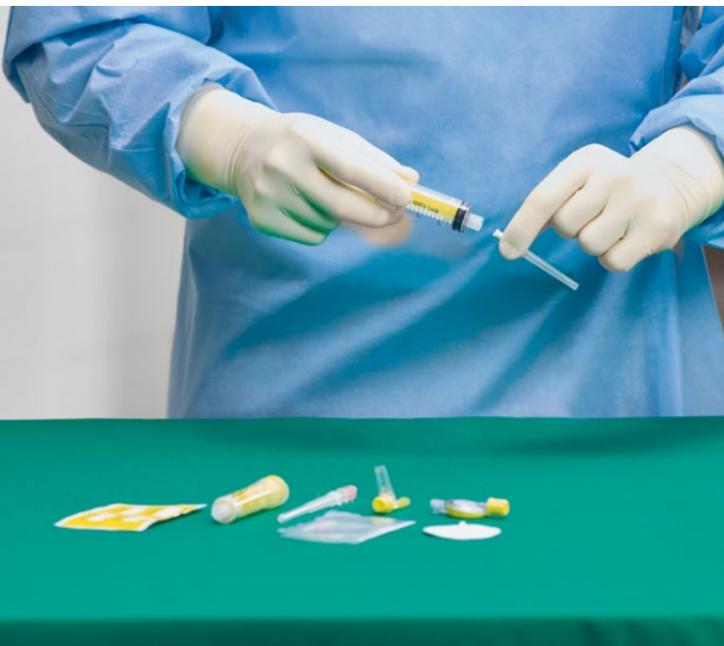
PREPARATION

APPLICATION

DISCHARGE MANAGEMENT

# Regional Anesthesia Accessories and Complementary Portfolio

Connecting what belongs together



Preparation is a fundamental and irreplaceable part of health care practices. B. Braun preparation devices with NRFit® connectors are designed to reduce risks of wrong route medication errors and particulate contamination from the very beginning in Neuraxial and Regional Anesthesia procedures.



The method of drug application depends on the chosen technique of anesthesia and on the selected post-operative 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

PREPARATION: DRAWING-UP DEVICES, FILTER AND CONNECTOR



Sterifix® filter needle

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



Sterifix® filter straws

Sterifix® filter straws for Regional Anesthesia with a 5 µm integrated filter allow for the withdrawal of solutions whilst filtering particles.



Perifix® filter

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 connector

Perifix® catheter connectors are available in two sizes (19G and 20/24G). A viewing window allows for catheter insertion control to ensure successful connection.

## Products with NRFit® connector

APPLICATION: SYRINGES AND PUMP DISPOSABLES



NRFit® syringe caps and NRFit® stoppers

NRFit® syringe caps are a single sterile solution for storage and/or transport alongside our Omnifix® portfolio. NRFit® stoppers are there to close our NRFit® filter or Perifix® catheter connector.



Omnifix® 1-50 ml

Omnifix® 3-piece syringes are available in a broad portfolio NRFit® Slip and Lock. 3-20 ml Lock versions and 50 ml syringes with NRFit® Lock connector can be used in combination with compatible syringe pumps.



Original Perfusor® Line

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.



Infusomat® Space 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.

PRESCRIPTION

PATIENT ACCESS

PREPARATION

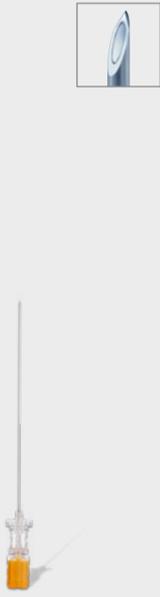
APPLICATION

DISCHARGE MANAGEMENT

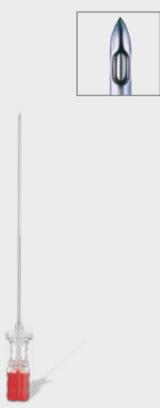
# Regional Anesthesia Products with NRFit®

