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Title: Relative exposure to inhaled steroids (ratio "ICS-to-total asthma therapy"): Concordant data from electronic medical records, claims data and patient-reported outcomes

Dr. Laurent 5588 Laforest laurent.laforest@univ-lyon1.fr MD [1], Dr. Idlir 5589 Licaj idlir.licaj@univ-lyon1.fr [1], Prof. Gilles 5590 Devouassoux gilles.devouassoux@chu-lyon.fr [2], Prof. Genevieve 5591 Chamba genevieve.chamba@wanadoo.fr [3], Prof. Laurent 10885 Letrilliart laurent.letrilliart@wanadoo.fr [4], Dr. Gerard 13897 Chatte gerardchatte@orange.fr [5] and Dr. Eric 5592 Van Ganse eric.van-ganse@univ-lyon1.fr [1,2]. [1] Pharmacoepidemiology, CHU Lyon; UMR 5558 CNRS - Claude Bernard University, Lyon, France ; [2] Respiratory Medicine, Croix Rousse University Hospital, Lyon, France ; [3] Pharmakeion, Pharmakeion, Lyon, France ; [4] Department of General Practice, Claude Bernard University, Lyon, France and [5] Chest Physician, Caluire, France .

Body: Background: In claims data, computation of "ICS-to-total-asthma-therapy" ratios (R) has shown interest to identify asthmatics more at risk of exacerbations, as a result of insufficient exposure to ICS for their level of disease severity. Ratios have seldom been computed from other data sources. The relationship between asthma outcomes and ratios was studied, from different sources: electronic medical records (EMRs) (Cegedim-Strategic-Data), claims data, and patient-reported outcomes (PROs) obtained from a pharmacy-based survey. Methods: In all settings, the primary comparison was between non users (R=0%), inadequate ICS users (0<R<50%) and adequate ICS users (R≥50%), as to asthma-related hospitalizations, use of oral steroids (OCS) or antibiotics (ATB), and Asthma Control Test (Pharmacy-based study). Results: In claims data (n=2,142, mean age=27 yrs, 53% females), inadequate users had higher rates of hospitalizations (p=0.0007), oral steroids or antibiotics use than other groups (p<0.0001 for both). OCS and ATB use were more common (p<0.0001 for both) among inadequate users in EMRs (n=4,587, mean age=28 yrs, 54% females). In the pharmacy-based survey (n=919, mean age=37 yrs, 55% females), inadequate users were more likely to be poorly controlled, hospitalized for asthma and to receive OCS or ATB (p<0.0001 for all). Conclusions: Despite differences in study designs and patients baseline characteristics, conclusions were highly concordant between the 3 data sources, with evidence of poorer control in inadequate users. Advantages and limitations of each data source for the interpretation of ratios will be discussed.