Overview
This paper discusses the use of physiological measurements in the laboratory, as a means of evaluating different support surfaces, due to the lack of quality randomised controlled trial data on which to base purchasing decisions.

Methodology and Measurements
- 10 healthy subjects, aged 22-62 years old with a weight range of 56–95 Kg.
- Evaluation of 2 different alternating pressure air mattresses (APAM) Nimbus® 3 (Huntleigh Healthcare) and Duo® (Hill-Rom).
- Mattress equilibrated for at least 30 minutes prior to testing using a single oxford pressure monitor.
- Continuous measurements taken under the heel, sacrum, left trochanter and buttocks in various positions.
- Duration of interface pressure below 30, 20 and 10 mmHg measured.
- Transcutaneous oxygen and carbon dioxide levels taken at the sacrum.
- Laser Doppler fluxmetry on the heel and mean peak mattress air cell pressure measured.
- All measurements taken over at least 2 alternating cycles.

Results
• Identified significant differences in interface pressure relieving performance between the 2 products.
• Current results suggest Nimbus 3 system has an advantage over the Duo system in protecting the skin at the heels, trochanter and buttocks.
• The mattress giving the highest PRI values also gave the greatest tissue perfusion readings, which indicates a direct positive relationship between PRI and skin tissue perfusion.

Conclusion
The relationship between interface pressure measurement and clinical outcome is yet unclear. Effectiveness can only be fully demonstrated through controlled clinical trials.

Nimbus 3 is a trademark of Huntleigh Technology Plc, and Duo is a trademark of Hill-Rom.