BY David Haligowski, BSc, MD AND Anne LeMesurier, RN, BScN, IIWCC

Sensitivity and Specificity of NERDS and STONEES for the Diagnosis of Increased Bacterial Burden in Chronic Wounds

Speaker: Kevin Woo

The diagnosis of infection in a chronic wound is best confirmed and supported by documenting clinical signs and symptoms. Sibbald et al. developed the mnemonic NERDS and STONEES to help assess levels of bacterial damage in chronic wounds. NERDS stands for: non-healing, exudate, red friable tissue, debris (discoloration) and smell. STONEES stands for: size increasing, temperature elevation, os (probes to bone), new breakdown, erythema/edema, exudate and smell. The signs identified in NERDS are suggestive of superficial wound infection that can be treated topically. The signs associated with STONEES could be treated with antibiotics systemically. Finding three clinical signs increased the specificity of NERDS to 80.5 per cent and STONEES to 69.4 per cent. Similarly the sensitivities improved to 73.3 per cent and 90 per cent, respectively. It is the hope that if these mnemonics were used in our practices when assessing for infection, we would diagnose infection earlier and reduce the inappropriate use of systemic antibiotics.

Wound Infection: A Nursing Perspective

Presenter: Hiromi Sanada

Lack of typical clinical signs of infection may be one reason for a delay in diagnosis of infection in chronic wounds. Because of this difficulty, thermography and ultrasonography were used to improve earlier diagnosis of infection. Once infection was diagnosed, the wound was cleansed with saline, and the peri-wound skin was washed with a cleanser or normal saline. Healing of the ulcers was better with the peri-wound cleanser, with a hazard ratio of 1.79.

The wound clinic also looked at Quorum sensing to assess the biofilm in wounds inoculated with *Pseudomonas aeruginosa*. Quorum sensing is the communication between bacteria using signaling molecules that can lead to increased bacterial virulence. The investigators found that Quorum sensing could be detected in the inoculated group, but not in the control group. At the same time, wound swabs measuring bacterial counts did not correlate with critical colonization.

Wound Infection: A Medical Perspective

Presenter: Martin Robson

Health is a balance or equilibrium between the factors of host resistance and a myriad of bacteria, which can be ever-present in a wound. When bacterial counts reach $>10^6$ CFU/g of tissue, or when there is a tissue presence of beta hemolytic *Streptococci*, the equilibrium favours bacteria, and infection can occur.

Treatment of chronic wounds attempts to restore the equilibrium, favouring health. Guidelines for the treatment of chronic wounds with evidence of infection were published in *Wound Repair and Regeneration* in December 2006. These guidelines recommend quantitative swabs or tissue biopsy if a wound is not progressing as expected. If $>10^6$ CFU/g are found on culture, the guidelines recommend topical antibacterials be applied. If deeper infection, such as cellulitis, is found, then systemic antibiotics, covering gram-positive bacteria, should be used.

Predicting Covert and Overt Infection in Leg Ulcers: A Randomized Controlled Trial

Speaker: Kerlyn Carville

This trial examined the clinical characteristics of wounds and associated wound-swab results to determine the effectiveness of topical antimicrobial dressings for the treatment of wound infection. Chronic leg ulcers are colonized by micro-organisms, which under some conditions may reach critical levels and progress to covert or overt infection.

The study examined the healing rate associated with the use of two commonly used antimicrobial dressings (cadexomer iodine and nanocrystalline silver) in the treatment of infected leg ulcers. Delayed healing (no improvement two weeks after optimal treatment) is the most common sign seen with critical colonization. New slough or wound breakdown is the second most frequent sign seen with critically colonized infection. This study confirmed that changes in wound characteristics could be used as clinical predictors for determining the presence of covert infection in chronic leg ulcers. Statistical analysis revealed a significant association between *Staphylococcus* on swab culture and malodorous or painful wounds with increased exudate.

