

**Sterinis<sup>®</sup>**

Tested at Rigshospitalet, Copenhagen,  
January 2005.

**Report from Infectionhygienic section, February 2005**

**Background:**

Sterinis<sup>®</sup> is an apparatus which diffuses H<sub>2</sub>O<sub>2</sub> and silvercations in small droplets. Both H<sub>2</sub>O<sub>2</sub> and silvercations have antimicrobial effect on most viruses, bacterias and fungus. By diffusion of the disinfectant the chemistry will penetrate into all corners and tiny spaces, normally difficult to reach by normal disinfection methods. There are done a number of tests, for instance at Ullevål Hospital in OSLO, with very good results.

**Target:**

To test the effect of Sterinis<sup>®</sup> in a patient room, contaminated with known microorganisms. The effect of disinfection was controlled by putting germs and sampling the area after and put these samples for growth analysis.

**Trial design:**

A patientroom (59m<sup>3</sup>) currently not in use at intensive ward 4131, was used for the trials.

AI Apparatus and interial was unchanged, and was only supplied with an additional respiratory device



Twenty places was chosen and contaminated with a mixture of *Serratia marcescens*, *Enterococcus faecalis* og *Bacillus cereus*, all in a concentration of 10<sup>7</sup>-10<sup>8</sup> CFU/ml the day before the trial was done.



Sterinis<sup>®</sup> was programmed to do 3 cycluses of 14 minutes,with respective contacttime of 30 min and 60 min. After the last cyclus the contacttime was 2 hours.



The samples was sampled with poding from the 20 places which had been contaminated. The samples was put in petriboxes with bloodagar for growth and the samplepins was put in a serumbouillon.



The petriboxes and the seumbouillon tubes was incubated at 37°C during 48hours.

The petriboxes was checked and growth identified. The Serum bouillon with growth was disperced on bloodagar and any growth was identified after 48hours in incubation at 37°C.

**Results:**

From table one, growth was found, from the bacterias that the room was contaminated within two of the controle samples (inside a respiratory rubbertube and one inside of a suctionglass).



Sampleplace	<i>S. marcescens</i>	<i>E. faecalis</i>	<i>B. cereus</i>
On top of cupboard beside door	0	0	0
On top of cupboard.window	0	0	0
Ceiling lamp by door	0	0	0
Ceiling lamp by window	0	0	0
Soapdispenser holder -wall	0	0	0
Screw holes in wall	0	0	0
Thermostat on heater-wall	0	0	0
Cotton curtain	0	0	0
Under table by window	0	0	0
Computer keyboard	0	0	0
Respiratory hose entry	0	0	0
Respiratory hose exit	0	0	0
Respiratory hose middle	+++	+++	0
Respirations mask	0	0	0
Infusionpump	0	0	0
Under monitor	0	0	0
Apparatus display	0	0	0
Top of monitor box	0	0	0
Suction bottle	0	+++	+++

#### Comments:

The two test places where bacteria was found, was difficult accessible, without any airflow (50cm inside of tube-hose, and inside of a suction glass with a sealed top) This result was expected and worked like a "positive control"

The skin flora, found in the bouillon, most likely originates from contamination from the wooden sticks in connection with the sample pickings. This can be avoided by using sterile gloves when sampling.

Sterinis has in this test proven itself to be effective against Gram negative bacteria, Gram positive bacteria and spore forming bacteria. Connected with the tests done at Ullevål Hospital in Oslo, Sterinis® is proven efficient against

microorganisms that causes hospital infections (viruses, bacterias, fungus inclusive spore forming bacterias).

In the present test we used a "long" program with 3 cycluses of diffusion, because we used spore forming bacterias. In a situation when spore forming bacterias are not the problem, you can use less cycluses of diffusion. With Sterinis<sup>®</sup> it will be possible for some selected situations to perform a more safe and effective disinfection (wards, apparatus, etc).

Sterinis<sup>®</sup> can not be used whilst people are present in the room.

There has apparently not been problems with H<sub>2</sub>O<sub>2</sub> resistant bacterias (catalase positiv bacterias), which possible could be a problem.

**Perspectives: Where can Sterinis<sup>®</sup> be used at the Rikshospital):**

In the following places and situations Sterinis<sup>®</sup> can be used:

- In wards or sections with outbrakes of microorganisms whitout finding the source.
- In sections where there are many cases of certain types of infections (fx *Clostridium difficile*).
- In highrisk areas, like intensive care,neonatal ward, transplation sections.
- In selected cases of end-disinfection of isolationwards after infected patients.
- In connection of rebuilding etc when spores might be present.
- For disinfection of technical apparatus in highrisk areas.
- For disinfection of ambulances.

**Comments:**

Disinfection with Sterinis<sup>®</sup> do not last longer than traditional methods, but the disinfection performance is safer and more seccure, espically for areas not easy reachable.

**Testresponsible:**

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