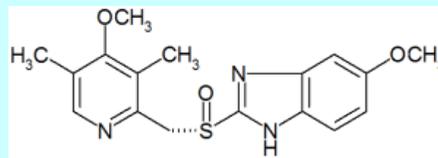


# Chirality and drug formulary: a second life for a blockbuster

Vernaz-Hegi N<sup>1</sup>, Girardin F<sup>2</sup>, Muscionico D<sup>3</sup>, Salomon JL<sup>3,4</sup>, Bonnabry P<sup>1,4</sup>

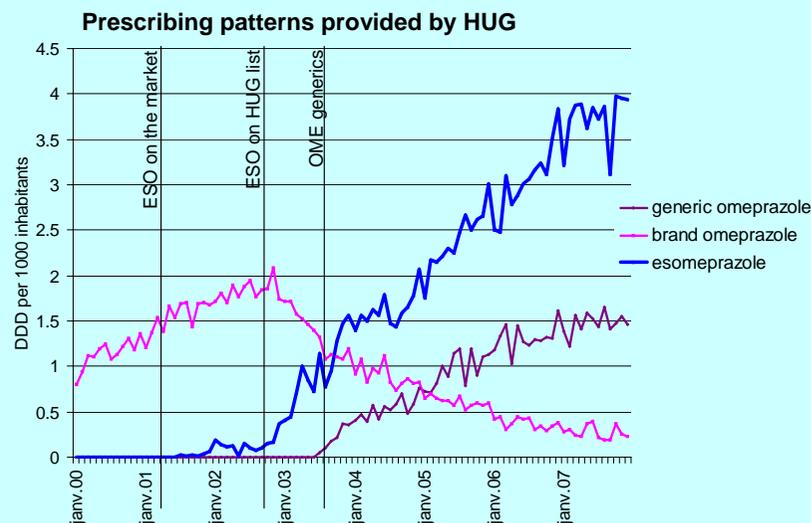
<sup>1</sup> Pharmacy, <sup>2</sup> Clinical psychopharmacology Unit, Service of clinical pharmacology and toxicology, APSI, University Hospitals of Geneva (HUG), Switzerland, <sup>3</sup> OFAC Invoice Office 1211 Geneva 17, <sup>4</sup> Section of pharmaceutical sciences, University of Geneva, University of Lausanne, 1211 Geneva 4, Switzerland.

**Background.** Chirality has emerged as a key issue in drug design, discovery and development. We evaluated the prescribing patterns of the blockbuster drug omeprazole (OME) and its active enantiomer esomeprazole (ESO) in all prescriptions provided by the Geneva University Hospitals (HUG) to discharged patients and to outpatients. ESO is considered as a new chemical entity, so that its prescription cannot be substituted by a generic. The company claims improved efficacy while others see this chiral switch as a marketing stratagem<sup>1-2</sup>.



**esomeprazole  
(s)-omeprazole**

**METHODS:** Prescribing patterns were studied from January 2000 to March 2007. All prescriptions were systematically recorded by a unique pharmacist's organisation (OFAC invoice office), which represents 92% of all prescriptions filled in the canton Geneva and 80% of insurants (around 445,000 inhabitants). The WHO daily defined dose (DDD) classification was used as reference normalized per 1000 inhabitants. Using time series analysis, we modelled aggregated data on OME and ESO use. ESO was marketed in April 2001, i.e. two years before the introduction of OME generics in July 2003. In October 2002, the HUG switched from OME to ESO into the restrictive drug formulary for economical reason only.



**RESULTS:** Since the HUG changed the prescriptions from OME to ESO in 2002, there is an influence of the hospitals on the study setting from December 2002 with a significant statistical trend of 0.0592 DDD every month per 1000 inhabitants (p value=0.0000). Considering all prescriptions per DDD, ESO is €0.51 more expensive than generic OME, which lead to an additional cost of **€394,000** in Geneva for 2006.

**CONCLUSIONS:** The HUG drug formulary switch from OME to ESO modified significantly the prescription to discharged patients and to outpatients. This leverage is known as the spillover effect. Moreover, pseudo-innovations as selective drug's chirality are a powerful strategy in extending the life of blockbusters but have a significant financial cost in the health care system. Hospitals should implement strategies to systematically switch patients to generic omeprazole at discharge.

<sup>1</sup> Medical letter, vol 43, April 30, 2001

<sup>2</sup> Medical letter, édition française, 2003, 25:15