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Face Care Trial – GlucanPro™ versus Soft White Paraffin for the treatment of paediatric facial burns

Background:
Facial burns in children are common. The face presents unique challenges in ensuring an adequate wound-healing environment. Typical dressings are not easily secured due to animation of the underlying structures, potential irritation of sensitive tissues, interference with hearing, vision, eating and regular cleaning of the child's face. Simple paraffin wax variations are used extensively to maintain a moist, comfortable and clean environment for wound healing.

Topical administration of Beta glucan (a complex plant derived carbohydrate), potentially enhances wound healing by increasing macrophage infiltration into the wound area, and by stimulating tissue granulation and re-epithelization.[1] This pilot study compared the use of Soft White Paraffin (SWP) against GlucanPro™ (GP), a paraffin wax containing oat Beta-glucans, in the treatment of partial thickness facial burns.

Methods:
The 2 products were randomly assigned to identical, de-identified pots by the hospital pharmacy, the investigators were blinded to this process. These pots were labelled A through J. 10 consecutive children presenting with partial thickness facial burns were eligible for inclusion. The children were assigned to each letter sequentially. Reviews by nursing staff were conducted 2 hourly during the day and 4 hourly overnight. Assessment of wound moisture was undertaken, where it was deemed that further product needed application, retrospective assessment of both the ease of application and the child's experience rating was undertaken. The use of analgaesia prior to cleaning and/or reapplication was recorded for standardisation. Likert scales (1-5) were used for all non-binomial data, where 1 was an inferior score (less moist, negative experience, difficult to apply). Patients were discharged when the burn was deemed 95% healed.

Results:
8 patients completed the pilot study (1 was excluded due to administrative error, 1 due to early self-discharge). Statistical significance was set at a p-value of <0.05. GP scored consistently higher mean scores than SWP in all subjective scales, however only reached statistical significance in wound moisture rating (Table 1). There were 3 children who required antibiotics for superficial infections, 2 of these were in the GP cohort. Total inpatient days were similar in both cohorts (range 6-14). Clinical photographs of our initial trial patient are shown opposite (Image Panel).

Table 1: Summary statistics

Clinical Parameter	Soft White Paraffin (n=3)	GlucanPro™ (n=5)
Product applications		
Number applied (percentage), n	125 (82%), n=152	158 (70.5%), n=224
Analgaesic requirement		
Number given (percentage), n	42 (29.2%), n=144	61 (29%), n=210
Wound moisture rating*		
mean (95% CI, n)	2.2 (1.9-2.4, n=149)	3.1 (2.9 – 3.3, n=223)
Child's experience rating		
mean (95% CI, n)	3.9 (3.7-4.1, n=124)	4.1 (3.9 – 4.3, n=155)
Ease of application		
mean (95%CI, n)	4.1 (3.9-4.3, n=122)	4.4 (4.2 – 4.6, n=157)

Discussion:
GlucanPro™ is substantially more expensive than Soft White Paraffin ($39.95 vs $2 /100g)[2]. Despite small patient numbers, a trend favoring GlucanPro's was identified in relation to improved wound moisture retention and ease of use (greater than 200 treatment episodes) in real terms this related to an average of one less application per patient per day. Other parameters did not reach statistical significance however a larger study may delineate this. No conclusion could be drawn as to the impact on length of stay in these patients, attributed to the heterogeneous nature of the burns (mechanism, size, depth, first aid etc). A higher rate of superficial infection was seen in the study than is typical for the unit, we believe this to be due to the repeat dispensing from a non-sterile pot instead of smaller sterile tubes as is the norm.

Image Panel: Patient 1 photographs on day 0, 2, 6, 28 (Clockwise from top-left)

Conclusion:
GlucanPro™ showed reached superiority over Soft White Paraffin in terms of wound moisture maintenance. However, no reduction in length of stay was seen in order to justify the additional cost. Sterile packed and cleanly dispensed topical treatments should be used where possible to reduce cross contamination.

1 Wei, D., Zhang, L., Williams, D. L. and Browder, I. W. (2002), Glucan stimulates human dermal fibroblast collagen biosynthesis through a nuclear factor-1 dependent mechanism. Wound Repair and Regeneration, 10: 161–168. doi:10.1046/j.1524-475X.2002.10804
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