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1. Introduction & Objective

- Although largely preventable, pressure injuries/ulcers (PI/Us), more commonly known as bedsores, are complex wounds exposing healthcare institutions to a significant clinical and financial burden (Figure 1).
- In the US alone, \$43,0000 is spent on average per pressure ulcer wound¹
- The current standard of PI/U care is inadequate in the timely prevention of PI/Us.
- Innovation in PI/U prevention strategies is required to reduce financial losses to health care services.
- Sub-epidermal moisture (SEM) is a biomarker for the early detection of pressure-induced tissue damage.^{2,3}
- The use of SEM assessments as an adjunct strategy is recognized in the international clinical practice guidelines for PI/U prevention.⁴
- This health-economic evaluation reports the cost-effectiveness of implementing an anatomy-specific, skin-tone agnostic, SEM assessment technology in the real world (Figure 2).

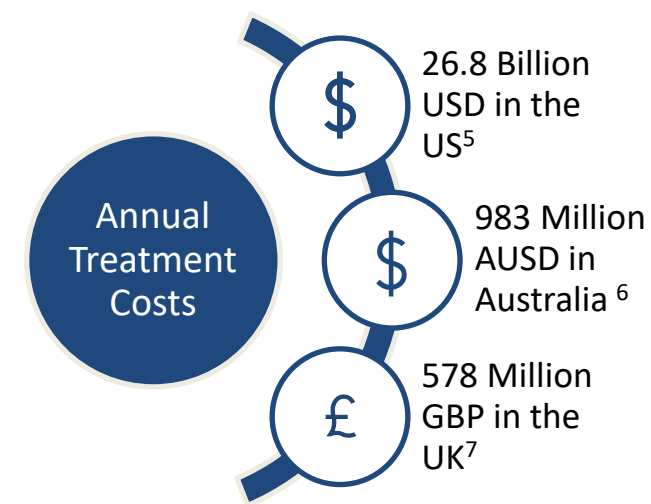


Figure 1: Global Economic Burden of Treating Hospital Acquired PI/Us



Figure 2: Implementing SEM Assessment Technology Into Clinical Practice

2. Methods

- A decision tree model was developed to compare annual costs and outcomes for an annual cohort of acute hospital admissions in the NHS, UK.
- Model parameters were input from published studies (Table 1).
- Costs of implementing SEM assessment technology were obtained from the manufacturer.
- A univariate sensitivity analysis was performed to reflect local variation between hospitals and or wards and to estimate PI/U incidence in each care pathway (SEM vs. VSA).
- Parameter uncertainty in a probabilistic sensitivity analysis (PSA) recorded randomly sampled distributions for 10,000 Monte Carlo simulations.
- The incremental cost per quality-adjusted life-year (QALY) for the intervention (incremental cost-effectiveness ratio ICER) was compared with VSA alone against a threshold of £30,000 per QALY gained.

3. Evaluation Outcomes

1. Probability that SEM assessment technology is cost-effective at a threshold of £30,000 per QALY gained.
2. Probability that SEM assessment technology is cost saving.
3. Probability that SEM assessment technology leads to an improvement in the quality of life of patients.

Key Parameters	Parameter value
Number of Beds	450
Occupancy rate	83%
Average Length of Stay (LOS)	4.5 days
At-risk patient population	41%
Annual SEM technology cost	£127,184
Incidence of hospital -acquired PI/Us	3.58%
Nurse cost	£41/hour
Standard prevention cost per day	£54.67
Enhanced prevention cost per day	£82.00

Table 1: Key Model Parameters

4. Results

- A total of 12,421 annual admissions, at-risk of developing PI/Us, entered the decision model.
- SEM assessment technology compared with VSA is cost-saving at £56.8 per person (-9.5%) and £705,470 for the cohort (Figure 3).
- Net adjusted monetary benefit is £797,129 and SEM is expected to be a dominant option leading to lower costs and better outcomes (Figure 4).

