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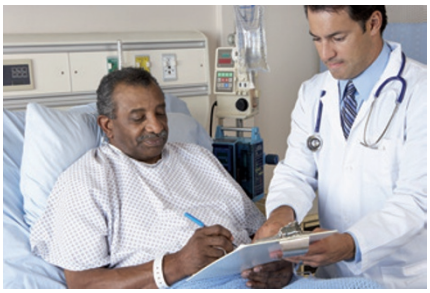
INTERVENTIONAL CARDIOLOGY

A step forwards in comparative effectiveness trial design?

The HEAT-PPCI trial has shown that heparin significantly reduces the risk of major adverse cardiac events, without increasing the risk of bleeding, when compared with bivalirudin in patients undergoing primary percutaneous coronary intervention (PPCI). However, "[this] randomized trial has generated more debate over its design and results than any in recent memory," write Drs Peter Berger and James Blankenship, who were not involved in the study, in an accompanying editorial in *The Lancet*. In another commentary, Dr David Shaw from the Institute for Biomedical Ethics in Switzerland opines that HEAT-PPCI "is an impressive achievement ... in ethical study design" and "has blazed a trail for future research of this type".

The HEAT-PPCI investigators used a strategy of delayed consent, which is common in emergency medicine trials where patients are often unable to give consent before randomization. This approach enabled the researchers to enrol 97% of all patients admitted for PPCI at the Liverpool Heart and Chest Hospital, UK. Thus, the stringent exclusion criteria often applied to interventional cardiology trials were avoided, producing a broad patient population representative of real-world practice. Patients ($n = 1{,}829$) were randomly assigned to the heparin or bivalirudin groups and underwent treatment in an emergency setting before consent was obtained. After PPCI, patients were asked for their consent to continue as trial participants and be followed-up for 28 days. Full ethical approval was granted for the study protocol. "This strategy was preferable to attempting to obtain consent from potentially incompetent patients needing extremely urgent cardiac treatment," explains Dr Shaw. "The two drugs under investigation are both used for licensed indications in conditions of equipoise; ... it would be perfectly normal for a doctor to choose heparin or bilvalirudin without involvement of the patient."

The findings of this study, which differ from previous comparisons of heparin and bivalirudin, could also be explained by the low dose of heparin (70 U/kg) as well as the use of novel antiplatelet agents (prasugrel and ticagrelor) and radial access in a high percentage of patients —all representative of contemporary PPCI practice. The superiority of heparin, which costs 400-times less than bivalirudin, has huge implications for reducing the cost of PPCI worldwide.



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