

# Post-Percutaneous Coronary Intervention CYP2C19 Genotyping: The Potential Role In Identifying Clopidogrel Therapy Related Bleeding Risks

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## Abstract

**Aim** Dual antiplatelet therapy (DAPT) after percutaneous coronary intervention (PCI) remains the standard of care. CYP2C19 genetic polymorphisms results in variable Clopidogrel bioactivation. Increased function (CYP2C19\*17) allele carriers (rapid metabolizers (RM) or ultrarapid metabolizers (UM)), are Clopidogrel hyper-responders and hence more susceptible to Clopidogrel related bleeding. Since current guidelines recommend against routine genotyping following PCI, data on the clinical utility of CYP2C19\*17 genotype guided strategy are sparse. Our study provides real-world data on the 12-month follow-up of CYP2C19 genotyping in patients post-PCI. **Methods** This is a cohort study within an Irish population receiving 12 months of DAPT following PCI for ACS or CCS. It identifies the prevalence of CYP2C19 polymorphisms within an Irish population and describe the ischaemic and bleeding outcomes after 12 months of Clopidogrel DAPT. **Results** 129 patients were included with the following CYP2C19 polymorphism prevalence: 30.2% hyper-responders (26.4% RM (1\*/17\*), 3.9% UM (17\*/17\*)) and 28.7% poor-responders (22.5% IM (1\*/2\*), 3.9% IM (2\*/17\*), 2.3% PM (2\*/2\*)). Total bleeding incidence at 12-months increased from poor-responders (0.0%) to normal-responders (15.0%), to hyper-responders (25.0%). Compared to poor-responders, hyper-responders were significantly more likely to experience a bleeding event (25.0% vs 0.0%,  $P = 0.044$ ). **Conclusions** The prevalence of CYP2C19 polymorphisms in Ireland is 58.9% (30.2% CYP2C19\*17, 28.7% CYP2C19\*2) with approximately 1 in 3 chance of being a Clopidogrel hyper-responder. The trend of increasing bleeding with increasing CYP2C19 activity, suggests a genotype guided strategy may have clinical utility identifying high-bleeding-risk with Clopidogrel in CYP2C19\*17 carriers but further studies are required.

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