## Product specifications

### SPINAL NEEDLES

| Spinocan®   | Color code  | Size (G)/ Length (inch) | ø/Length (mm) | Units per box | Code no. (REF) |             |  |
|---|---|-------------------------|---------------|---------------|----------------|-------------|--|
|   |    | 29 x 3 1/2"             | 0.35 x 88     | 25            | 4501900N-01 *  |             |  |
|   |    | 27 x 3 1/2"             | 0.40 x 88     |               | 4503902N-01    |             |  |
|   |    | 26 x 3 1/2"             | 0.45 x 88     |               | 4502906N-01    |             |  |
|   |    | 25 x 3"                 | 0.50 x 75     |               | 4505751N-01    |             |  |
|   |    | 25 x 3 1/2"             | 0.50 x 88     |               | 4505905N-01    |             |  |
|   |    | 22 x 1 1/2"             | 0.70 x 40     |               | 4507401N-01    |             |  |
|   |    | 22 x 3"                 | 0.70 x 75     |               | 4507754N-01    |             |  |
|   |    | 22 x 3 1/2"             | 0.70 x 88     |               | 4507908N-01    |             |  |
|   |    | 20 x 3"                 | 0.90 x 75     |               | 4509757N-01    |             |  |
|   |    | 20 x 3 1/2"             | 0.90 x 88     |               | 4509900N-01    |             |  |
|   |    | 19 x 1 1/2"             | 1.10 x 40     |               | 4501144N-01    |             |  |
|   |    | 19 x 3 1/2"             | 1.10 x 88     |               | 4501195N-01    |             |  |
|   |    | 18 x 3"                 | 1.30 x 75     |               | 4501373N-01    |             |  |
|   |   | 18 x 3 1/2"             | 1.30 x 88     |               | 4501390N-01    |             |  |
|   | <b>Long Length</b>  |                         |               |               |                |             |  |
|   |  | 29 x 4 3/4"             | 0.35 x 120    |               | 25             | 4501918N-01 |  |
|   |  | 27 x 4 3/4"             | 0.40 x 120    |               |                | 4502140N-01 |  |
|   |  | 26 x 4 3/4"             | 0.45 x 120    |               |                | 4504917N-01 |  |
|  | 25 x 4 3/4"   | 0.50 x 120              | 4505913N-01   |               |                |             |  |
|  | 22 x 4 3/4"   | 0.70 x 120              | 4506090N-01   |               |                |             |  |
|  | 22 x 6"   | 0.70 x 150              | 4506095N-01   |               |                |             |  |

\*With Spinal Introducer Needle

| Pencan®   | Color code  | Size (G)/ Length (inch) | ø/Length (mm) | Units per box | Code no. (REF) |               |  |
|---|---|-------------------------|---------------|---------------|----------------|---------------|--|
|  |  | 27 x 3 1/2"             | 0.40 x 88     | 25            | 4502027N-01    |               |  |
|   |   |                         |               |               | 4502051N-01 *  |               |  |
|   |  | 25 x 3 1/2"             | 0.50 x 88     |               | 4502019N-01    |               |  |
|   |   |                         |               |               | 4502043N-01 *  |               |  |
|   |  | 22 x 3 1/2"             | 0.70 x 88     |               | 4502035N-01    |               |  |
|   | <b>Long Length</b>  |                         |               |               |                |               |  |
|   |  | 27 x 4"                 | 0.40 x 103    |               | 25             | 4502124N-01 * |  |
|   |  | 27 x 4 3/4"             | 0.40 x 120    |               |                | 4502132N-01   |  |
|   |  | 25 x 4"                 | 0.50 x 103    |               |                | 4502116N-01 * |  |
|   |  | 25 x 4 3/4"             | 0.50 x 120    |               |                | 4502120N-01   |  |
|  | 25 x 6.1"   | 0.50 x 156              | 333877N-01    |               |                |               |  |

