

[OP042] AN AUDIT OF TOPICAL ANTIMICROBIAL USAGE IN THE COMMUNITY SETTING

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Free Paper Session: Infection and Antimicrobials

Aim: The aim of this study was to evaluate current practice of community nurses when selecting an antimicrobial dressing.

Method: The study comprised of a retrospective analysis of patients' electronic community nurses record using a data collection proforma. Fifteen district nursing bases were included in the Audit. Patients' electronic nursing records on the district nursing caseload with wounds were scrutinised (n=555). Patients that had been treated with a topical antimicrobial and were included in the study = 336.

Results / Discussion: A high proportion of antimicrobials dressings were used within patients treated by community nurses (60.5%). The rationale for use was not documented in 44.3% of patients and care plans did not follow care documented in 46% of patients. Exudate colour was the most frequently used criteria for wound infection (10.4%). In order of frequency other criteria documented was odour, cellulitis, redness/inflammation, pain, friable granulation and prophylaxis were both equally used.

The following recommendations were made to improve current practice:

- Development of a pathway for correct identification of infection and selection of an antimicrobial dressing
- Provide a bespoke education programme on the identification and documentation of wound infection
- Development of a core care plan within the electronic patient record for a patient with a wound infection

Conclusion: Critical thinking, holistic assessment and correct documentation of clinical indicators are considered essential when justifying the use of antimicrobials; failure to undertake may lead to indiscriminate and inappropriate use. The implementation of education strategies into clinical practice may facilitate appropriate usage of topical antimicrobials within the community setting.

[OP043] ENGINEERED HONEY TO MANAGE BACTERIAL BIOBURDEN AND BIOFILM IN CHRONIC WOUNDS

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Free Paper Session: Infection and Antimicrobials

Aim: Honey* is a licensed sterile product for wound care, and has demonstrated highly potent activity against a wide range of planktonic Gram-positive and Gram-negative bacteria. Honey* has promise as a topical dressing agent.

Given the global concerns surrounding antimicrobial resistance, and the challenges posed by biofilms, we sought to investigate the clinical activity of honey* in chronic wounds on bioburden, biofilm and healing.

Method: Patients in hospital and primary care with chronic wounds (venous, ischaemic and pressure ulcers, traumatic and surgical wounds, burns, diabetic ulcers) were treated topically with honey*. Microbiological analysis of the lesion bed was carried out prior to, during and at the end of treatment, by bedside plating of a swab of the lesion base. Colony counting with bacterial speciation was undertaken. The size of the lesion was recorded throughout treatment, along with level of pain, nature of exudate, odour and induration/inflammation.

Results / Discussion: 143 wounds were treated and assessed: 20 pressure ulcers, 42 leg ulcers, 19 surgical wounds, 24 traumatic wounds, 38 diabetic ulcers. The honey* was effective in reducing bacterial bioburden from semi-quantitative values of 3+ colony forming units (cfu) to +/- cfu. It was highly effective in eradicating multiply resistant bacteria (*MRSA*, *ESBL* and *VRE*) and reducing biofilm, particularly with *Pseudomonas aeruginosa*. The honey* treatment resulted in healthier, healing lesions. No lesions deteriorated on treatment. Patient tolerance was high.

Conclusion: The honey* may be the first biotechnology product with enhanced antimicrobial properties to be used successfully in wound management and could have advantages over chemical products and antibiotics in wound dressings in promoting healing and counteracting antimicrobial resistance.

*Engineered honey (SH)

[OP047] A PROSPECTIVE STUDY TO EVALUATE HYDROFERA BLUE FOR THE MANAGEMENT OF CHRONIC WOUNDS EXHIBITING SIGNS OF INCREASED BACTERIAL BURDEN.

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Free Paper Session: Infection and Antimicrobials

Aim: Increased bacterial burden has been identified as one of the key factors contributing to delayed wound healing and other serious complications. The purpose of this case series is to evaluate dressing impregnated with Methylene Blue and Gentian Violet for the management of chronic wounds that exhibited signs associated with increased bacterial burden.

Method: All subjects enrolled into the study were between 18-85 years of age with a chronic wound. Their wounds were evaluated weekly for four weeks to determine changes in wound surface areas, exudate levels, wound tissue types and odour using validated assessment tools (including the PUSH tool and Infection Symptoms Checklist).

Results / Discussion: Twenty-two participants (with 13 pressure ulcers, 8 surgical wounds, and 1 diabetic foot ulcer) completed the study. At baseline, all wounds were documented to have moderate to heavy exudate, an odour problem, and sloughy tissues present in the wound beds. At the end of study (week 4), only granulation tissues were present in all wound beds with light exudation. None of the participants and caregivers noticed any odour. There was a significant difference in wound sizes from 23.9 cm² (SD=24.03) at baseline to 18.03 cm² (SD=22.65) at week 4 according to paired t-test ($t=3.95$, $df = 21$, $p<0.001$).

