

## [OP138] DANISH TRANSLATION AND VALIDATION OF THE INTERNATIONAL SKIN TEAR CLASSIFICATION SYSTEM

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Free Paper Session: Wound Assessment

**Aim:** The aim of this study was to translate, validate and establish reliability of the International Skin Tear classification ISTAP system into Danish.

**Method:** Phase 1: The classification System was translated into Danish, using the translation ± back translation method (Wild et al., 2005).

Phase 2: ISTAP was sought to be replicated and validated by the nurses (RN) and social and health care assistants (SHCA) from primary health care and one Danish hospital.

Photographs (n=30), with equal representation of the 3 types Skin Tears, were selected to test validity. The 30 photographs used for the validation process were the same photos originally used for internal and external validation by the ISTAP group (LeBlanc et al., 2013). All statistics were completed using SPSS version 22 for Mac.

**Results:** The classification system and photographs were sent to a group of 270 participants to include 241 registered RN, 29 SHCA. The data indicated a moderate level of agreement on classification of Skin Tears by type (Fleiss J = 0.460). A moderate level of agreement was demonstrated for both the RN group and the SHCA group (Fleiss J = 0.464 and 0.443, respectively).

**Conclusion:** The expert panel established the ISTAP Skin Tear Classification System with the goal of raising the global healthcare community's awareness of Skin Tears. The Danish translation of this ISTAP classification system supports the earlier ISTAP study and further validates the classifications system. The Danish translation of the classification system is vital to the promotion of skin tears in both research and the clinical settings in Denmark.

## [OP139] RELIABILITY OF A SKIN DIAGNOSTIC DEVICE

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Free Paper Session: Wound Assessment

**Aim:** Current assessment of skin condition is subjective and lacks standardisation. Skin diagnostic technology, used in the cosmetic and dermatological fields, could be applied to wound management. This study sought to examine the reliability of an objective skin diagnostic device, in assessing skin hydration and erythema of the periwound and pressure injury prone areas.

**Method:** Three studies examined the reliability of epidermal hydration\* and erythema\*\*. Study 1 was a cross-sectional study of venous leg ulcer periwounds (n=16). Study 2 was a prospective study of diabetes related foot complication periwounds (n=17). Study 3 was a prospective study of pressure prone areas amongst residents of an aged care facility (n=38).

**Results / Discussion:** Study 1: Internal consistency was high for repeated measures at one site of the periwound and at multiple locations around the periwound for hydration ( $\alpha >.996$ ) and erythema ( $\alpha >.970$ ). Study 2: High internal consistency of single measures at multiple points around the periwound was observed at baseline and subsequent assessment points for hydration ( $\alpha >.892$ ) and erythema ( $\alpha >.929$ ). Study 3: With two exceptional results at the sacrum ( $\alpha=.611$ ) and right calcaneus ( $\alpha=.410$ ), internal consistency at remaining pressure prone areas was high for hydration ( $\alpha >.916$ ). Internal consistency for erythema measures was also high ( $\alpha >.852$ ) at all nine pressure prone anatomical locations.

**Conclusion:** Epidermal hydration and erythema in periwound skin and intact skin on pressure prone areas can be reliably assessed using an objective skin diagnostic device.

\*Corneometer

\*\*Mexameter (SD202, Courage+Khazaka GmbH, Cologne, Germany)

**[OP140] BLOOD NEUTROPHILS FUNCTION ACTIVITY DURING THE WOUND BED PREPARATION WITH USAGE OF ULTRASONIC ASSISTED WOUND DEBRIDEMENT (UAW)**

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Free Paper Session: Wound Assessment

**Aim:** To evaluate the changes of blood neutrophils function activity at the patients with chronic wounds as a response on UAW.

**Method:** 90 patients with chronic wounds were enrolled in the study. Wound treatment protocol for the preparation of patients to skin grafting included UAW and dressing therapy. Depending on the frequency of debridement the patients were divided into group 1 – one UAW procedure and group 2 – two UAW procedures.

Neutrophils function activity was evaluated for the assessment of chronic inflammation status of the wounds. Neutrophil respiratory burst reaction spontaneous (NBTsp) and *S. aureus*-stimulated (NBTst) as well as the level of phagocytosis was analyzed. Neutrophils-extracellular trap forming (NETs) was evaluated before (spontaneous, NETsp) and after incubation of neutrophils with products of *S. aureus* (stimulated, NETst).

**Results / Discussion:** At the moment of admission all the patients had the increased NBTsp, NETsp, NETst and decreased phagocytosis. Dressing treatment was accompanied with the activation of NBTsp. After the first UAW procedure the phagocytosis increasing as well as NBTsp and NBTst was evaluated. Repeated UAW (group 2) resulted in the most expressed changes of neutrophils function activity with their normalization at the moment of wound healing.

**Conclusion:** Blood neutrophils function activity reflects the condition of chronic inflammatory status of wound and can be used for the estimation of the wound bed preparation completeness. The first UAW procedure stimulates neutrophils function and as a result provides acute inflammation activation. The second UAW procedure supported neutrophils activity and promotes their normalization at wound healing.

