ANTIMICROBIAL CATHETER LOCK SYSTEM TO PROVIDE PATENCY AND INFECTION CONTROL
Prophylaxis against catheter related bloodstream infections:

Central venous catheters (CVC) are used as short or long term vascular access devices in hemodialysis, oncology, ICU and total parenteral nutrition. High risks for CVC malfunction are catheter related infections (CRI). These infections may be triggered by microbial colonization of the catheter and the microorganisms can spread from here to the bloodstream. CRI may develop septic symptoms which require the immediate removal of the catheter.

TauroLock™ catheter lock solutions do not contain antibiotics and were developed for prophylactic use. They reduce catheter related infections significantly (~ 90%).

The combination of citrate (4%) with (cyclo)-taurolidine and heparin/urokinase has excellent anticoagulative and anti-microbial properties also against resistant microorganisms like MRSA und VRE.

Therefore TauroLock™ is recommended as an antimicrobial lock solution in different guidelines such as the German Dialysis Standard, the guidelines from the German Society of applied Hygiene in Dialysis and the evidence-based recommendations of the German Society for Paediatric Oncology and Hematology (GPOH).

Prophylaxis against biological occlusion in the catheter:

The TauroLock™ Catheter Lock System contains a threefold prophylaxis against occlusion in the catheter: All locking solutions contain 4% citrate as anticoagulant. This concentration removes calcium safely and effectively from the clotting cascade.

The optional use of low concentrated heparin supports an additional anticoagulative effect via binding to antithrombin. The prophylactic use of TauroLock™-U25.000 (which contains 25,000 IU of urokinase) achieves the best prophylaxis against occlusion by prevention of biological clotting.

The decision which locking solution is most adequate depends on the individual patient situation. The alternative use of different locking solutions in the same catheter (e.g. TauroLock™-HEP500, TauroLock™-U25.000) is possible.

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**TauroLock™ prevents catheter infections:**

**ONCOLOGY**

<table>
<thead>
<tr>
<th></th>
<th>Simon</th>
<th>Dümichen</th>
<th>Handrup</th>
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<tbody>
<tr>
<td>Infections per 1000 catheter days</td>
<td>2.3</td>
<td>0.5</td>
<td>1.3</td>
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**PARENTERAL NUTRITION**

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<tr>
<th></th>
<th>Gabe</th>
<th>Touré</th>
<th>Al-Amin</th>
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<tr>
<td>Infections per 1000 catheter days</td>
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<td>6.09</td>
<td>6.3</td>
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**DIALYSIS**

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<th></th>
<th>Allen</th>
<th>Beljes</th>
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<th>Murray</th>
<th>Fantaré</th>
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<tbody>
<tr>
<td>Infections per 1000 catheter days</td>
<td>5.6</td>
<td>0.5</td>
<td>2.1</td>
<td>5.2</td>
<td>6.6</td>
<td>3.25</td>
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Heparin  
TauroLock™

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Heparin/Saline  
TauroLock™

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Heparin  
TauroLock™
TauroLock™ is bactericidal and fungicidal within 2 hours:

- **TauroLock™**
- **Legend**
  - S. aureus (MRSA)
  - P. aeruginosa
  - A. niger
  - E. coli
  - C. albicans
  - S. epidermidis
  - *detection limit (10 cfu/ml)*

Clearly superior in comparison to the activity of Citrate and Heparin:

- **46.7% Citrate**
- **30% Citrate**
- **Heparin**

If used prophylactically, TauroLock™ prevents the development of a biofilm on the surface of the catheter lumen:

- Heparin Lock – 7 months implanted – S. epidermidis biofilm covers surface completely
- TauroLock™ 5 months implanted – No colonization
Instillation of TauroLock™

Follow the manufacturer’s instructions that accompany the particular vascular access product utilized. Specific catheter lock volumes are associated with each device.

1. Flush the device with 10 mL of saline.
2. Withdraw TauroLock™ from the container using an appropriate syringe.
3. Instill TauroLock™ slowly (not more than 1 mL per second, infants and children less than two years of age not more than 1 mL per 5 seconds) into the access device in a quantity sufficient to fill the lumen completely. Consult the manufacturer’s instructions for the specific fill volume or specify fill volume during implantation. The volume has to be strictly respected. TauroLock™ will remain inside the access device until the next treatment (up to a maximum of 30 days).
4. Prior to the next treatment, TauroLock™ must be aspirated (if desired and possible) and discarded in accordance with the institution’s waste policy.
5. Flush the device with 10 mL of saline.

TauroLock™ is safe:

The concentration of 4% citrate in TauroLock™ is safe and efficient - according to the recommendation of the FDA (ref.: FDA Warning Letter, April 2000).

No hypocalcaemic effects are observed in contrast to highly concentrated citrate solutions (30% resp. 46.7%) e.g. arrhythmia, cardiac arrest*, emboli**, tingling fingers and metallic taste***.

TauroLock™ is biocompatible and non toxic.

In contrast to highly concentrated citrate there is no protein precipitation if using TauroLock™****.


Product selection for application

<table>
<thead>
<tr>
<th>Product</th>
<th>TauroLock</th>
<th>TauroLock vs</th>
<th>TauroLock MC</th>
<th>TauroLock HMC</th>
<th>TauroLock VHC</th>
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<tbody>
<tr>
<td>Dialysis</td>
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<td>Oncology</td>
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TauroLock™ catheter lock solutions are available in different containers:

<table>
<thead>
<tr>
<th>Product</th>
<th>TauroLock</th>
<th>TauroLock</th>
<th>TauroLock</th>
<th>TauroLock</th>
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<tbody>
<tr>
<td>Ampoule (10 x 3 mL)</td>
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<td></td>
<td></td>
<td></td>
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<tr>
<td>Ampoule (10 x 5 mL)</td>
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<td></td>
<td></td>
<td>●</td>
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<tr>
<td>Vial (100 x 10 mL)</td>
<td>●</td>
<td></td>
<td>●</td>
<td></td>
</tr>
<tr>
<td>Vial (5 x 5 mL)</td>
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<td>●</td>
<td>●</td>
<td>●</td>
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