

USING MACHINE LEARNING METHODS, CAN ANTIBIOTICS PREDICT A FUTURE RELAPSE IN PATIENTS WITH INFLAMMATORY BOWEL DISEASE? – A POPULATION-BASED NESTED CASE-CONTROL STUDY USING MACHINE LEARNING METHODS

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Machine learning models trained on Danish registry data identified quinolones and antiprotozoal agents as important predictors of inflammatory bowel disease flare-ups requiring hospitalization or systemic steroids.

KEY POINTS

- A gradient-boosted decision tree model analyzing 15,636 IBD patients achieved 85% accuracy (AUROC 0.85) in predicting IBD-related hospitalization and 83% accuracy (AUROC 0.71) in predicting need for systemic steroids on test data.
- Quinolones and agents against amoebiasis and protozoal diseases were identified as top-10 most important variables for predicting flares, with tetracyclines, betalactam antibiotics, and intestinal anti-infectives also contributing to model predictions.
- The study used Danish nationwide registry data from 1994-2018, matching patients 1:5 and analyzing antibiotic exposures within 60 days before flare outcomes, with models incorporating demographic, disease, and medication variables.
- The authors conclude that these findings highlight the impact of antibiotics on subsequent risk for severe IBD flare-ups and may guide future research on microbial factors in IBD.

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