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.

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™
5. Clean Treatment Start



On-Off kit



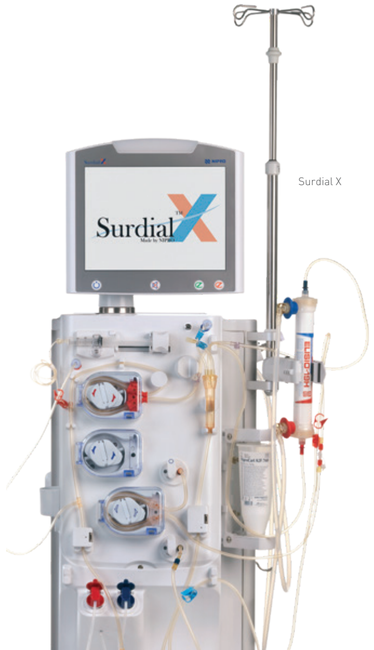
Prefilled syringe



Nipro Safe Derm - Fix IVN



Pushban



Surdial X

Clean Treatment Start connection with the Surdial™ X machine.

The Clean Treatment Start function allows the UF pump to remove priming solution from bloodlines, without delivering it to the patient during the connection phase and without the need of extra drain bags. Simultaneous connection also reduces the risk of contamination during connection.

PREVENTIVE ANTIMICROBIAL CATHETER LOCKS AND CATHETER SURFACE TREATMENT

Nipro offers a full range of prefilled syringe with citrate 4%, 30%, or 46,7% to maintain and preserve safe vascular access for patients.

The benefits are clear:

- Ready to use
- Less risk of contamination
- Cost-effective compared to other lock solutions
- Environmental solution

- CitraFlow™ 4%
- CitraFlow™ 30%
- CitraFlow™ 46.7%



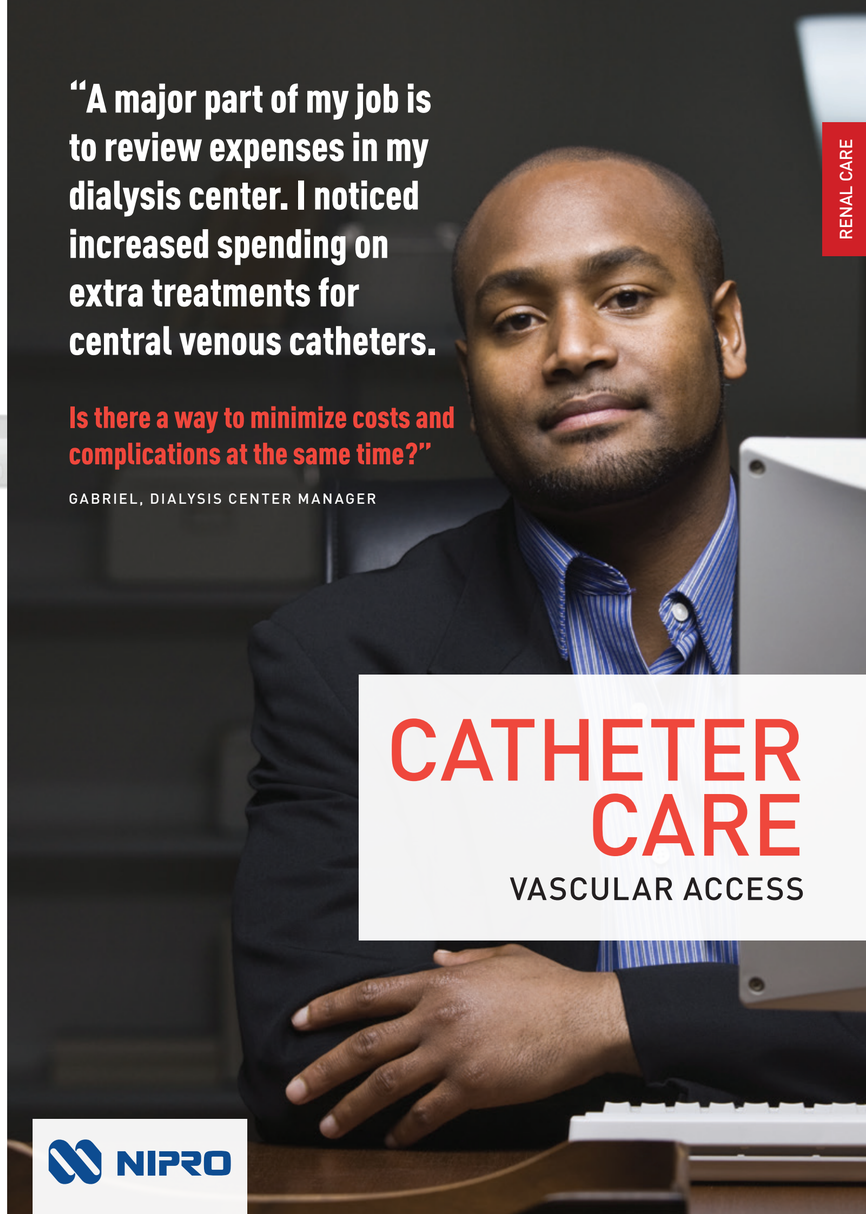
BECAUSE EVERY LIFE DESERVES AFFORDABLE CARE

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Bro-Catheter_Care - 26 Jul 18