\*With Spinal Introducer Needle

### SPINAL NEEDLES

| Pencan® Paed  | Color code  | Size (G)/ Length (inch) | ø/Length (mm) | Units per box | Code no. (REF) |
|---|---|-------------------------|---------------|---------------|----------------|
|  |  | 27 x 2"                 | 0.40 x 50     | 25            | 4502175N-01    |
|   |  | 25 x 1"                 | 0.50 x 25     |               | 4502167N-01    |
|   |  | 25 x 2"                 | 0.50 x 50     |               | 4502159N-01    |

### INTRODUCER

| Spinal Introducer Needles (for Spinocan® and Pencan®)                               | Color code  | Size (G)/ Length (inch) | ø/Length (mm) | Units per box | Code no. (REF) |
|---|---|-------------------------|---------------|---------------|----------------|
|  | <b>For Spinal Needles 29 G and 27 G</b>   |                         |               |               |                |
|   |  | 22 x 1 3/8"             | 0.70 x 35     | 25            | 4500059        |
|   | <b>For Spinal Needles 26 G and 25 G</b>   |                         |               |               |                |
|   |  | 20 x 1 3/8"             | 0.90 x 35     | 25            | 4505000        |

### EPIDURAL NEEDLES

| Perican®  | Color code  | Size (G)/ Length (inch) | ø/Length (mm) | Units per box | Code no. (REF) |  |
|---|---|-------------------------|---------------|---------------|----------------|--|
|  |  | 18 x 3 1/4"             | 1.30 x 80     | 25            | 4512383N-01    |  |
|   |  | 16 x 3 1/4"             | 1.70 x 80     |               | 4512782N-01    |  |
|   | <b>Long Length</b>  |                         |               |               |                |  |
|   |  | 18 x 4 3/4"             | 1.30 x 120    | 25            | 4512453N-01    |  |
|   |  | 18 x 6"                 | 1.30 x 150    |               | 4512200N-01    |  |
|   |  | 16 x 4 3/4"             | 1.70 x 120    |               | 4512785N-01    |  |
|   |  | 16 x 6"                 | 1.70 x 150    |               | 4512784N-01    |  |

| Perican® Paed   | Color code  | Size (G)/ Length (inch) | ø/Length (mm) | Units per box | Code no. (REF) |
|---|---|-------------------------|---------------|---------------|----------------|
|  |  | 22 x 2"                 | 0.73 x 50     | 25            | 4502078N-01    |
|   |  | 20 x 2"                 | 0.90 x 50     |               | 4502094N-01    |
|   |  | 18 x 2"                 | 1.30 x 50     |               | 4502302N-01    |

| Epican® Paed Caudal   | Color code  | Size (G)/ Length (inch) | ø/Length (mm) | Units per box | Code no. (REF) |
|---|---|-------------------------|---------------|---------------|----------------|
|  |  | 25 x 1 1/8"             | 0.53 x 30     | 25            | 4502400N-01    |
|   |  | 22 x 1 3/8"             | 0.73 x 35     |               | 4502418N-01    |
|   |  | 20 x 2"                 | 0.90 x 50     |               | 4502426N-01    |

# Regional Anesthesia Products with NRFit®

## Product specifications

### EPIDURAL CATHETERS

| Perifix® catheter  | Catheter ø outer/inner/<br>Length (mm) (G) | Suitable for Perican®<br>Size (G) | Units<br>per box | Code no.<br>(REF) |
|--|--|-----------------------------------|------------------|-------------------|
| <b>Perifix® Standard catheter (with 3 lateral eyes)</b>  |  |                                   |                  |                   |
|  | 1.05/0.60/1000 (19)                        | 16                                | 25               | 4513258N-01       |
|  | 0.85/0.45/1000 (20)                        | 18                                |                  | 4513150N-01       |
| <b>Perifix® Standard catheter (with central opening)</b> |  |                                   |                  |                   |
|  | 0.85/0.45/1000 (20)                        | 18                                | 25               | 4513177N-01       |
| <b>Perifix® Soft Tip catheter (with 3 lateral eyes)</b>  |  |                                   |                  |                   |
|  | 0.85/0.45/1000 (20)                        | 18                                | 25               | 4515048N-01       |
| <b>Perifix® ONE catheter (with 6 lateral eyes)</b>       |  |                                   |                  |                   |
|  | 1.05/0.60/1000 (19)                        | 16                                | 25               | 45132581N-01      |
|  | 0.85/0.45/1000 (20)                        | 18                                |                  | 45131501N-01      |

