AI System to Predict Postoperative Complications

Predicting postoperative complications provides the potential to inform shared decisions regarding the appropriateness of surgical procedures and risk reduction strategies.

It is now possible for artificial intelligence predictive analytic platforms, using automated EHR data inputs, to mitigate harm by estimating the risk of postoperative complications. The automated outputs are directly delivered to surgeons' mobile devices, integrating the predictions within surgeon workflows.

In a recent prognostic study of 74 417 inpatient surgical procedures, an artificial intelligence (AI) system known as MySurgeryRisk used EHR data and input features to predict postoperative complications and mortality. The study aimed to show whether the AI system could provide automated outputs to surgeons' mobile devices, matching their predictive accuracy.

Among a total of 58,236 patients who underwent 74,417 major inpatient procedures between 2014 and 2018, 19,132 patients were represented in the prospective cohort.

The team made note of their EHR data to construct algorithms for three generalised additive models and random forest models using 55, 101, and 135 input features. For most complications the random forest models outperformed the generalised additive ones.

The random forest models trained with 135 inputs were presented to be the strongest for predicting acute kidney injury, cardiovascular complications, neurological complications etc., and achieved a predictive performance matching that of surgeons.

Overall, in this prognostic study the platform managed to accurately predict postoperative complications using automated real-time EHR data and mobile device outputs.

MySurgeryRisk allowed for faster data loading than a web portal and allowed for efficient fingerprint login access. Its predictive performance seems to match that of the surgeons, and therefore it carries the potential to effectively support surgical decision-making.

Source: JAMA

Image Source: iStock Photo

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