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PREDICTION MODEL OF ASTHMA USING ANTI-ASTHMA DRUG CLAIMS FOR EPIDEMIOLOGICAL SURVEILLANCE OF ASTHMA IN SELF-EMPLOYED WORKERS IN FRANCE

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Objectives To develop a prediction model of asthma based on antiasthma drug claims among affiliates to the health insurance for self-employed workers in France.

Methods A random sample of the affiliates, stratified on their drug claims for antiasthma medications, was selected in three

regions in France. Drug claims data for the 3 previous years was used. Ten categories of antiasthma medications, demographic variables and medical examination were introduced in multivariate logistic regression. The performance of the prediction model was examined against current asthma defined by a self-administered questionnaire. Asthma estimated by the prediction model was used to study prevalence and odds-ratios according to economic activities.

Results Among the 2753 respondents with antiasthma drug claims, 520 had current asthma. Variables retained in the model were short or long acting bronchodilator, inhaled glucocorticosteroid, long-acting inhaled bronchodilator combined with inhaled glucocorticosteroid, leukotriene modifiers, one antihistamine (ketotifen) and medical examinations by a chest physician. The area under the ROC curve was excellent (0.90). The optimal cut-off yielded a sensitivity of 80% and a specificity of 86%. Prevalence of current asthma estimated by the prediction model was 3.4%. Significantly elevated odds-ratios were observed in the production of food products and beverages (OR=2.2 (95% CI 1.7 to 2.7)) and in the manufacture of machinery and equipment (OR=2.0 (95% CI 1.0 to 4.0)).

Conclusions Prediction models of asthma using antiasthma drug claims can be a useful tool for asthma surveillance in the working population. The next step is an external validation which will be carried out on workers of the agriculture industry.