### ACCESSORIES & COMPLEMENTARY PORTFOLIO

| Sterifix® filter straws     | Particle filter<br>(µm) | Length<br>(cm)          | Units<br>per box  | Code no.<br>(REF) |                   |
|-----------------------------|-------------------------|-------------------------|-------------------|-------------------|-------------------|
|                             | 5                       | 4.50                    | 50                | 4550250N          |                   |
|                             | 5                       | 10                      |                   | 4550200N          |                   |
| Sterifix® filter needle     | Size<br>(G)             | Particle filter<br>(µm) | Length<br>(cm)    | Units<br>per box  | Code no.<br>(REF) |
|                             | 19                      | 5                       | 3.80              | 50                | 4550404N          |
| Perifix® catheter connector | Size<br>(G)             | Units<br>per box        | Code no.<br>(REF) |                   |                   |
|                             | 19                      | 50                      | 4513801N-01       |                   |                   |
|                             | 20/24                   |                         | 4513800N-01       |                   |                   |
| Perifix® filter             | Particle filter<br>(µm) | Units<br>per box        | Code no.<br>(REF) |                   |                   |
|                             | 0.20                    | 25                      | 4515501N-01       |                   |                   |

### ACCESSORIES & COMPLEMENTARY PORTFOLIO

| Infusomat® Space Line                            | Length<br>(cm)                    | Units<br>per box       | Code no.<br>(REF)        |                   |
|--|-----------------------------------|------------------------|--------------------------|-------------------|
|  | 300                               | 100                    | 8700132SP                |                   |
| Original Perfusor® Line                          | Length<br>(cm)                    | Units<br>per box       | Code no.<br>(REF)        |                   |
|  | 200                               | 25                     | 8722865                  |                   |
| Omnifix®   | Description                       | Filling volume<br>(ml) | Units<br>per box         | Code no.<br>(REF) |
|  | Slip NRFit®                       | 1                      | 100                      | 9164001           |
|  |                                   | 3                      |                          | 4616003           |
|  |                                   | 5                      |                          | 4616005           |
|  |                                   | 10                     |                          | 4616014           |
|  |                                   | 20                     |                          | 4616021           |
|  | Lock NRFit®                       | 3                      | 100                      | 4617003           |
|  |                                   | 5                      |                          | 4617006           |
|  |                                   | 10                     |                          | 4617014           |
|  |                                   | 20                     |                          | 4617021           |
|  |                                   | 50                     |                          | 4617508F-01       |
| Perifix® Loss-of-Resistance (LOR) Syringe NRFit® | Description                       | Units<br>per box       | Code no.<br>(REF) NRFit® |                   |
|  | Perifix® LOR Syringe, Slip NRFit® | 25                     | 4637110                  |                   |
|  | Perifix® LOR Syringe, Lock NRFit® |                        | 4638110                  |                   |
| NRFit® syringe caps<br>NRFit® stoppers           | Description                       | Units<br>per box       | Code no.<br>(REF)        |                   |
|  | Syringe cap with NRFit® connector | 25                     | 4517501N                 |                   |
|  | Stopper with NRFit® connector     | 25                     | 4517502N                 |                   |

