are looking forward to providing science popularization and early morning screening for potential osteoporotic patients.

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P444: Design and development of a novel positioning device used to monitor pressure over the iliac crest of patients in the prone position using pattern recognition to highlight at risk patients intra-operatively

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Introduction: Hospital acquired pressure injuries (HAPIs) are associated with known risk factors including decreased mobility, surgical duration, vasopressor infusion, excessive moisture, and altered perfusion. HAPIs are still mostly unexamined in the critical care population [1] with very few risk assessments taken intra-operatively; patients who undergo surgery and older than 65 years are higher risk compared to younger patients acquiring PIs [2,3]. Peri-operatively, skin assessment is performed pre/post-operatively. With high-risk surgeries ranging up to 6+ hours, patients' skin is left unobserved. Subsequently post-operative PIs occur. Pressure relieving devices have been developed for other hospital settings such as the use of redistribution and low air mattresses or manual repositioning [4]. However, during surgeries such as spinal surgeries this is impossible. In most cases the use of these redistribution devices is impossible to integrate intra-operatively as they could distract, cause injury to the patient and disrupt the clinician's workflow. The prevalence of PIs in surgical patients undergoing spinal surgery in prone position was 23% [5], thus supporting further investigation into intra-operative monitoring or assessment during surgery. This research investigates the use of intra-operative sensors to identify patients at risk of developing a PI during surgery. **Materials and Methods:** A study was conducted to determine location of bone and high-pressure areas on a carbon spinal frame provided by Baxter Healthcare. Participants were placed in the prone position for 5 minutes and documented their perceived comfort levels using a visual analog scale and complete a survey on their demographic information. To collect data from suspected bone/ high pressure areas, pressure sensor matrices were developed. The sensor matrices comprised of four, 16x16 custom flat matrices designed to be integrated to the specific frame and are connected to a microcontroller. Analog signals are collected/ processed into data visualisation and data collection; visualisation is collected every 10 seconds (10000 milliseconds) with jpeg files created of each 10 second frame in MATLAB. Each frame was analysed using Unsupervised Classification methods identifying image patterns. **Results:** The results collected in the ongoing study that have been examined have highlights themes/ questions, these themes include:

- Can the sensor data be used in the initial stages of patient positioning to limit areas of high pressure; can it be used as a positioning aid to mitigate and reduce the risk of PI development.
- Can pattern recognition be used to identify those at higher risk intra-operatively during positioning and throughout surgery and assist in streamlining incident reporting of pressure injuries peri-operatively.
- When comparing the pattern recognition and BMI of the participants do the results create a U-shaped relationship where the pattern recognition shows a participant at a either extremes of BMI (extremely low and extremely high) are at higher risk of PIs than those at a normal range of BMI.

Conclusion: The study findings identify patients at risk of PI development by use of pattern recognition thus providing an opportunity to monitor the risks of PI development intra-operatively demonstrating the need for integration of intra-operative risk assessment scales to help streamline incident reporting.

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