Conclusion: Signs associated with increased bacterial burden are useful indicators for the need to use antimicrobial dressings. Results of this study indicate that an antibacterial foam dressing containing gentian violet and methylene blue may be a suitable option for chronic wounds exhibiting signs of increased bacterial burden.

[OP040] DACC DRESSING FOR THE PREVENTION OF SURGICAL SITE INFECTION AFTER CESAREAN SECTION: A PILOT STUDY

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Free Paper Session: Infection and Antimicrobials

Aim: Surgical site infections (SSIs) occur in approximately 1.8-9.2% of patients undergoing cesarean section (CS). This paper aims to assess the efficacy of dressings impregnated with dialkylcarbamoyl chloride (DACC)* in the prevention of incisional SSIs in patients subjected to CS during the first 14 days following surgery.

Method: A single-blinded randomized, controlled pilot study was conducted at a tertiary care hospital between December 2013 and March 2014. Patients were randomly allocated to receive treatment with either DACC dressing or standard surgical dressing (SSD). A logistic regression model was constructed in order to determine risk factors for SSIs, and a microbiological analysis was performed in order to identify responsible pathogens.

Results: 142 patients after planned or emergency CS were enrolled in the study (DACC group, n=71; SSD group, n=71). No significant differences between groups were observed with regard to patients perioperative characteristics. The rate of superficial and deep SSIs was 2.8% in the DACC dressing group compared to 9.8% in the SSD group (p=.08). Patients with SSIs who received a SSD required systemic antibiotic therapy significantly more frequently (p=.04). Based on the logistic regression model developed the pre-pregnancy body mass index was the only statistically significant risk factor for incisional wound infection (p=.015). *Staphylococcus epidermidis* was the most common pathogen responsible for SSIs in patients in both groups.

Conclusion: The results indicate a decreasing SSI rate in patients after a CS who received DACC dressings. A larger trial was recommended as follow up**.

*Sorbact®, ABIGO Medical AB, Sweden

**RCT was registered and is currently recruiting participants

[OP041] MANAGEMENT OF COMPLICATIONS OF MYCOBACTERIUM ULCERANS DISEASE; A THREE YEAR REVIEW

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Free Paper Session: Infection and Antimicrobials

Aim: To document the complications of MU disease and the reconstructive surgery performed to correct them.

Method: Patients with unhealed lesions after completing eight weeks of rifampicin and streptomycin treatment, and patients with complications of MU disease were selected and prepared for surgical treatment.

Results / Discussion: 61 patients were treated successfully with rifampicin and streptomycin without complications.

65 patients presented with complications; they comprised 34 males and 31 females. Their ages ranged from 1 year 3 months to 80 years with mean age of 29.7 (S.D. 20.1).

The types of lesions seen were ulcers (54), contractures (7), chronic osteomyelitis (one), subluxation of knee joint (one), salivary gland fistula (one) and Marjolin's ulcer (one). The lesions were distributed as follows: 69.2% on the lower, and 23.1% on the upper limbs, 6.2% on the head and neck and 1.5% on the trunk. Wound excision with or without skin grafting was done in 84.6% of patients, surgery for contractures in 10.8%, and sequestrectomy, exploration and ligation of fistula, groin dissection and above knee amputation in 4.6%.

Conclusion: Whilst ulcers, the commonest MU lesions, are being controlled with antibiotics, rare complications of the disease are also emerging.

[OP044] BACTERIAL ISOLATIONS IN A POPULATION OF DIABETIC INPATIENTS ADMITTED IN A SPECIALIZED DIABETIC FOOT CENTER

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Free Paper Session: Infection and Antimicrobials

Aim: Foot infections are a major complication of diabetes that may lead to lower extremity amputation. This analysis investigated the microbial isolations in patients with diabetic foot infections treated in a specialized diabetic foot center.

Method: From January 2013 to December 2013, 630 specimens were analysed by our microbiology laboratories obtained from diabetic foot wounds. Consecutive patients with diabetic foot infection admitted in our department were studied. Clinical severity of infection was moderate or severe according to IDSA (Infectious Disease Society of America) or grade 3-4 according with PEDIS classification. Five specimens including soft tissue biopsy were obtained from every ulcer.