# Regional Anesthesia Products with NRFit®

## Product specifications

### EPIDURAL ANESTHESIA SETS

| Legend   | Perican® Tuohy needle |       | Perifix® ONE epidural catheter, 6 lateral eyes |      |      | Perifix® Standard epidural catheter, 3 lateral eyes |      | Perifix® Soft Tip epidural catheter, 3 lateral eyes | Perifix® Loss of Resistance syringe |
|--|-----------------------|-------|--|------|------|---|------|---|-------------------------------------|
| <ul style="list-style-type: none"> <li>20 G x 2", ø 0.90 x 50 mm</li> <li>18 G x 3 1/4", ø 1.30 x 80 mm,</li> <li>18 G x 2", ø 1.30 x 50 mm (Paed Set)</li> <li>16 G x 3 1/4", ø 1.70 x 80 mm</li> </ul> |                       |       |  |      |      |   |      |   |                                     |
|  | 50 mm                 | 80 mm | 24 G   | 20 G | 19 G | 20 G  | 19 G | 20 G  |                                     |

|   |  |   |   |                                 |   |  |
|---|--|---|---|---------------------------------|---|--|
|   |  |   |   |                                 |   | <b>* Sterican® needles</b><br>25 G, 16 mm, ø 0.50 mm<br>21 G, 40 mm, ø 0.80 mm<br>18 G, 40 mm, ø 1.20 mm |
| Omnifix® three part syringe, 20 ml, Lock, Sterifix® filter needle | Omnifix® three part syringe, 3 ml, Lock, Sterifix® filter needle | Perifix® Filter 0.20 µm, pressure resistant up to 7 bar | Perifix® catheter connector 19 G or 20/24 G | Perifix® PinPad filter fixation | Omnifix® three part syringe, 3ml, Luer Lock, 3 hypodermic Luer needles* | <b>Caution: Product with Luer connection</b>   |

| Set versions          | Perican® with NRFit® | Perifix® ONE with NRFit® | Perifix® Standard with NRFit® | Perifix® Soft Tip with NRFit® | Perifix® LOR with NRFit® |
|-----------------------|----------------------|--------------------------|-------------------------------|-------------------------------|--------------------------|
| <b>Complete Sets</b>  |                      |                          |                               |                               |                          |
| Perifix® 421          |                      | ■                        |                               | ■                             | ■                        |
| Perifix® Soft Tip 901 | ■                    |                          |                               | ■                             | ■                        |
| Perifix® ONE 421      | ■                    | ■                        |                               |                               | ■                        |
| <b>Filter Sets</b>    |                      |                          |                               |                               |                          |
| Perifix® 400          | ■                    |                          | ■                             |                               |                          |
| Perifix® 401          | ■                    |                          | ■                             |                               | ■                        |
| Perifix® 402          | □                    |                          | ■                             |                               | ■                        |
| Perifix® Soft Tip 701 | ■                    |                          |                               | ■                             | ■                        |
| Perifix® Soft Tip 730 | □                    |                          |                               | ■                             | ■                        |
| Perifix® ONE 401      | ■                    | ■                        |                               |                               | ■                        |
| Perifix® ONE 402      | □                    |                          | ■                             |                               | ■                        |
| <b>Pediatric Sets</b> |                      |                          |                               |                               |                          |
| Perifix® ONE Paed 18  | ■                    |                          | ■                             |                               | ■                        |
| Perifix® ONE Paed 20  | ■                    |                          | ■                             |                               | ■                        |
| <b>Mini Set</b>       |                      |                          |                               |                               |                          |
| Perifix® 300          | ■                    |                          | ■                             |                               | ■                        |

