NIPRO’S TOTAL SOLUTION:

Nipro is a global market leader with a wide range of products to prevent vascular access complications.

More choices mean more opportunities for success.

Nipro is also the only company to have a unique, patented BioHole™ stick for maturation of the tunnel. BioHole™ is available in standard needle, single needle and catheter needle.

ASEPTIC TECHNIQUES:

1. On-Off kit, customized on request
2. Prefilled syringes of 0.9% NaCl to minimize potential contamination
3. Nipro Safe Derm – Fix IVN
4. Pushban™

CANNULATION TECHNIQUES:

5. BioHole™ is available in standard needle, single needle and catheter needle.
6. BioHole catheter needle
7. BioHole buttonhole stick
8. Pushban™

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SURVEILLANCE OF VASCULAR ACCESS:

9. AVF catheter needle
8. BioHole buttonhole stick
7. BioHole catheter needle
6. BioHole needle & single needle
5. Pushban™
4. Nipro Safe Derm - Fix IVN
3. Prefilled syringes of 0.9% NaCl to minimize potential contamination
2. On-Off kit, customized on request
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The most predominant complications of arteriovenous fistulas in hemodialysis are:

- Thrombosis: 17-25%
- Stenosis: 14-42%
- Aneurysms: 5-6%

Vascular access complications have been associated with as much as 10-15% of all inpatient stays among hemodialysis patients.

Clinical Practice Guidelines recommend different procedures for the prevention of vascular access complications:

**Aseptic techniques:**
- For manipulation, connection and disconnection

**Cannulation techniques:**
- Buttonhole technique
  - Reduces pain
  - Reduces aneurysms
  - Lowers vascular access failure
  - Facilitates access for self-cannulation
  - Improves appearance of the fistula
- Plastic fistula needles
  - Safe cannulation during fistula maturation
  - Decreases risk of perforation
  - Allows higher mobility
  - Better option for patients allergic to metal
- Needle specifications
  - Needle gauge depending on the blood flow rate
  - Needle length adapted to any fistula depth
  - Rotating hub allows rotation without moving the needle wings
  - Back eye

A fully-functioning fistula is the main indicator of a successful hemodialysis, but complications in vascular access are a serious reality. These complications are the first cause of hospital admissions for dialysis patients.

**WHAT ARE THE CONSEQUENCES & COSTS ASSOCIATED?**

The following procedures are accepted as general practice:

**Monitoring vascular access**
- Physical examination to detect early dysfunction
  - Character of pulse and sound
  - Presence and location of thrill
- Clinical parameters
  - Swelling of arm
  - Prolonged bleeding time
  - Cannulation problem

**Surveillance**
- Monitoring vascular access performance indicators
- Periodic measurements are required to make correct assessment
  - Blood flow delivered
  - Dialysis efficacy
  - Recirculation analyses
  - Bleeding time control
  - Venous pressure measurements

**Diagnostic testing**
- If physiological monitoring and surveillance indicators confirmed abnormalities, a Doppler Ultrasound or a Fistulography may be required

**COSTS ASSOCIATED**

Direct costs related to arteriovenous fistula complications vary from $571 to $12,740, depending on the severity of hospital intervention.

The goal is to prevent complications, without worrying about the costs.

**IS THERE A WAY TO PREVENT COMPLICATIONS?**

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**Recomendar needle gauge**

<table>
<thead>
<tr>
<th>Needle gauge</th>
<th>Blood flow rate</th>
<th>Color</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 gauge</td>
<td>100-200 ml/min</td>
<td>Blue</td>
</tr>
<tr>
<td>11 gauge</td>
<td>200-300 ml/min</td>
<td>Green</td>
</tr>
<tr>
<td>12 gauge</td>
<td>300-450 ml/min</td>
<td>Red</td>
</tr>
<tr>
<td>13 gauge</td>
<td>&gt; 450 ml/min</td>
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</tbody>
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**Recommended needle gauge**

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**Surveillance of vascular access:**
- KDOQI recommends surveillance, at least once a month, to diagnose and prevent the progression of stenosis or thrombosis
  - Flow measurement
  - Recirculation

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