Budget impact analysis of antiplatelet therapy with cangrelor in patients with acute coronary artery disease undergoing percutaneous coronary intervention in Portugal

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Topic(s):
Pharmacotherapy

Background: Cangrelor is a novel, intravenous, potent, fast onset, direct-acting, P2Y12 receptor antagonist that blocks adenosine diphosphate-induced platelet activation and aggregation with a half-life of 3-6 min. Co-administered with acetylsalicylic acid, it is indicated for reducing thrombotic cardiovascular events in patients with coronary artery disease (CAD) (ST-elevation myocardial infarction (STEMI), non-STEMI, stable CAD) undergoing percutaneous coronary intervention (PCI) who have not received an oral P2Y12 inhibitor (clopidogrel, prasugrel or ticagrelor) prior to PCI procedure and in whom oral therapy with P2Y12 inhibitors is not feasible or desirable.

Purpose: To assess the economic implications of incorporating cangrelor into the hospital formulary for the acute care of CAD patients undergoing PCI in Portugal.

Methods: A budget impact model (BIM) was developed. The 3-year pharmacological and clinical event costs of two hypothetical scenarios, without and with cangrelor in the formulary for the total PCI population (base case) in Portugal were compared. Also, the primary PCI (STEMI) and a PCI population with special needs (ie. unable to swallow) were assessed as complementary setups. Epidemiological, efficacy (stent thrombosis, myocardial infarction (MI), ischaemia-driven revascularization, death), safety (Thrombolysis in Myocardial Infarction (TIMI) bleeding criteria) and costs (€, 2019) data were based on clinical trials, meta-analyses and on Portuguese registries. Only the costs of pre-treatment with oral P2Y12 inhibitors and glycoprotein IIb-IIIa inhibitors (GPI) for bail-out were considered. One-way sensitivity analysis established the effect of uncertainty on BIM results.

Results: The model assumes that the total PCI population grows from 13,422 to 14,370 adults (age 65 years, mean) over three years in Portugal. Pre-treatment with oral P2Y12 inhibitors increases from 9,932 to 10,634 patients, and uptake of cangrelor rises from 0.80% to 1.40% in the same period. The number of total PCI patients receiving cangrelor grows from 79 to 149. At current usage of antithrombotics and at existing pharmacological and management costs, adding cangrelor into the hospital formulary represents 115 thousand € over 3 years in Portugal. Results are most sensible to the percentage of patients on GPI bail-out.

Conclusions: Under BIM assumptions, introducing cangrelor for the acute care of CAD patients undergoing PCI represents a safe and affordable option in Portugal, particularly when the required control of thrombosis is not certain with oral pre-treatment.