| Omnifix® and Sterifix® with NRFit® | Omnifix® and Sterifix® with NRFit® | Perifix® Filter with NRFit® | Perifix® catheter connector with NRFit® | Perifix® PinPad | Omnifix® and hypodermic needles with Luer | Units per box | Code No. (REF) |
|------------------------------------|------------------------------------|-----------------------------|---|-----------------|---|---------------|----------------|
| ■                                  |                                    | ■                           | ■                                       | ■               | ■   |               | 4514211N-01    |
| ■                                  |                                    | ■                           | ■                                       | ■               | ■   | 10            | 4510305N-01    |
| ■                                  |                                    | ■                           | ■                                       | ■               | ■   |               | 45142111N-01   |
|                                    |                                    | ■                           | ■                                       | ■               |   |               | 4514009N-01    |
|                                    |                                    | ■                           | ■                                       | ■               |   |               | 4514017N-01    |
|                                    |                                    | ■                           | ■                                       | ■               |   |               | 4514025N-01    |
|                                    |                                    | ■                           | ■                                       | ■               |   | 10            | 4510097N-01    |
|                                    |                                    | ■                           | ■                                       | ■               |   |               | 4517309N-01    |
|                                    |                                    | ■                           | ■                                       | ■               |   |               | 45140171N-01   |
|                                    |                                    | ■                           | ■                                       | ■               |   |               | 45140251N-01   |
|                                    | ■                                  | ■                           | ■                                       | ■               |   | 10            | 45120061N-01   |
|                                    | ■                                  | ■                           | ■                                       | ■               |   |               | 45120141N-01   |
|                                    |                                    |                             | ■                                       |                 |   | 10            | 4513002N-01    |



# Regional Anesthesia Products with NRFit®

## Product specifications

### SINGLE-SHOT BLOCK NEEDLES

| Stimuplex® D   | Needle ø (G) and Length (inch)          | Needle ø and Length (mm) | Units per box | Code no. (REF) |
|--|---|--------------------------|---------------|----------------|
|  | <b>Insulated Needles with 15° Bevel</b> |                          |               |                |
|  | 25 x 1 1/3"                             | 0.50 x 35 mm             | 25            | 4892153NR      |
|  | 25 x 2 1/8"                             | 0.50 x 55 mm             |               | 4892155NR      |
|  | 23 x 1 1/2"                             | 0.60 x 40 mm             |               | 4892134NR      |
|  | 23 x 2 3/4"                             | 0.60 x 70 mm             |               | 4892137NR      |
|  | 22 x 2"                                 | 0.70 x 50 mm             |               | 4892105NR      |
|  | 22 x 3 1/8"                             | 0.70 x 80 mm             |               | 4892108NR      |
|  | 22 x 4 3/4"                             | 0.70 x 120 mm            |               | 4892112NR      |
|  | 20 x 6"                                 | 0.90 x 150 mm            |               | 4892115NR      |
|  | <b>Insulated Needles with 30° Bevel</b> |                          |               |                |
|  | 22 x 1 1/2"                             | 0.70 x 40 mm             | 25            | 4892204NR      |
|  | 22 x 2"                                 | 0.70 x 50 mm             |               | 4892205NR      |
|  | 22 x 3 1/8"                             | 0.70 x 80 mm             |               | 4892208NR      |

| Ultraplex® 360  | Size (G)/ Length (inch) | ø / Length (mm) | Bevel (°) | Units per box | Code no. (REF) |
|---|-------------------------|-----------------|-----------|---------------|----------------|
|  | 22 x 1 3/8"             | 0.70 x 35       | 30        | 25            | 4892603NR-01   |
|   | 22 x 2"                 | 0.70 x 50       |           |               | 4892605NR-01   |
|   | 22 x 3 1/8"             | 0.70 x 80       |           |               | 4892608NR-01   |
|   | 20 x 4"                 | 0.90 x 100      |           |               | 4892610NR-01   |
|   | 20 x 6"                 | 0.90 x 150      |           |               | 4892615NR-01   |

| Stimuplex® Ultra 360®   | Size (G)/ Length (inch) | ø / Length (mm) | Bevel (°) | Units per box | Code no. (REF) |
|---|-------------------------|-----------------|-----------|---------------|----------------|
|  | 22 x 1 3/8"             | 0.70 x 35       | 30        | 25            | 4892503NR-01   |
|   | 22 x 2"                 | 0.70 x 50       |           |               | 4892505NR-01   |
|   | 22 x 3 1/8"             | 0.70 x 80       |           |               | 4892508NR-01   |
|   | 20 x 4"                 | 0.90 x 100      |           |               | 4892510NR-01   |
|   | 20 x 6"                 | 0.90 x 150      |           |               | 4892515NR-01   |

