PREvention of Late Stent Thrombosis by Interdisciplinary Global European effort

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Medical, scientific and technological objectives

The development of drug eluting stent (DES) therapy has represented a very significant milestone in the battle against coronary restenosis, the major limitation of percutaneous coronary intervention (PCI) in the bare metal stent (BMS) era. Although thrombotic stent occlusion was also observed with BMS, with the widespread adoption of DES therapy, it has become obvious that there is a clear excess of late stent thrombosis (ST) events following DES implantation. Clinically, late ST is defined as a total or subtotal thrombotic occlusion of the target vessel originating at the site of intracoronary stent implantation occurring beyond 30 days after the index intervention. This entity can be further subdivided temporally into late (between 30 days and 1 year) and very late (> 1 year) ST and according to certainty of the thrombotic event – classified as definite (confirmed), probable or possible.

The principle medical objective of PRESTIGE is to develop new strategies to prevent late ST at a cost of minimum bleeding risk.

The scientific objective of PRESTIGE is to dissect the mechanisms contributing to the occurrence of late ST. This will be achieved through mechanistic research in coagulation as well as platelet and endothelial biology using relevant in vitro and in vivo model systems in combination with novel imaging technologies. A better mechanistic understanding of late ST is a conditio sine qua non for the development of more specific anti-thrombotic regimens that have minimal effects on normal haemostasis.

The major technological objectives of PRESTIGE will be (a) to develop novel imaging technologies allowing for early diagnosis and a better risk prediction of late ST and (b) to evaluate optimized stent designs that support vascular healing.

PRESTIGE will focus on the following specific aims:

- Gaining a better understanding of the molecular and cellular events triggering late ST
- Developing and validating novel strategies to reduce late ST
- Developing and evaluating novel imaging technologies
- Performing a multi-stranded characterisation of patients presenting with late ST