The effect of Acticoat™ dressings on Bioimpedance Spectroscopy measurements when monitoring fluid status in burns patients: An update.

Tiffany L. Grisbrook[1], Pippa Kenworthy [2], Michael Phillips[3], Fiona M. Wood[4], Dale W. Edgar[5].

1 Fiona Wood Foundation, Fiona Stanley Hospital, Murdoch, WA, tiffany.grisbrook@curtin.edu.au
2 State Adult Burn Unit, Fiona Stanley Hospital, Murdoch, WA, pippa.kenworthy@health.wa.gov.au
3 Harry Perkins Institute of Medical Research, The University of Western Australia, Crawley, WA, michael.phillips@perkins.uwa.edu.au
4 State Adult Burn Unit, Fiona Stanley Hospital, Murdoch, WA, Fiona.Wood@health.wa.gov.au;
5 State Adult Burn Unit, Fiona Stanley Hospital, Murdoch; Burn Injury Research Node, University of Notre Dame, Fremantle, WA; dale.edgar@health.wa.gov.au.

Introduction
Bioimpedance Spectroscopy (BIS) is a tool used to measure body composition and fluid distribution. BIS is based on the response of electrical impulses across intact skin and it is unknown if silver dressings influence the accuracy of BIS.

Methods
BIS measurements were collected during two dressing conditions; no dressing (ND), and new Acticoat™ dressing (AD). Wilcoxon Signed-ranks tests determined if there were any significant differences in BIS measures between the dressing conditions. Spearman's correlations assessed the association between the BIS measures taken with ND and AD.

Results
Mean age of the participants was 34.9 (SD=13.8) years; with a mean TBSA of 19.6 (SD=17.7)%. Preliminary results indicated that total body water (TBW) (Z=-2.92, p=0.004), intracellular fluid (ICF) (Z=-3.23, p=0.001), and extracellular fluid (ECF) (Z=-2.06, p=0.039), were significantly lower with ND compared with AD. There was a positive correlation between TBW (r_s=0.62, p<0.001), ICF (r_s=0.66, p<0.001) and ECF (r_s=0.73, p<0.001) with ND and AD.

Discussion
The significant difference in BIS variables between the dressing conditions is of concern. However, given the measures were correlated, this may be indicative of a systematic difference that needs to be adjusted for when BIS measures are taken with AD in situ. This difference could be owing to a number of variables including; %TBSA, incidental fluid loss, time in between measurements etc. Multilevel regression analysis is required to address these issues, the results of which will be presented.

Conclusion If BIS variables can be adjusted to account for AD, then BIS may become a useful clinical tool in the assessment and management of oedema.

Key Words

bioelectrical impedance, silver dressing, wound, oedema