## [OP141] THE 1ST PIONEER LOCAL REPORT: FLUORESCENCE DIAGNOSTICS OF STOMAL MUCOSA BY NURSE

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Free Paper Session: Wound Assessment

**Aim:** To explore the stoma mucosa; using the fluorescence to distinguish different kinds mucosa lesions which they are often appear as healthy under daylight.

**Method:** The principle of Fluorescence Diagnostics (FD) is scanning and analyzing reflected light from the mucosa; using the blue light after the stoma mucosa was stained with fluorescence strip. It creates a red–green image of etiology changes.

**Results / Discussion:** From June to November 2014; we examined 64 patients with stoma randomly in Nurse Clinic (Wound Care). Clinically; it is our routine practice to assess the stoma viability and mucosa by simple light source. In FD; we use the blue light to assess the stained stoma; under the dark room. Interestingly; we distinguish different targets diagnosis despite the stoma is perfectly viable and red. They are classified as stomatitis (12%); local ulceration(19%); laceration(21%); local bleeder with mild oozing(22%) and nothing abnormality detected(26%). It is impossibility to differentiate different diagnosis without the FD for the stoma mucosa appears well under the daylight.

**Conclusion:** Fluorescence diagnosis is a fast and noninvasive method for tissue imaging in many locations. This method is sensitive and specific especially in diagnostics of small changes that are invisible using white lighting procedures. It allows clinician view the nature of the mucosa concisely; and detects aberrant tissues in full details than can be achieved by simple visual examination. Yet it is still not common enough in clinical practice; it is necessary to promote the advantages of this diagnostic method among clinicians near future.

**[OP142] COMPARING VISUAL ASSESSMENT WITH AN OBJECTIVE SKIN DIAGNOSTIC DEVICE TO MEASURE PERIWOUND OF DRFU**

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Free Paper Session: Wound Assessment

**Aim:** Peri-wound skin condition has been associated with wound healing however there is limited evidence to guide effective peri-wound assessment practices. This study evaluated the relationship between two peri-wound assessment techniques (1) visual peri-wound assessment by clinicians and (2) an objective skin measuring device (SD202) in diabetic related foot ulcers (DRFU).

**Method:** Seventeen people (aged 31-86 years) with DRFUs were recruited from a high-risk foot clinic over a 4-month period. The peri-wound of each participant's DRFU was assessed fortnightly for 6 weeks. Assessment included visual appraisal by podiatrists and objective evaluation using the skin measuring device\* which quantifies epidermal hydration and erythema. Pearson's correlation coefficients were obtained to assess the relationship between I) visual assessment of maceration and objective hydration measures and II) visual erythema assessment and objective erythema measures.

**Results / Discussion:** Correlations between visual and objective peri-wound hydration assessments were consistently strong and positive however, they only reached statistical significance at baseline ( $r=0.565$   $p=0.035$ ) and 2 weeks ( $r=0.611$   $p=0.035$ ). Significant relationships between visual and objective peri-wound erythema assessments were not detected at any time point.

**Conclusion:** Further research is warranted as this study suggests that objective diagnostic techniques using the skin measuring devices may improve the accuracy of peri-wound assessment. It demonstrated that elements of these peri-wound assessments show promise as determinants of healing trajectory and predictor of wound healing.

\*SD202 skin-measuring device (C.K Electronic)

## [OP143] USE OF NOVEL 3D DIGITAL TECHNOLOGY FOR ASSESSMENT OF DIABETIC FOOT ULCERATION

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Free Paper Session: Wound Assessment

**Aim:** We describe experience with a new technology for 3D digital wound assessment in the management of patients with diabetes foot ulceration.

**Method:** We studied prospectively 11 patients with diabetes who presented to our Foot clinic with foot ulcers. Ulcer healing was monitored with the new imaging system\*, which allowed us to measure area, depth and volume and stored a digital record of the ulcer. At each visit, the wound assessment software calculated the percentage area reduction from baseline. Treatment outcomes were evaluated at weeks 1, 3, 5 and 12.

**Results / Discussion:** The ulcer area at presentation was  $1.6 \pm 2 \text{ cm}^2$  (mean $\pm$ SD) and the ulcer volume was  $171.4 \pm 321.2 \text{ mm}^3$ . During the observational period, foot ulcers healed in 7 patients and improved in 2 patients. Ulcer deterioration was observed in 2 patients. Follow up measurements and treatment outcomes are presented in the table below.

	Week 1 (n=11)	Week 3 (n=11)	Week 5 (n=8)	Week 12 (n=7)
Ulcer volume (mm <sup>3</sup> )	100.3 $\pm$ 239.4	31.2 $\pm$ 33.1	22.2 $\pm$ 15.5	1 $\pm$ 1.4
Area reduction from baseline (%)	14.3 $\pm$ 27.6	27.3 $\pm$ 37.9	43.5 $\pm$ 50	54.9 $\pm$ 56.2
Outcome				
Improved	11	8	6	2
Healed		2	1	4
Deteriorated		1	1	

**Conclusion:** This new system enabled us to easily compare the foot ulcer image between visits and allowed us to accurately analyze the wound measurements. The detection of subtle deleterious changes prompted us to review patients within the multi-disciplinary clinic for management optimization. The accurate and objective wound assessment gave the

professional and patient an early indication of how the patient was responding to treatment. The system was fast and easy to use with the bonus of being a non-contact wound assessment method.

\*Silhoutte (ARANZ Medical Limited)