Macrolide use among patients with asthma and chronic obstructive pulmonary disease

A drug-utilization and prediction study

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Macrolide use for asthma and COPD patients decreased in recent years. LASSO models show low discriminative values.

INTRO:

- Clinical trials have shown improvement in health outcomes during macrolide-use among patients with asthma, COPD and asthma-COPD overlap (ACO). Does this translate into increased use among these patient-groups?
- How well can macrolide-use be predicted?
- What are predictive factors for macrolide use?

METHODS

- Retrospective population-based cohort study on the Integrated Primary Care Information (IPCI) database, mapped to OMOP-CDM.
- Asthma, COPD and ACO were defined according to AsthmaCOPDtretamentPatterns study package.
- Study period: 1 Jan. 2010 - 30 June 2021
- Incidence calculation was performed by an adapted version of the drug-utilization-study package for ranitidine.
- Prediction modeling was performed with Least Absolute Shrinkage and Selection Operator (LASSO) for each cohort by utilizing the PatientLevelPrediction-package with default covariate-settings.

RESULTS

- Study population: 96,793 asthma, 33,212 COPD and 15,159 ACO patients.
- There is an overall decrease in use for all macrolides in all patient groups.
- Macrolide-use was the highest among ACO, followed by COPD and asthma. The use was higher in all groups compared to the general IPCI-population. (Figure 1)
- The LASSO models show relatively low discrimination for the prediction of macrolide use. (Table 1 on the right)
- The strongest predictors for macrolide-use among asthma, COPD and ACO were: “disease due to alphaherpesvirinae”, “antibacterials for systemic use” and “very potent corticosteroids in combination with antibiotics”.

REFERENCES available via QR-code on the right

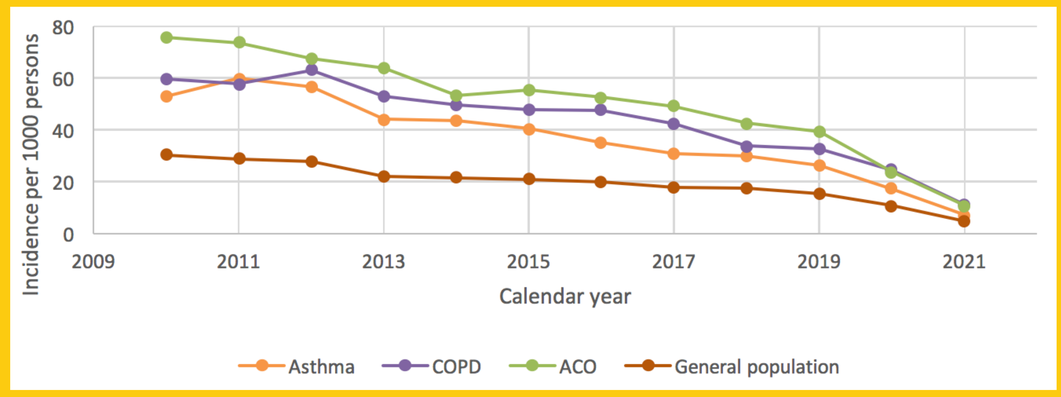

Figure 1. Macrolide incidence in all patient groups stratified by calendar year. COPD = Chronic Obstructive Pulmonary Disease, ACO = Asthma-COPD overlap.

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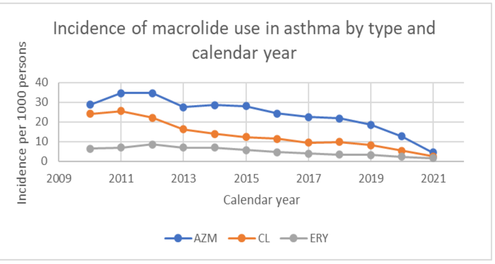

Figure 1. Macrolide incidence in asthma stratified by calendar year. AZM = azithromycin, CL = clarithromycin, ERY = erythromycin

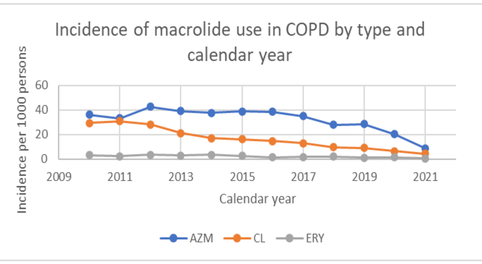

Figure 2. Macrolide incidence in COPD stratified by calendar year. AZM = azithromycin, CL = clarithromycin, ERY = erythromycin

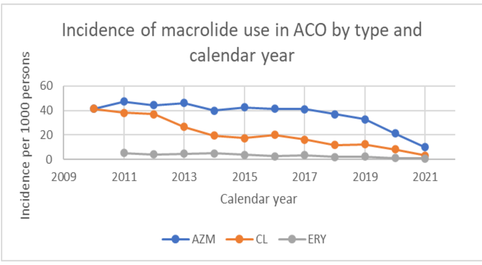

Figure 3. Macrolide incidence in ACO stratified by calendar year. AZM = azithromycin, CL = clarithromycin, ERY = erythromycin

Table 1. Area under the receiver operating curve (AUROC)-values for macrolide-use prediction

Patient group	AUROC (95% CI)
Asthma	0.65 (0.64-0.67)
COPD	0.69 (0.66-0.71)
ACO	0.65 (0.62-0.69)

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