### ACCESSORIES

| Nerve Stimulation   | Description  | Units per box | Code no. (REF) |
|---|--|---------------|----------------|
|  | Stimuplex® HNS 12 Nerve Stimulator for Stimuplex®, Ultraplex® and Contiplex® needles | 1             | 4892098        |
|   | Stimuplex® HNS Compact Nerve Stimulator*   | 1             | 4892101        |

\*Stimuplex® HNS Compact is not available in all countries

| Nerve Stimulator Accessories and Spare Parts | Units per box | Code no. (REF) |
|--|---------------|----------------|
| Stimuplex® Pen for cutaneous nerve mapping   | 1             | 4892099        |
| Electrode cable for Stimuplex® HNS 11/12     |               | 4892070        |
| Battery cover for Stimuplex® HNS 12          |               | 4892094        |
| Carrying Case for Stimuplex® HNS 12          |               | 4892095        |
| Test resistor for Stimuplex® HNS 12          |               | 4892096        |
| Knob for special handling                    |               | 4892283        |

# Regional Anesthesia Products with NRFit®

## Product specifications

### SETS FOR CONTINUOUS NERVE BLOCKS

|  |  |  |  |  |  |                                      |                                 |
|--|---|---|---|--|---|--------------------------------------|---------------------------------|
|  | Contiplex® C catheter-over-the-needle system                                      | Contiplex® S<br>Contiplex® S Ultra 360®   | Contiplex® Tuohy<br>Contiplex® Tuohy Ultra 360®                                   | Contiplex® D   | Perifix® Standard Catheter  |                                      |                                 |
|  | 25 G  | 18 G  | 18 G  | 18 G, 20 G   |   |                                      |                                 |
| Set Specifications   | Bevel (°)   |   | Needle  |  |   | Perifix® Standard                    |                                 |
|  | with NRFit®   | with NRFit®   | Size (G)  | Size Ø (mm)  | Length (mm)   | 3 lateral openings (closed tip) (mm) | central opening (open tip) (mm) |
| <b>Contiplex® C Sets</b>                                     |   |   |   |  |   |                                      |                                 |
| Contiplex® C   |   | 15  | 25  | 0.53   | 190   | -                                    | -                               |
| Contiplex® C   |   | 30  | 25  | 0.53   | 190   | -                                    | -                               |
| <b>Contiplex® D Sets</b>                                     |   |   |   |  |   |                                      |                                 |
| Contiplex® D   |   | 15  | 18  | 1.30   | 110   | -                                    | 1000                            |
| Contiplex® D   |   | 15  | 20  | 1.10   | 33  | -                                    | 400                             |
| Contiplex® D   |   | 15  | 20  | 1.10   | 55  | -                                    | 400                             |
| Contiplex® D   |   | 15  | 18  | 1.30   | 55  | -                                    | 400                             |
| Contiplex® D   |   | 30  | 18  | 1.30   | 55  | -                                    | 400                             |
| <b>Contiplex® S and Contiplex® S Ultra 360® Sets</b>         |   |   |   |  |   |                                      |                                 |
| Contiplex® S   |   | 20  | 18  | 1.30   | 50  | 500                                  | -                               |
| Contiplex® S   |   | 20  | 18  | 1.30   | 100   | 500                                  | -                               |
| Contiplex® S   |   | 20  | 18  | 1.30   | 150   | 1000                                 | -                               |
| Contiplex® S Ultra 360®                                      |   | 20  | 18  | 1.30   | 50  | -                                    | -                               |
| Contiplex® S Ultra 360®                                      |   | 20  | 18  | 1.30   | 100   | -                                    | -                               |
| Contiplex® S Ultra 360®                                      |   | 20  | 18  | 1.30   | 150   | -                                    | -                               |
| <b>Contiplex® Tuohy and Contiplex® Tuohy Ultra 360® Sets</b> |   |   |   |  |   |                                      |                                 |
| Contiplex® Tuohy   |   | Tuohy bevel   | 18  | 1.30   | 40  | 500                                  | -                               |
| Contiplex® Tuohy   |   | Tuohy bevel   | 18  | 1.30   | 50  | 500                                  | -                               |
| Contiplex® Tuohy   |   | Tuohy bevel   | 18  | 1.30   | 100   | 500                                  | -                               |
| Contiplex® Tuohy   |   | Tuohy bevel   | 18  | 1.30   | 150   | 1000                                 | -                               |
| Contiplex® Tuohy Ultra 360®                                  |   | Tuohy bevel   | 18  | 1.30   | 40  | -                                    | -                               |
| Contiplex® Tuohy Ultra 360®                                  |   | Tuohy bevel   | 18  | 1.30   | 50  | -                                    | -                               |
| Contiplex® Tuohy Ultra 360®                                  |   | Tuohy bevel   | 18  | 1.30   | 100   | -                                    | -                               |
| Contiplex® Tuohy Ultra 360®                                  |   | Tuohy bevel   | 18  | 1.30   | 150   | -                                    | -                               |

