

# Recording therapeutic equivalents in a CPOE database to guide prescribers and help them complying with the drug formulary

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## BACKGROUND

Prescriptions of "out of formulary" drugs (OF-drugs) generate workload and logistical problems for the pharmacist and the care units. Since 2006 and the implementation of a CPOE system for medication (Predimed) in some care units of the hospital, the number of these prescriptions surprisingly increased, despite the fact that some equivalent drugs for the prescribed medicines exist in our formulary. The CPOE database allows creating electronic links between drugs, suggesting the prescriber to switch to the recorded equivalent(s) when selecting the drug for prescription (Fig. 1).

## OBJECTIVES

The main objective of this work was to add new therapeutic equivalents in the CPOE database to help and stimulate physicians to comply with the drug formulary at the time of selecting a drug in order to reduce the number of OF-drug prescriptions by the care units working with Predimed.

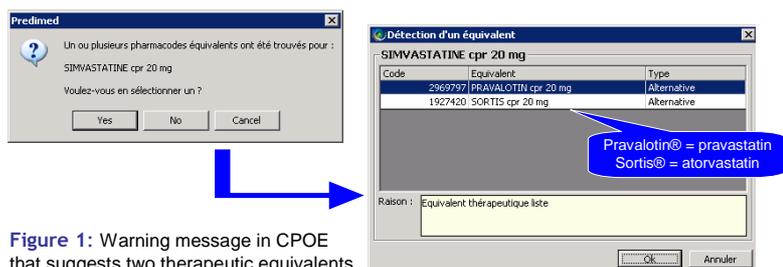


Figure 1: Warning message in CPOE that suggests two therapeutic equivalents

Level of Similarity	Active molecule	Galenic form	Dosage	Therapeutic class
Formulary equivalent	+	+	+	+
Formulary alternative	+	±	±	+
Therapeutic equivalent	-	±	-	+

Figure 2: Categories of equivalents according to similarities between prescribed and substitution drug

## METHOD

- All prescriptions of OF-drugs for the last five years have been analyzed to identify the medicines which could have been replaced by a formulary drug, referring to the actual composition of our formulary.
- For these drugs, we applied three different categories of equivalence according to the level of similarity (Fig. 2) between the prescribed drug and the suggested alternative.
- The equivalences have been registered in the CPOE database and prescribers have been informed (June 2008).
- In order to evaluate the impact of our intervention, a new analysis of the orders received from July 2008 to February 2009 from the care units using Predimed has been made. We also analyzed the impact on 7 frequently prescribed specific drugs.

## RESULTS

- Over the last 5 years period, our pharmacy received a total of 5352 special requests concerning 1356 different OF-drugs.
- Among them, only 257 requests (136 different molecules) were substituted by a formulary drug.
- For these 136 distinct molecular entities, 502 links to formulary drugs were created, by extending to other existing dosages or trade names.
- The second analysis (after 7 months) of the prescriptions from the care units using Predimed revealed a slower increase of the total number of request of OF-drugs (Fig. 3). Moreover we observed a complete stop of the increase in the rehabilitation care units, which were the first department implemented with Predimed. The acute care units adopted electronic prescription more recently.
- The impact on frequently prescribed drugs shows a decreasing trend in 5/7 drugs (Fig. 4).

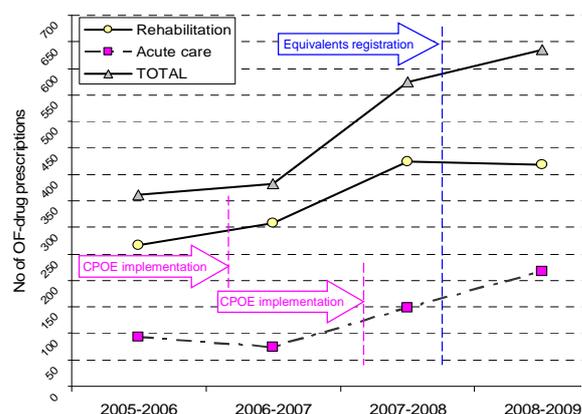


Figure 3: Evolution of the number of OF-drug prescriptions from the care units using CPOE considering the July to January period

## DISCUSSION & CONCLUSION

- This analysis brought to light that, for different reasons, most of the prescribed OF-drugs cannot be substituted (e.g. antiepileptics, specific treatments for uncommon pathologies, new molecules, patient refusal...)
- One limitation of our CPOE system is the impossibility to suggest the switch from one combined drug to two different «mono-substance» drugs (e.g. combined antihypertensive drugs).
- At the time of implementing a CPOE system, it's important to stay vigilant, as it impacts on professional practices and introduces changes in the whole care units working process. Therefore, some non-predictable side effects may appear, as the increase of OF-drugs prescriptions we observed. But new opportunities offered by these systems must be exploited, like, in our case, the possibility to suggest a switch of drug at the time of prescription.
- This referencing work of therapeutic equivalents will be continued by the pharmacists and we'll check if the stabilisation of OF-drugs requests observed in rehabilitation units will occur in acute care also.

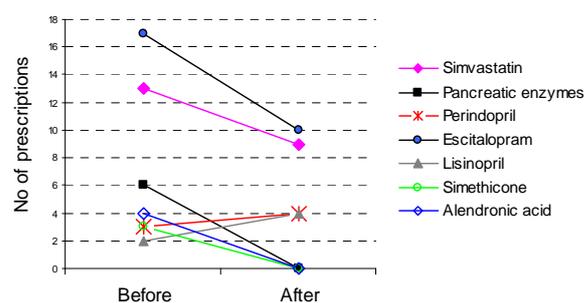


Figure 4: Number of prescriptions, on a 7 months period, for specific molecules before and after equivalents registration