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Genomic Prescribing System™ [GPS]

Patient Name :
Sex :
DOB :

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Patient's Current Medications

Medication	Pharmacogenomic Signal	Level of Evidence	Pharmacogenomic Alternative(s)
Aspirin		Level 2	Clopidogrel
Lansoprazole		Level 2	Esomeprazole Rabeprazole Pantoprazole Omeprazole
Hydrochlorothiazide		Level 3	Amlodipine Atenolol Benazepril Carvedilol Hydralazine Isosorbide dinitrate Metoprolol Perindopril Irbesartan

Suppl. Fig. 1A

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Patient Specific Information for : Lansoprazole

Your patient has a high probability of having a genotype in CYP2C19 that confers ultrarapid metabolism of lansoprazole to inactive metabolites, meaning your patient has a risk of insufficient response to this drug. Guidelines recommend considering a dose increase when using lansoprazole in such individuals when treating certain conditions.

These data are based on evidence from several studies showing that individuals with increased metabolism of lansoprazole have lower H. pylori eradication rates and increased 6-month recurrence rates of GERD symptoms. Pharmacokinetic data for omeprazole--a compound metabolized similarly to lansoprazole--show that patients with genotypes conferring ultrarapid metabolizer status are the most efficient at drug inactivation.

Due to the risk of undertreatment, guidelines by the Royal Dutch Association for the Advancement of Pharmacy's Pharmacogenetics Working Group recommend a dose increase of 200% for ultrarapid metabolizers undergoing treatment for H. pylori, and consideration of the same dose increase for individuals undergoing treatment for GERD or gastrointestinal bleeding. A switch to an alternative PPI like rabeprazole, which appears to not be as affected by CYP2C19 metabolizer status, could also be considered.

Suppl. Fig. 1B

Supplementary Figure 1. Representative Screen Shots from the Pharmacogenomic Results Delivery System Utilized in this Study. Supplementary Figure 1A shows an example results homepage for an individual patient as viewed by the provider. Detailed clinical decision supports (CDS) (screen shown in **Supplementary Figure 1B**) were provided in an on-demand fashion when the provider "clicked" on any of the traffic-light result signals from the patient homepage. Alerts were categorized into three stratification levels of evidence, with level 1 recommendations having the strongest supporting evidence (pharmacogenomic information present in the FDA label and/or the presence of a published pharmacogenomic guideline). The quantity of the clinical evidence (total number of patients studied, number of positive studies) and quality (study design, controls, replication) distinguish the remaining level 2 and level 3 alerts. However, all reported, actionable recommendations were based on strong published human clinical studies demonstrating the association of the pharmacogenomic variant with clinical outcomes. Note that, because a comprehensive preemptive genotyping approach was used, physicians had the ability to immediately identify genetically compatible alternative medications in the "pharmacogenomic alternatives" column (see far right of screen shot in **Supplementary Figure 1A**).