Dialysis efficiency – effectively protected

Catheter lock solution with taurolidine, heparin and citrate

Prevents thrombosis
Protects against infection

Neutrolin®

cormedix-europe.com
Neutrolin®
First-in-class, non-antibiotic solution that prevents infections and thrombosis associated with central venous catheters.

Neutrolin® consists of taurolidine 1.35%, heparin 1,000 units/mL and citrate 3.5%:
- Taurolidine 1.35% is a synthetic broad-spectrum anti-bacterial and anti-fungal compound that is metabolized to the amino acid taurine in humans, which limits its toxicity for clinical use
- Heparin 1,000 units/mL is added to Neutrolin as a well-established anticoagulant
- Citrate 3.5% is added as a buffer to ensure that taurolidine remains in solution at ~ pH 6

Neutrolin® is an antimicrobial and anticoagulant catheter lock solution for hemodialysis patients
Neutrolin® provides protection against catheter-related blood stream infections (CRBSI) and helps to maintain catheter patency

Attributes of Neutrolin® which improve lock effectiveness:
- Broad-spectrum antimicrobial effect against bacteria and fungi
- Safe and compatible with tissue and blood
- No evidence of bacterial resistance in human
- No systemic pharmacological effect
- Inactivation of endotoxin
- Reduces adherence of bacteria and blood to surfaces

Active ingredient – taurolidine
- Taurolidine is a unique nontoxic substance that eliminates binding of bacteria and some fungi to the surface
- Taurolidine is NOT an antibiotic and it has never demonstrated bacterial resistance
- Taurolidine is a broad-spectrum antimicrobial active substance against virulent bacteria and fungi, responsible for most HD infections
- Taurolidine has proven effective in preventing catheter colonization at the planktonic level and eradication of a developed biofilm in several types of in vitro tests
Neutrolin® and biofilm formation

Figure 1 shows two scanning electron microscope (SEM) photos of the luminal surfaces from two different catheters. The left catheter was removed from the HD patient who had been using a conventional heparin lock for 7 months. The photo on the right of an HD patient using Neutrolin® locked catheter has no evidence of any biofilm after 5 months in vivo.4

Validated Clinical Utility in “EU Real World” Setting – Neutrolin® Usage Monitoring Program (NUMP)

From January 2014 to November 2015, 19 hemodialysis centers in Germany participated in Neutrolin® Usage Monitoring Program

- 199 HD patients representing 15,122 dialysis sessions over a 22 months period for a total of 35,285 hemodialysis catheter days
- 5 infections and 3 thrombosis events over the 35,285 hemodialysis catheter days
- The primary outcome of our study is to monitor safety and efficacy of Neutrolin® in preventing infection and thrombosis in HD patients

<table>
<thead>
<tr>
<th>Complication (per 1,000 catheter days)</th>
<th>Historical Benchmark</th>
<th>Neutrolin*</th>
<th>% Reduction in Infection Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infection</td>
<td>3.52</td>
<td>0.142</td>
<td>96.0%</td>
</tr>
<tr>
<td>Thrombosis</td>
<td>2–34.5</td>
<td>0.085</td>
<td>96.6%</td>
</tr>
</tbody>
</table>

Figure 2 shows the results of Neutrolin® Usage Monitoring Program

Positive results are consistent with prior clinical studies

*Neutrolin for this study was provided by Biolink Corporation. Composition of Neutrolin was taurolidine 1.35 % and citrate 2.61 % as citric acid.