Results / Discussion: The most commonly isolate organisms were: *Staphylococcus aureus* (26%), *Pseudomonas aeruginosa* (17%), *Staphylococcus epidermidis* (17%), *Proteus mirabilis* (5%), *Staphylococcus intermedius* (5%), *Escherichia coli* (4%), *Enterococcus cloacae* (3%), *Enterococcus faecalis* (3%) and *Klebsiella pneumoniae* (2%) Others (18%). In the present study the 61.6% of *Staphylococcus aureus* was Methicillin-resistant, but it showed high degree of sensitivity to vancomycin, daptomycin, linezolid, teicoplanin. The second bacterial strain isolated after *Staphylococcus aureus* was *Pseudomonas aeruginosa*, that showed high rate of sensitivity to colistin. Regarding other Gram-negative microorganisms, *Escherichia coli*, *Klebsiella pneumoniae* and *Proteus mirabilis* showed high rate of sensitivity to ertapenem and tygecilin.

Conclusion: Bacterial isolations in the population studied agreed with results present in literature. Management of diabetic foot infections usually requires combined antibiotic therapy in association with surgical drainage and bone resection. The choice of antibiotic therapy is influenced by sensitivity of the isolated bacterial strains.

[OP045] CLINICAL EXPERIENCES WITH ULTRASONIC ASSISTED WOUND DEBRIDEMENT (UAW) USED FOR WOUND BED PREPARATION BEFORE SKIN GRAFTING

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Free Paper Session: Infection and Antimicrobials

Aim: To evaluate the effectiveness of a 25kHz ultrasonic assisted wound debridement device (UAW) for chronic wound bed preparation before skin grafting.

Method: UAW was used for wound debridement of 140 chronic wounds. Group 1 included n=53 patients with critically colonized wounds and group 2, n=87 patients with colonized wounds. Group 1 wounds underwent a single initial UAW procedure followed by 7–14 days moist wound care before skin grafting. Group 2 received two UAW treatment sessions, the first 2-3 days after patient admission and the second after 7–14 days of moist wound care. Skin grafting followed after the second UAW treatment.

Results / Discussion: In group 1 a single UAW application showed to be effective in removing necrotic and devitalized tissue with a significant reduction of bacteria from 10^5 - 10^8 to 10^1 - 10^4 CFU/ml being detected. All wounds showed best skin graft take rates with no complications noted. Group 2 patients required two procedures of UAW for efficient wound debridement. A significant reduction of strong slime and biofilm building bacteria species (from 60% to 10%) was noted. These results were confirmed *in vitro* showing UAW application removed the biofilm biomass and affected bacteria to become less capable in producing slime.

Conclusion: These clinical experiences provide a first guidance to clinicians on the frequency of UAW treatment sessions to be applied for effective removal of devitalized tissue and bacterial biofilms and best preparing the wound bed for further skin grafting.

[OP046] TEN YEARS AFTER. ANALYSIS OF WOUND INFECTIONS PROFILE IN DIABETIC FOOT SYNDROME PATIENTS IN YEARS 2011-2013

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Free Paper Session: Infection and Antimicrobials

Aim: Estimation of pathogen profile in patients with ulcerations in years 2011-2013.

Method: The study was conducted in the Department of Gastroenterology and Metabolic Diseases and Diabetic Foot Outpatient Clinic of Medical University of Warsaw. The study included 254 patients with diabetes mellitus. Bacteria from the samples obtained from base of ulceration were cultured and identified.

Results / Discussion: Among 503 most common pathogens Gram (+) species made up to 42%, Gram (-) (58%). The most common isolated pathogens were *Serratia marcescens* (n=75, 29.6% of cultures), *Staphylococcus aureus* (n=70, 27.7% of cultures), *Pseudomonas aeruginosa* (n=64, 25.3% of cultures), *Peptostreptococcus* (n=39 15.4% of cultures) and *Proteus mirabilis* (n=31, 12.3% of cultures). *Methycilin Resistant Staphylococcus aureus* was present in 7.1% of total number of cultures and in 25.7% *Staphylococcus aureus* samples. In 23 cultures of *Enterobacter cloacae* 13% were ESBL (+). In 20 samples with *Morganella morgani*, 5% were ESBL (+). In 31 cases with *Escherichia coli* 9.7% were ESBL (+). Difference in incidence of pathogens between genders was discovered. In men more common were *Staphylococcus aureus* (p=0.03) and *Streptococcus agalactiae* (p=0.02), while in women *Proteus mirabilis* (p=0.002), *Staphylococcus aureus* MRSA (p=0.04) and *Prevotella bivia* (p=0.03).

Conclusion:

Staphylococcus aureus is still common cause of diabetic foot infections but was observed less often than in previous studies. Domination of Gram (-) species indicates the chronicity and severity of infections with diabetic foot ulcers. While *Serratia marcescens* and *Pseudomonas aeruginosa* usually need prolonged, wide spectrum antibioticotherapy in hospital settings increase in number of hospitalizations in coming years may be observed.