Pythia – building a surgical database

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Value Proposition

Despite major advances in surgical care, complications arise in 15% of all US surgical procedures performed, with high-risk surgeries having complications in up to 50% of cases. Targeted preoperative intervention for high-risk individuals have been shown to improve outcomes. However, the task of identifying these patients is challenged by difficulties in timely access to relevant patient care data and shortage of accurate predictive models utilizing electronic health data. Accordingly, there is an urgent need in better identifying high-risk patients.

Technology

The inventors have developed a curated surgical database housing all surgical patient electronic health record data. The repository was created using automated SQL and R code that extracted and processed patient clinical and surgical data from local electronic health record along with relevant clinical patient information, important medications, and demographic, provider, and preoperative clinic information. The database allows to classify patients at high risk of complication to improve outcomes.

Advantages

- Automated and clinically curated surgical data pipeline and repository
- Superior at estimating postoperative risk for patients

Publications

- Development and validation of machine learning models to identify high-risk surgical patients using automatically curated electronic health record data (Pythia): A retrospective, single-site study (PLOS Medicine, 2018)

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Inventor(s)

- Corey, Kristin
- Kashyap, Sehj "Sehj"
- Lorenzi, Elizabeth
- Sendak, Mark
- Whalen, Krista

Links

- Clinical Research Day highlights the role of new technologies in building partnerships

College

School of Medicine (SOM)

For more information please contact

Divakaran, Dinesh
919-684-3131
dinesh.divakaran@duke.edu