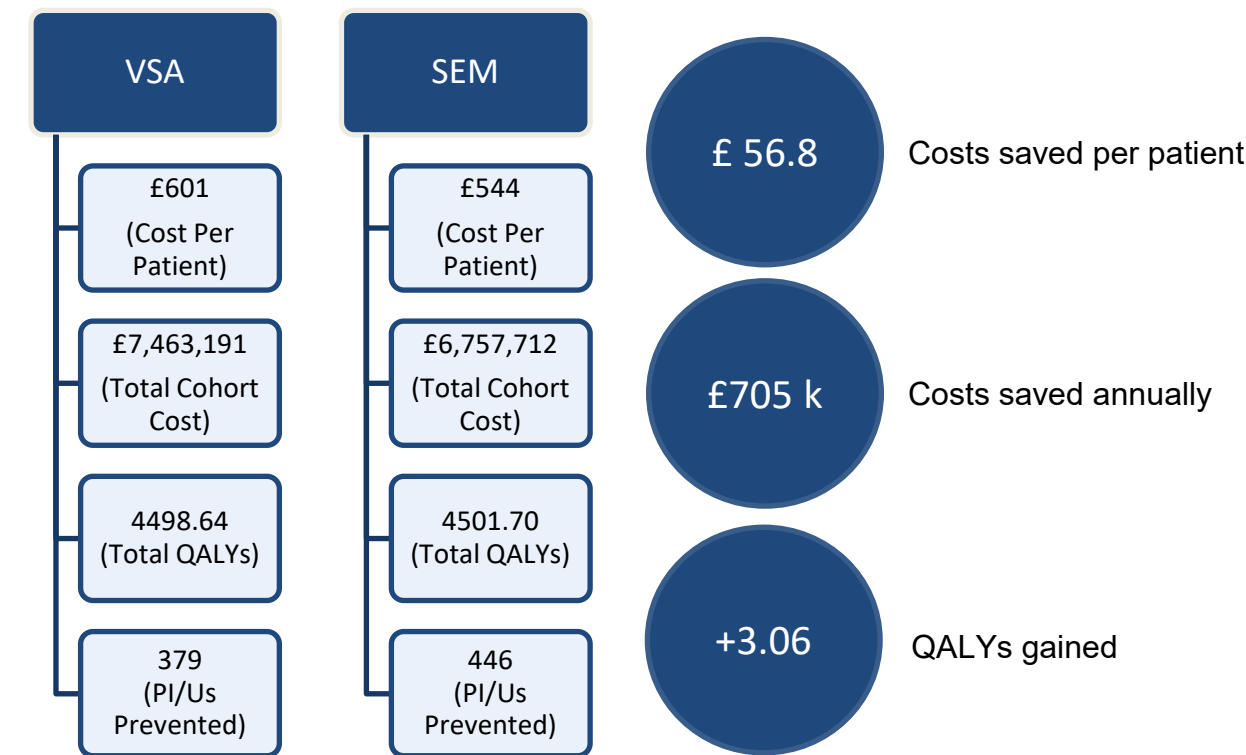


Figure 3: Cost of SEM Assessment Technology Compared With VSA

5. Limitations of the model

- The model considers only acute care costs.
- The model should be recalibrated for hospital-specific data and care settings data such as treatment costs, LOS and incremental bed day costs.
- The model is static and does not account for the prevention effect of SEM assessment technology.
- Incidence rate for PI/Us is a key factor. Cost-savings and QALYs will be higher with higher rates, or when LOS is short.

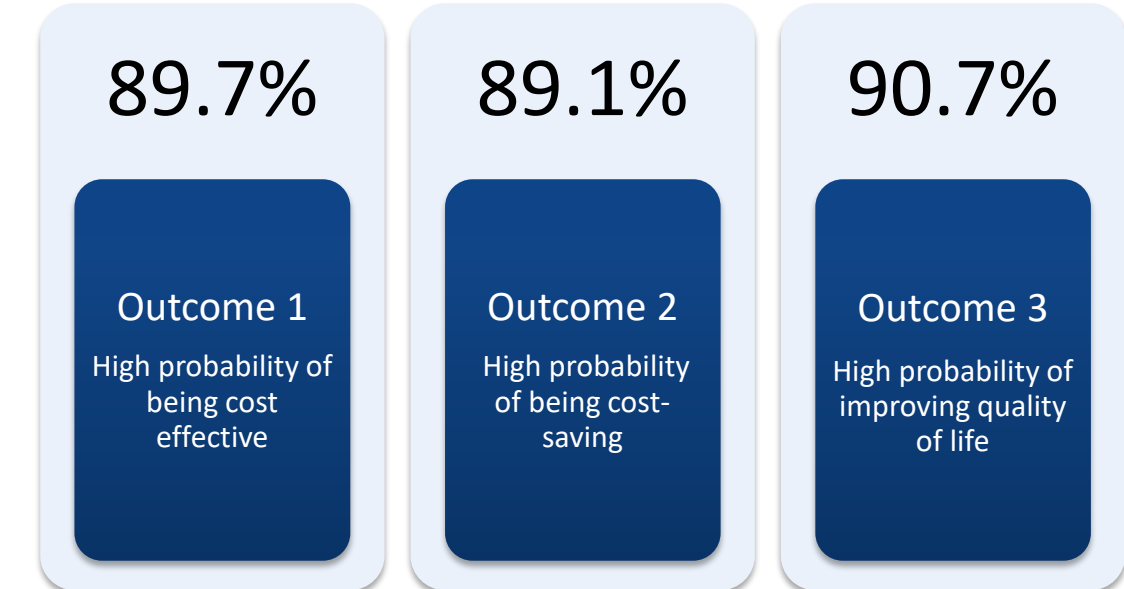


Figure 4: PSA Outcomes of SEM Assessment Technology Compared With VSA

6. Discussion

- The reference costs and input parameters from published data are conservative estimates
- In the real world, SEM assessment implementation, as an adjunct to SoC, reports a 3-fold reduction in PI/U incidence across multiple care settings.⁸
- Where PI/U incidence rates are higher than described in the model (3.58%), the health-economic outcomes are expected to be even higher.
- Even in a dual decision model where either the SEM or VSA pathway triggers interventions, the model still predicts a small cost-saving of £8.13 per person and better outcomes.

7. Conclusion

- Implementing SEM assessment technology is expected to make it possible to prevent more PI/Us and to reduce costs of treatment.
- SEM assessment technology is a dominant strategy above the existing standards of PI/U prevention and care.

8. References

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