

# **Swedish Medtech**

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## **Position Paper**

**Regarding Use of Silver in Wound Care Products**

**January 2008**



## **1. Introduction**

A number of clinical studies on wound dressings containing silver have demonstrated positive results on the healing of wounds. This not only decreases the suffering of the patient but provides the health care sector with a (necessary) complement to the use of antibiotics in those cases where micro-organisms disturb the wound healing.

The member companies of Swedish Medtech are of the opinion that products containing silver should be used in the occasions where they have a beneficial effect on wound healing, where they improve the patient's medical condition and give the patient a higher quality of life.

## **2. Product development**

The companies in the field of medical devices continually develop new products (and methods) using both new materials and substances as well as those more well-established. The objective is to develop products with a documented effect and function. Silver is a substance which is established to have a documented anti-microbial effect.<sup>1, 2, 3</sup>

Silver is a wide-spectrum, anti-microbial substance, affecting anaerobic and aerobic bacteria, fungus and multi-resistant bacteria such as MRSA and VRE. Silver kills micro-organisms through multiple mechanisms.<sup>1,2,3,4</sup>

## **3. Medical Devices with silver**

Wound care products<sup>4,5</sup> and catheters are two examples of medical devices that contain silver.

## **4. Silver dressings and its use**

Silver dressings should only be used in the instances where the micro-organisms have a negative affect on the wound healing. It is important to diagnose the underlying cause to the lack of healing of the wound. If there are no signs of healing while using the silver dressings, a new evaluation should be done after 2-4 weeks. During the time of treatment a repeated evaluation of the wound should take place. Silver should not be seen as a substitute to antibiotics when treating deep wound infections. Silver should rather be seen as an integrated part of the total health care given to the patient.

Patients with a high frequency of re-occurring wound infections can be given a preventive treatment prescribed by a specialist.<sup>7</sup>

Silver dressings are also useful in preventing infections when treating burn injuries.

## 5. Silver, waste management and environmental impact

Silver dressings should be managed as infectious waste, which is incinerated and taken care of according to recommendations for products within the health care sector.

No specific information on the amount of silver, used in the health care sector, has been reported. A general analysis on the amount of silver dressing in hospital waste performed by Stena Miljö (Stena Environment) concluded that the quantity of silver dressing in hospital waste is small <sup>6</sup>.

Since silver is a precious metal it is not destroyed by incineration in the waste management process. The silver is however captured during the cleansing of smoke at the incineration plants in Sweden. The silver then ends up in the fly-ashes which is the deposit-rest from the incineration. According to existing legislation for this kind of hazardous waste, the ashes are then deposited. This means that silver from wound dressings does not reach the day water if the waste treatment is handled according to the recommendations.

## 6. Silver and resistance development

Products containing silver have been used for treatment of burn injuries and other wounds for many years now. In laboratorial, clinical and environmental settings, the total incidence of resistance against silver has proven to be low (silver sulfadiazine and silver nitrate). Unlike antibiotics, silver has multiple effects which make it likely that the development of resistance against silver demands a mutation in more than one genetic localisation. <sup>4</sup>

For controlled use of medical devices containing silver, there are presently insufficient clinical data on the development of resistances in modern wound care products containing silver.

**Up to-date there are no documented cases reported in literature where silver resistance has led to a fatal disease. There are no therapeutic alternatives to silver use available. In the rare case of a silver resistance development, systemic antibiotic treatment is effective. In the light of this, dressings containing silver may reduce the need for prescription of systemic antibiotics. It can also contribute to the avoidance of antibiotic resistance development in patients with impaired healing wounds.**

## 7. Summary

Silver in medical devices has a documented antimicrobial effect. It provides patients with severe wounds a quicker healing process, thereby giving them an improved quality of life. Medical devices with silver should only be used after a careful assessment and should never be used where their usage is not indicated. Silver dressings should be handled in accordance to the existing waste management regulations for infectious waste.

## 8. Swedish Medtech

Swedish Medtech, formerly known as Sjukvårdens Leverantörs Förening, SLF, is the Swedish trade association for medical device producers. With presently 150 member companies the association represents nearly 90 percent of the medical device market in Sweden.

The medical device sector is very wide and the member companies have products within X-ray treatment, orthopaedic implants, stents, minimal invasive surgery, pacemakers, dialysis, and aids for disabled persons and disposables. The member companies are both larger and smaller companies, manufacturers and distributors.

## 9. References

- (1) Antimicrobial activities of silver dressings: an in vitro comparison; *Margret Ip Journal of medical microbiology* (2006), 55, 59-63.
- (2) Ovington, L.G. (2004). The truth about silver. *Ostomy/Wound Management* 50 (9A suppl)1S-10S.
- (3) Maple, P.A.C., Hamilton-Miller, J.M.T. & Brumfitt, W. (1992). Comparison of the *in vitro* activities of the topical antimicrobials azelaic acid, nitrofurazone, silver sulphadiazine and mupirocin against methicillin-resistant *Staphylococcus aureus*. *Journal of antimicrobial Chemotherapy* 29, 661-668.
- (4) Leaper DJ. Silver dressings: their role in wound management. *International Wound Journal* 2006;3(4):282-294.
- (5) Hindhede A. Silverförbandens roll i sårbehandling. (2007)Sår; nr1, 16-18
- (6) Stena Miljö, Fahlgren: "10x10 cm compress is the most used size. A 10x10 cm compress contains 100 mg silver. In accordance with information from the suppliers approximately 30 000 compresses are sold annually in Sweden. That means **about 0,6 kg (30 000x100/1 000 000x20%) pure silver to recycle totally in Sweden after the use of the 30 000 compresses.** The suppliers have no other instructions than to dispose the compresses with other medical waste."
- (7) Carsin et al, A silver sulphadiazine-impregnated lipocolloid wound dressing to treat second-degree burns. *J of Wound Care* 2004, 13:145-148