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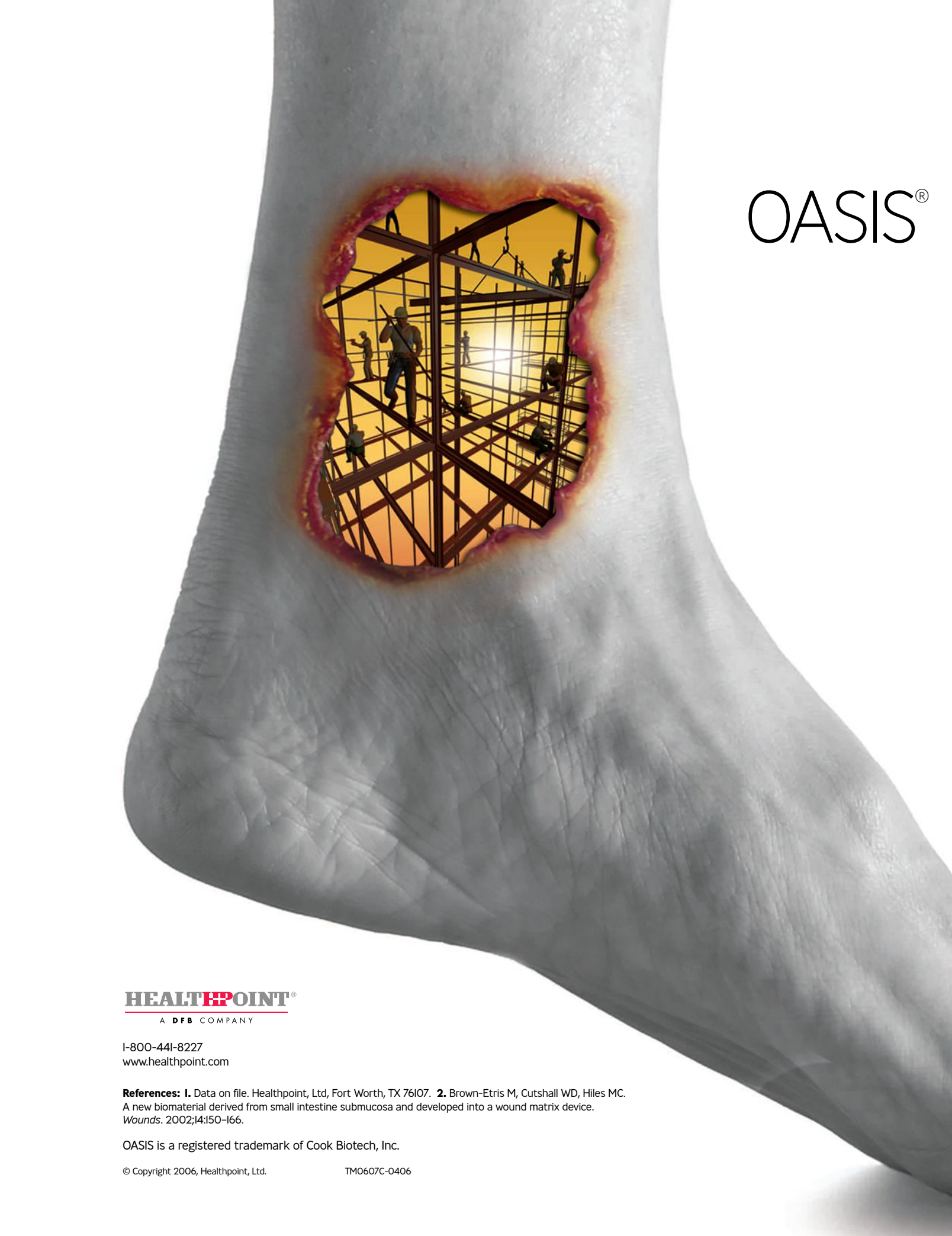

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