

Improving an Elective Thyroidectomy and Parathyroidectomy Waiting List Using Augmented Intelligence and Quality of Life Metrics: a Cross-sectional Feasibility Study.

Sipan Shahnazari¹ and Neil Tolley¹

¹Imperial College London

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Abstract

Objectives Current patient prioritization is based on guidance from the Federation of Surgical Specialty Associations (FSSA). This approach fails to identify and prioritize patients with the greatest need and risk of deterioration. Quality of Life (QOL) metrics and augmented intelligence (AI) can be used to achieve this. Our feasibility study aims to assess whether QOL metrics and AI could be used to prioritize an elective waiting list. **Design** An augmented intelligence software, Copeland Clinical Artificial Intelligence (C2-AI, Cambridge England), was used to analyze physiological data to calculate current and delayed morbidity and mortality. These patients also completed online QOL surveys. The combined scores were used to reprioritize the waiting list. The correlation was assessed between the original FSSA and enhanced waiting list. Differences in current and delayed mortality and morbidity were also compared. **Results** 20 patients were analyzed by C2-AI. An increase was seen in patient mortality (0.57% to 0.68%, $p<0.01$) and morbidity if their procedure was delayed (7.6% to 8.8%, $p<0.01$). The greatest increases were seen in the risk of pneumonia, wound infection, and hemorrhage. The enhanced waiting list failed to correlate with the initial FSSA waiting list prioritization. **Conclusions** Our study was able to demonstrate that AI and QOL metrics can be used to prioritize patients on an elective operative list. Furthermore, it might be possible to mitigate against complications in high risk patients due to operative delay. Future studies will implement the enhanced prioritization to assess whether it is beneficial to patients and the healthcare system.

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