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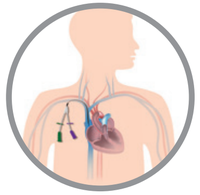


The use of central venous catheters for hemodialysis has increased in recent years despite recommendations from the National Kidney Foundation and European Renal Best Practice.

The increased prevalence of elderly and diabetic patients are the presumed reasons.[1]

CATHETER COMPLICATIONS ARE CHALLENGING FOR BOTH PATIENT AND HEALTHCARE PROFESSIONALS:

Patients



- Reduced efficiency in dialysis procedures
- Treatment interruptions and additional hospitalization
- Use of thrombolytics and risk of bleeding
- Use of antiobiotics and risk of antibiotic resistance
- Catheter replacement due to serious infection
- Reductions in quality of life and survival rate

Hospitals

- Increased costs in testing
- Increased costs in the use of medical products
- Increased costs related to time and personnel dedicated to interventional treatment

Central venous catheters are associated with a higher risk of infections, thrombosis, and cardiovascular complications, which ultimately impact mortality rate.

This translates to a 41% higher risk of death from infection compared to patients with fistula.[2]

- Infections: 0.46 to 30 per 1000 catheter days
- Thrombosis: 0.06 to 21 per 1000 catheter days

41% HIGHER RISK OF DEATH

WHAT ARE THE CONSEQUENCES & COSTS ASSOCIATED?

Dysfunctional or non-functioning catheter:



- Repositioning of a malpositioned catheter.
- Use of thrombolytics, either intraluminal lytic, intradialytic lock protocol, or an intra-catheter thrombolytic infusion or inter-dialytic lock.
- Catheter replacement.

Treatment of infection:[3]

- All catheter-related infections, except for catheter exit-site infections, should be addressed by initiating parenteral treatment with antibiotics to target the organism(s) suspected.
- Definitive antibiotic therapy should be based on the organism(s) isolated.
- Catheters should be exchanged as soon as possible and within 72 hours of initiating antibiotic therapy in most instances, and such exchange does not require a negative blood culture result before the exchange. Follow-up cultures are needed a week after the cessation of antibiotic therapy (standard practice).
- Port pocket infections should be treated with systemic antibiotics and irrigation, in accordance with the manufacturers' recommendations.

Consequences for the patient are:

- Poor quality of life
- Reduced dialysis adequacy
- Increased hospital visits
- Higher morbidity-mortality

$ 10,000 TO $ 32,000 PER EPISODE

Central venous catheters have the highest overall cost compared to other types of vascular access in hemodialysis. The magnitude of costs varies depending on the severity of the complication. A total of direct and indirect costs have been estimated between **$ 10,000** and **$ 32,000** per episode.[4]

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

BECAUSE EVERY LIFE DESERVES AFFORDABLE CARE

IS THERE A WAY TO PREVENT COMPLICATIONS?

European Renal Best Practice (ERBP) recommends:[1]

Aseptic techniques:

- Universal precautions, a sterile environment, and aseptic techniques should be applied whenever a venous catheter is manipulated, connected or disconnected.

Preventive antimicrobial catheter locks and catheter surface treatment:

- There is increasing evidence that antimicrobial locks applied within the catheter lumen are effective at reducing catheter-related bloodstream infections.
- Some locks may have extra antimicrobial or biofilm removing properties (e.g. citrate, alcohol, ethylene-diamine triacetic acid). Citrate locks have, for the time being, been the most extensively studied locks. The 4% solution seems to offer the best benefit-risk ratio at present.
- On the contrary, Heparin, however, tends to antagonize the bactericidal properties of certain antibiotics. It also promotes biofilm formation unless at very low concentrations.

The presence of Vascular Access Managers has been shown to reduce treatment failure rates and septic death:[5]

The use of preventive antimicrobial catheter locks containing a citrate 4% solution as a measure against infection.[1]

- Avoids the risk of systemic heparinization
- Reduces incidents of clotting[6]
- Reduces catheter replacement rates[7]
- Prevents formation of biofilms[8]
- Lowers the rate of catheter related bacteremia infections[9]