# **Efficacy of Silver Impregnated Nanocrystalline Dressing in Managing Bacterial Resistant Chronic Wounds in Hospital Kuala Lumpur**

Dr Harikrishna K.R.Nair FMSWCP, AMO Banushay Balakrishnan

## INTRODUCTION

Wound management Dressings are part of a holistic wound management plan with personalized patient goals. One goal may be to facilitate faster wound healing by providing the optimal environment for healing process. Agicoat is a silver impregnated dressing facilitating the delivery of silver to the wound surface. It contains nanocrystalline silver which when moistened with sterile water releases silver ions onto the wound surface. The invitro antimicrobical action of silver has been demonstrated to destroy within 30 minutes, both Gram positives and negative bacteria a well as Vancomycin resistant enteroccocci (VRE) Methicillin and resistant S. Aureus.

The action is accomplished by the silver ions binding to tissue proteins causing a structural change in the bacterial cell membranes. The silver then binds and denatures the bacterial DNA and RNA, thus inhibiting replication.

The action of Agicoat is fast in destroying pathogens such as Escherica coli, S. Aureus and Methicillin resistant S. Aureus and Pseudomonas aeruginosa.iuj

A Study was taken to determine the Efficacy of Agicoat Silver Nanocrystaline Dressing to Manage Bacterial Resistant Chronic wounds with different aetiology. Five patients were assessed:- one venous ulcer wound, one benign ulcer, one lower limb ulcer, one diabetic foot ulcer and one diabetic foot abscess.

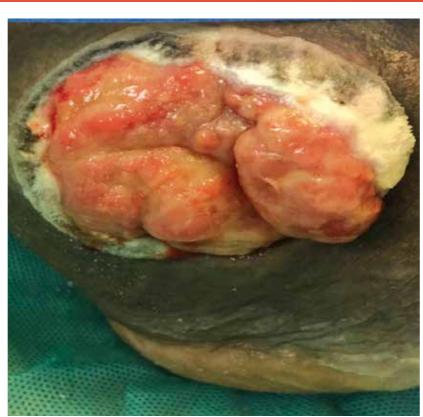
## **METHODOLOGY**

The wound were assessed using TIME concept. The wounds were cleansed using Distilled water. De-sloughing and debridement was done to remove the slough, necrotic tissue and devitalized tissue. Nano Silver dressing was used to reduce the bacterial burden. Changes in dressing were made every 7 days. Trial was done for four (4) to six (6) weeks

## **RESULTS**

All wounds started to heal with granulation tissue. There was reduction of the exudates and the bacterial bioburden. Wound size reduction was seen. Healing was noted with the Agicoat Silver Nanocrystaline Dressing.

## **RESULTS**



**Before** 



**After** 

#### CASE 1

55 Years old / Malay / Female

#### **Medical History**

Underlying diabetes mellitus, Hypertension, and History of ray's amputation of 2nd, 3rd, 4th, and 5th toes (right). Had been admitted in medical ward for right diabetic foot ulcer and debridement done on 29/09/2015.

#### **On Examination**

Right DFU post Ray's amputation over lateral aspect Granulation tissue seen Biofilm noted

Sinus tracking (8cm) @ 12 o'clock position Heavy serous exudate

Macerated edges



**Before** 



#### CASE 2

62 years old / Chinese / Female

#### **Medical History**

Underlying scoliosis for the past 5 years. No history of diabetes.

#### **Wound History**

She had previous multiple admission to ward for right lower limb venous ulcer for the past 7 years.

Presented to us last year on May with venous ulcer wound on her lower right leg.

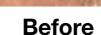
Necrotic tissue seen, heavy yellowish exudates, Malodour.

#### Wound size

1st agicoat ag using: 14th June 2016

L: 8.5 cm x W: 10 cm







**After** 

**After** 

#### CASE 3

57 Years old / Malay / Male

## **Medical History**

Underlying diabetes mellitus since age 19. He was admitted for left diabetic foot abscess and incision and drainage done by orthopedic.

## **On Examination**

Left dorsal over lateral aspect Granulation tissue seen Biofilm noted Heavy serous exudate Macerated edges







**After** 

## CASE 4

24 years old / Malay / Male

## **Medical History**

u/l left leg benign ulcer under dermatology HKL since June 2015.

Biopsy done (12/1/16) – consistent with benign ulcer, no malignancy/granuloma identified.

Covered with multiple courses of antibiotics.

## **Wound History**

He had previous multiple admission to ward for left lower limb venous ulcer.

## On Examination

Ulcer L: 8 cm x W: 7 cm on left shin

Overgranulation tissue

Greenish discharge, sloughy tissue seen, malodour, surrounding skin wet and mild erythema.



Right Leg - Before



Right Leg - After



Left Leg - Before



**Left Leg – After** 

# 47 Years old / Malay /

CASE 5

Female

#### **Medical History** No history of diabetes

Underlying cellulitis for the past 1 year

Previously had bilateral lower limb ulcer

## On Examination

Bilateral lower limb ulcer Heavy yellowish excudate Sloughy tissue seen Granulation tissue seen Wound size (right): 12.5cm x 9.7cm Wound size (left): 9cm x 7cm