Trial Description

Title

Skin Disinfection with Octenidine Dihydrochloride for the Prevention of Catheter-associated Infections ? A Double-Blind, Randomised, Controlled Trial

Trial Acronym

[---]*

URL of the trial

[---]*

Brief Summary in Lay Language

Health-care-acquired infections are of tremendous importance for patients, especially catheter-associated infections. More than 40% of all bloodstream infections are associated with central venous catheters (CVC; catheters which are inserted into a large vein near the heart). Of all patients that acquire such an infection 1% to 5% die as a result from it. The insertion site is the main source of contamination and infection. In general, bacteria of the skin are the cause of infection, especially in short-term CVCs (10-14 days). Therefore it is necessary to efficiently disinfect the skin (kill bacteria) for the preparation and care of CVC insertion sites. Several substances are used for disinfection. Alcohol-based disinfectants are mainly used in Central Europe, other preparations contain povidine-iodine or chlorhexadine. Alcoholic disinfectants have a rapid initial effect, chlorhexadine shows an additional remanent (longer lasting) effect. A further substance, octenidine dihydrochloride, also demonstrated a remanent effect in a pilot study with neurosurgical patients. The purpose of our study is to compare an alcohol-based disinfectant containing octenidine dihydrochloride with a pure alcoholic disinfectant regarding efficacy and tolerability in patients receiving a CVC for a minimum of 5 days.

Brief Summary in Scientific Language

Catheter-associated infections are one of the most eminent healthcare acquired infections. More than 40% of all bloodstream infections are associated with a central venous catheter (CVC)and between 1% and 5% of the affected patients die as a direct consequence of this infection [Widmer 1997]. The most important microorganisms are gram-positive cocci (S. aureus, S. epidermidis). In intensivcare units gram-negative microorganisms such as pseudomonas, acinetobacter and candida spp. are more frequent. The insertion site is the main source of contamination and infection in short-term CVCs (10-14 days)[Maki et al. 1997, Mermel et al. 1991, Raad 1998]. In this case the infection is caused by migration of microorganisms along the outside of the catheter [Cooper et al. 1988]. Contamination of the hub due to frequent manipulation is usually the source of infection in long-term CVCs [Linares et al. 1985, Raad 1998]. In this case the infection occurs intraluminally. An effective skin disinfection is the main measure of prevention before insertion of a CVC. The aim of this measure is the elimination of transient and the reduction of resident microorganisms around the insertion

site. To achieve this, disinfectants on the basis of alcohol, povidone-iodine or chlorhexadine are applied [Maki et al. 1991]. Alcohol-based disinfectants are preferred in Central Europe because of their rapid initial effect and broad microbiological spectrum. Chlorhexadine and povidone-Iodine in contrast to alcoholic disinfectants have a remanent effect which reduces regrowth of microorganisms beyond the immediate initial effect. To which extent remanent substances reduce colonisation of the CVC extraluminally or the CVC-tip is still being disputed. In an earlier clinical trial a residual or remanent effect of 0.1% octenidine combined with propanol in microbial skin decontamination over a 24h period was shown in neurosurgical patients receiving a central line (CVC or peripherally inserted central catheter) [Dettenkofer et al. 2002]. The objective of this study is therefore to evaluate further the preventive impact and tolerability of a commercially available, alcohol-based antiseptic solution containing octenidine for the preparation and care of CVC insertion sites in a clinical setting in comparison with the results given by an alcoholic solution alone.

Organizational Data

- DRKS-ID: **DRKS00000006**
- Date of Registration in DRKS: **2008/08/19**
- Date of Registration in Partner Registry or other Primary Registry: **2005/09/13**
- Investigator Sponsored/Initiated Trial (IST/IIT): **yes**
- Ethics Approval/Approval of the Ethics Committee: **Approved**
- (leading) Ethics Committee Nr.: **337/01 , Ethik-Kommission der Albert-Ludwig-Universität Freiburg**

Secondary IDs

- Primary Registry-ID: **NCT00515151 (ClinicalTrials.gov)**
- Partner Registry-ID: **UKF000502 (Register Klinischer Studien des Universitätsklinikums Freiburg)**
- Sponsor-ID: **NEO-0102**

Health condition or Problem studied

- ICD10: **A41 - Other septicaemia**
- Free text: **Catheter-associated Infections**
- Free text: **Bacteremia**

Interventions/Observational Groups

- Arm 1: **Oct/Alc: Active Comparator.**
  Drug: 0.1% Octenidine with 30% 1-propanol and 45% 2-propanol
  Before insertion of the catheter, the entry site was disinfected with the assigned solution over an area of >200 cm² for at least one minute. The

assigned solution was then applied for care of the entry site during the change of dressings, usually every 2 to 3 days.

- Arm 2: **Alc: Active Comparator.**
  Drug: 74% Ethanol with 10% 2-propanol.
  Before insertion of the catheter, the entry site was disinfected with the assigned solution over an area of >200 cm² for at least one minute. The assigned solution was then applied for care of the entry site during the change of dressings, usually every 2 to 3 days.

