RWD145

VALUE OF USING AI

The Direct Cost Savings and Indirect Value of Using Artificial Intelligence With Clinical Disease Specific Quality Register Data - Case Helsinki University Eye Clinic: Cataract Register and Retina Register

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OBJECTIVES:

To evaluate the value of structured real world data collection in health care is important to ensure best return on investment. The immediate cost savings are connected to more effective patient care processes. Our objective was also to investigate secondary use of data with artificial intelligence algorithms for prediction and synthetic data production.

METHODS:

Helsinki University Hospital Eye Clinic in Finland estimated patient monitoring system processes when collecting data for Cataract and Retina Register in 2019, which was basis for the cost analysis.

For the AI we have analysed data of ~10000 patients, ~120000 visits, ~300 variables from the registry since P2/2015. The pseudonymised data is cleaned and stored in separate Azure space. Selected variables: diagnosis age, and treatment ~1500 patients, ~5000 visits, ~40 variables. With multiple analysis methods inc. Random Forest and neural networks we have achieved AUC of 0,83. Decision trees, Bayesian networks, GAN neural networks with Restricted Boltzmann Machine (RBM) were used to test production of synthetic data.

RESULTS:

Direct cost savings in cataract surgery by reducing 16000 dictations gives cost savings € 112 000 per year. Speeding up record keeping with 3-4 minutes per surgical procedure, with 5000 surgical procedures saves € 14 000 per year.
In age-related macular degeneration treatments automatic surgery report for 10 000 patient per year give savings of € 140 000 per year. Document search costs € 4 per search and savings effect of paper lessness is € 40 000 per year.

CONCLUSIONS:

Direct cost savings for eye clinic totals € 306 000 per year by digitalisation of patient data collection in day-to-day activities.

Both synthetic data and predictive algorithms for treatment optimisation could be made by using the structured and high-quality data. Additional cost savings from AI are evaluated as the algorithms are used as support in clinical practice and research.

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