|  |  |  |  |  |               |                |
|---|---|---|---|---|---------------|----------------|
| Contiplex® ONE Catheter (6 lateral openings, closed tip, open tip for Contiplex® C) | Perifix® Catheter Connector 19 G or 20/24 G   | Perifix® PinPad filter fixation   | Perifix® Filter 0.2 µm, Pressure resistant up to 7 bar                              | Omnifix® syringe 5 ml   |               |                |
| Contiplex® ONE (mm)   | Perifix® Catheter Connector   | Perifix® PinPad   | Perifix® Filter with NRFit®   | Omnifix® with NRFit®  | Units per box | Code no. (REF) |
| 187   | ■   | ■   | ■   | -   | 5             | 4898115NR      |
| 187   | ■   | ■   | ■   | -   |               | 4898130NR      |
| -   | ■   | ■   | ■   | ■   | 10            | 4898311NR      |
| -   | ■   | ■   | ■   | ■   |               | 4898323NR      |
| -   | ■   | ■   | ■   | ■   |               | 4898325NR      |
| -   | ■   | ■   | ■   | ■   |               | 4898305NR      |
| -   | ■   | ■   | ■   | ■   |               | 4898335NR      |
| -   | ■   | ■   | ■   | ■   | 10            | 4898405NR      |
| -   | ■   | ■   | ■   | ■   |               | 4898410NR      |
| -   | ■   | ■   | ■   | ■   |               | 4898415NR      |
| 400   | ■   | ■   | ■   | ■   |               | 4898650NR-27   |
| 1000  | ■   | ■   | ■   | ■   |               | 4898610NR-27   |
| 500   | ■   | ■   | ■   | ■   |               | 4898615NR-27   |
| -   | ■   | ■   | ■   | ■   | 10            | 4898504NR      |
| -   | ■   | ■   | ■   | ■   |               | 4898505NR      |
| -   | ■   | ■   | ■   | ■   |               | 4898510NR      |
| -   | ■   | ■   | ■   | ■   |               | 4898515NR      |
| 400   | ■   | ■   | ■   | ■   |               | 4898704NR-01   |
| 400   | ■   | ■   | ■   | ■   |               | 4898705NR-01   |
| 1000  | ■   | ■   | ■   | ■   |               | 4898710NR-01   |
| 1000  | ■   | ■   | ■   | ■   |               | 4898715NR-01   |

## LITERATURE

1. Kress R, Townley, Jason Lane, Robyn Packer, and Rajnish K. Gupta. Unintentional Infusion of Phenylephrine into the Epidural Space. A&A Case Rep. 2016 Mar 1; 6(5):124-6.
2. <https://www.iso.org/standard/50734.html> (2017-05-23).
3. For information please visit: <https://www.iso.org/standard/50734.html>.
4. Vallejo MC, Mandell GL, Sabo DP, Ramanathan S. Postdural puncture headache: a randomized comparison of five spinal needles in obstetric patients. Anesth Analg. 2000 Oct; 91(4):916-20.

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