Characteristics

- Study Type: **Interventional**
- Study Type Non-Interventional: **[---]***
- Allocation: **Randomized controlled trial**
- Blinding: **Double or multiple blind**
- Who is blinded: **[---]***
- Control: **Active control**
- Purpose: **Prevention**
- Assignment: **Parallel**
- Phase: **IV**
- Off-label use (Zulassungsüberschreitende Anwendung eines Arzneimittels): **[---]***

Primary Outcome

**Skin colonisation in cfu/cm2 at the insertion site, Colonisation of the CVC-tip, positivity by definition of number cfu/5cm > 15 (Maki-method),
Incidence of catheter-associated bloodstream infection.
[Time Frame: For the duration of catheter placement plus 2 days]**

Secondary Outcome

Comparison of therapy regimens regarding side effects and complications. [Time Frame: For the duration of catheter placement plus 30 days]

Countries of recruitment

- DE **Germany**
- CH **Switzerland**

Locations of Recruitment

Recruitment

- Planned/Actual: **Actual**
- (Anticipated or Actual) Date of First Enrollment: **2002/05/13**
- Target Sample Size: **400**
- Monocenter/Multicenter trial: **Multicenter trial**
- National/International: **International**

Inclusion Criteria

- Gender: **Both, male and female**
- Minimum Age: **18 Years**
- Maximum Age: **no maximum age**

Additional Inclusion Criteria

Patients >18 years and medical indication for CVC with a planned duration of minimum 5 days. Patient´s (or relative´s if applicable) written informed consent

Exclusion criteria

Known sensitisation against the proposed antiseptics, tunneled or implanted CVCs (e.g. Hickman Catheter), administration of antimicrobial drugs for therapy (not prophylaxis) less than one week prior to catheterization, pre-existing bloodstream infection (i.e., fever and/or other signs of infection, positive blood culture), terminal patients with limited therapy options and patients with burns, patients participating in a clinical trial on other antiseptics within a period of four weeks prior to inclusion date, patients with missing written consent

Addresses

- **Primary Sponsor**

  Universitätsklinik Freiburg
  Hugstetter Straße 55
  79106 Freiburg
  Germany

  Telephone: **[---]***
  Fax: **[---]***
  E-mail: **[---]***
  URL: **www.uniklinik-freiburg.de**

- **Contact for Scientific Queries**

  Universitätsklinikum Freiburg

Contact for Scientific Queries

Umweltmedizin und Krankenhaushygiene
Mr. Professor Markus Dettenkofer
Breisacherstr. 115b
79106 Freiburg
Germany

Telephone: **+49 761 270-8275**
Fax: **[---]***
E-mail: **markus.dettenkofer at uniklinik-freiburg.de**
URL: **[---]***

Sources of Monetary or Material Support

- **Commercial (pharmaceutical industry, medical engineering industry, etc.)**

Schülke & Mayr GmbH
Robert-Koch-Str. 2
22851 Norderstedt
Germany

Telephone: **+49 40 521 00-0**
Fax: **+49 40 521 00-318**
E-mail: **mail at schuelke-mayr.com**
URL: **http://www.schuelke-mayr.com/de/de/index.htm**

- **Private sponsorship (foundations, study societies, etc.)**

Swiss National Science Foundation
Wildhainweg 3
8232 Bern
Switzerland

Telephone: **+41 31 3082222**
Fax: **+41 31 3013009**
E-mail: **[---]***
URL: **www.snf.ch**

Status

- Recruitment Status: **Recruiting complete, follow-up complete**
- Study Closing (LPLV): **2005/04/20**

Trial Publications, Results and other documents

- Paper **Dettenkofer et al.: Skin disinfection with octenidine dihydrochloride for central venous catheter site care: a double-blind, randomized, controlled trial. Clin Microbiol Infect. 2010 Jun;16(6):600-6.**
- Abstract <style fontName='DejaVu Sans' isBold='true'>To compare the efficacy of two commercially available, alcohol-based antiseptic solutions for preparation and care of central venous catheter (CVC) insertion sites, with and without octenidine dihydrochloride, a double-blind, randomized, controlled trial was undertaken in the haematology units and in one surgical unit of two university hospitals. Adult patients with a non-tunnelled CVC were randomly assigned to two different skin disinfection regimens at the insertion site: 0.1% octenidine with 30% 1-propanol and 45% 2-propanol, and as control 74% ethanol with 10% 2-propanol. Endpoints were (i) skin colonization at the insertion site; (ii) positive culture from the catheter tip (> or = 15 CFU); and (iii) occurrence of CVC-associated bloodstream infection (defined according to criteria set by the CDC). Four hundred patients with inserted CVC were enrolled from May 2002 through April 2005. Both groups were similar in respect of patient characteristics and co-morbidities. Skin colonization at the CVC insertion site during the first 10 days was significantly reduced by octenidine treatment (relative difference octenidine vs. control: 0.21; 95%CI: 0.11-0.39, p <0.0001). Positive culture of the catheter tip was significantly less frequent in the octenidine group (7.9%) than in the control group (17.8%): OR = 0.39 (95%CI: 0.20-0.80, p 0.009). Patients treated with octenidine had a non-significant reduction in catheter-associated bloodstream infections (4.1% vs. 8.3%; OR = 0.44; 95%CI: 0.18-1.08, p 0.081). Side effects were similar in both groups. This randomized controlled trial supports the results of two observational studies demonstrating octenidine in alcoholic solution to be a better option than alcohol alone for the prevention of CVC-associated infections.</style>