An Investigation of the accuracy of early pressure ulcer damage assessment using sub epidermal moisture measurement versus nurses' visual skin assessment.

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Background

Pressure ulcers have a detrimental effect on the health and wellbeing of patients and have a significant impact on resource costs in healthcare [1]. Despite investment in resources and education, the problem persists, with estimated rates of up to 25% of hospital acquired pressure ulcers (HAPU's) occurring in the acute care setting [2]. Currently risk assessment tools and nurses visual skin assessment guide pressure ulcer prevention strategies, however risk assessment tools vary in reliability, and nurses visual skin assessment and staging of pressure ulcers is often inaccurate [1]. Elevated sub epidermal moisture (SEM) is associated with early pressure ulcer damage. Studies [2] have demonstrated the feasibility of using sub epidermal moisture measurement which rises in the inflammatory process as a predictor of early pressure damage. SEM is medical device that calculates this measure allowing for early intervention improving patient outcomes,

Figure 1.1.

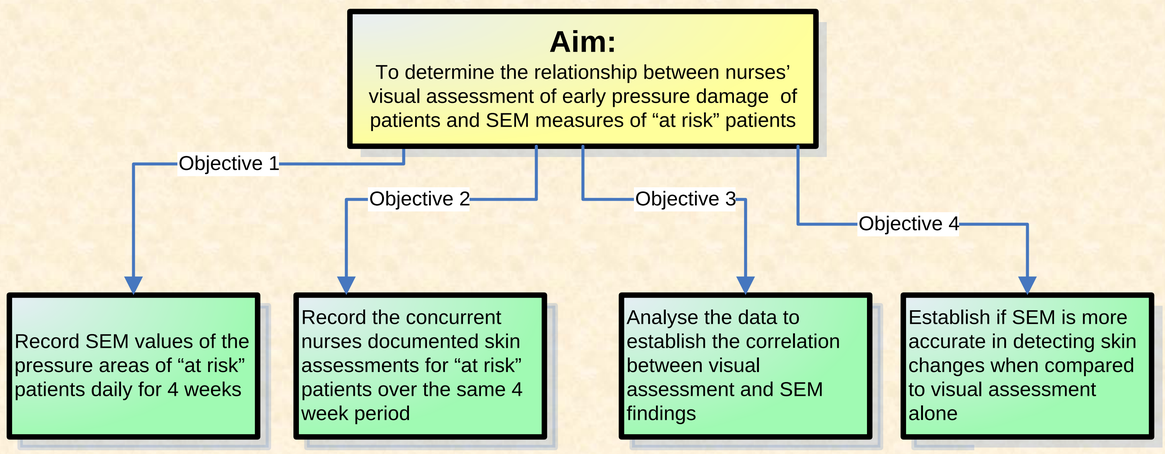
Figure 1.1 SEM Scanner and procedural steps for completion of assessment

Research Approach

A quantitative prospective descriptive, correlation study is used to answer the research question.

Research Question

'Is there a correlation of early pressure ulcer damage between SEM™ and visual skin assessment?'



Research Method

Data collection:

- Cohort sampling of all at risk patients over a 4 week timeframe
- Baseline demographics which consist of:
  - ✓ Medical data for each patient
  - ✓ Norton pressure ulcer risk score
  - ✓ Previous pressure ulcer damage
  - ✓ Nurses visual skin inspection – skin normal/ skin not normal
  - ✓ SEM scanner readings

Data analysis:

- Statistical Package for Social Sciences (SPSS)
- Descriptive and inferential statistics
- Correlation between the two methods of assessment will be determined using the phi coefficient

Ethical Issues

- Ethical approval sought and granted prior to commencement of study
- All participant information is anonymous and confidential

Time Frame/Resources

- Time frame restricted due to academic assignment
- Research costs are researcher funded

Limitations of Study

- Time frame of study & bed closures limited number of potential participants
- Purposive sample of 47 patients in an acute general hospital in Ireland limits generalisability of findings

Research Findings

- SEM Scanner™, is more accurate in detecting skin changes when compared to nurses' visual assessment alone
  - Of the 47 patients, 34% (n=16) exhibited sustained elevated deviation in sub epidermal moisture (SEM) levels. Of these, 100% went on to develop visual signs of pressure ulceration.
- However, importantly, SEM Scanner™ identified early damage, on average, 3.9 days earlier than nurses' visual assessment.
  - The mean number of days for nurses' to detect early pressure damage was 5.0 (SD 5.15; max 11, min 3)
  - The mean number of days that it took SEM Scanner™ to detect early pressure damage was 1.1 (SD 0.75; max 2, min 1).
- Objective means of identifying early pressure ulcer damage, allowing earlier/heightening of prevention strategies, avoiding further extension and associated issues such as poor patient experience, increased costs, increased length of hospital stay, morbidity and mortality

References

1.Samuriwo R. & Dowding D. (2014) Nurses' pressure ulcer related judgements and decisions in clinical practice: A systematic review. Int. J. Nurs. Stud [Online] Available at: http://dx.doi.org/10.1016/j.ijnurstu.2014.04.009 (Accessed 6th October).

2.Bates-Jensen B.M., McCreath H.E., Kono A., Apeles N.C.R. & Alessi C. (2007) Sub epidermal Moisture Predicts Erythema and Stage 1 Pressure Ulcers in Nursing Home Residents: A Pilot Study. J Am Ger Soc 55, 1199-1205.