UVC disinfection of catheters

Executive Summary

U-vivo’s goal is to develop and market a UVC light based device primarily for in-vivo disinfection of implanted medical devices. But other solutions for disinfection within areas such as drinking water, diagnostic equipment and machinery could be future business areas. U-vivo will market solutions for disinfection of devices that is not dependent on chemicals and antibiotics.

Customer value:

- No use of antibiotics and potential hazardous chemicals
- Quick kill (minutes)
- Sustained disinfection capability (kill from above – no need for an active surface)
- Broad spectrum efficiency (all pathogenic bacteria are killed with UVC)
- Recognized physical mechanism for disinfection
- No reported UVC resistant microorganisms
- Disinfection of established biofilm possible
- Cheap and emerging technology
- Dose can be adjusted (power and treatment time)

The initial products that can be delivered by U-vivo are:

- UVC light source for disinfection (LED bulb/housing + power/control wiring)
- Disposable units (sterile barrier)
- Replacement of LED bulb in existing light source (LED bulb/housing)
- Optical catheter Luer connector

Market description

Market for the first company’s product, peripherally inserted central catheter, PICC (long term) is described as follows:

- PICC can be used for a prolonged period of time (e.g. for long chemotherapy regimens, extended antibiotic therapy, or total parenteral nutrition). Hence these are especially interesting for U-Vivo.
- Revenues in this market passed 351.000.000 USD in 2011 with expected average growth rate of 13,4%
- Antimicrobial PICCs generate revenues of 87.000.000 USD in 2011 with expected average growth rate of 72,7%

Frost & Sullivan, U.S. Venous Access Catheter Market, October 2010

As U-Vivos technology has proven to perform better than antimicrobial alternatives, the market is expected to be at least as big as this market. Current antimicrobial PICC market in U.S. is 78.000.000 USD/year with an average expected growth rate of 72,7%.
IP Situation and Time to Market

The technology is protected by two patents which belong 1/3 to Jimmy Bak, 1/3 to DTU Fotonik and 1/3 to DTU.

<table>
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<tr>
<th>DTU ref.</th>
<th>Inventor</th>
<th>Invention</th>
<th>Date for invention</th>
<th>Filed patent application</th>
<th>Application no.</th>
<th>Patent application phase</th>
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<tr>
<td>92363-08</td>
<td>Jimmy Bak</td>
<td>Apparatus for sterilizing tube lumens</td>
<td>10-04-2008</td>
<td>01-09-2008</td>
<td>EP 01815415.4</td>
<td>5. PCT - DEMAND</td>
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<td>92483-09</td>
<td>Jimmy Bak</td>
<td>New Developments on apparatus for sterilizing tube lumens</td>
<td>31-12-2009</td>
<td>03-03-2010</td>
<td>EP 10155997.4</td>
<td>3. PRIORITEITSR</td>
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Technology description

The first product is a catheter intra luminal sterilization device comprising of a: Housing, light emitting diode (UV LED), electronics, optics, disposable plastic sterile barrier cap.

Research team and contact information

DTU Photonics, Rigshospitalet, Panum.
Looking for: Investors, medical device companies, disinfection of other medical devices than catheters, other industrial applications (e.g. water disinfection, disinfection of non-medical devices – process equipment).
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Links to further information

