Door-to-Balloon and Door-to-Needle Time for ST-Segment Elevation Myocardial Infarction in the U.S.

In a recent thought-provoking commentary, Terkelsen et al. (1) from Denmark recommended that the committee responsible for further updates to the American College of Cardiology/American Heart Association (ACC/AHA) guidelines for ST-segment elevation myocardial infarction (STEMI) and the D2B (Door-to-Balloon) Alliance shift focus toward initiatives that would reduce system delay in primary percutaneous coronary intervention (PCI) patients. We are in strong support of such a system-based approach to the management of STEMI patients at centers providing full-time highly skilled and efficient care for these patients. We wish to corroborate their findings with the data available online at http://www.hospitalcompare.hhs.gov/, a quality initiative tool created by the Centers for Medicare and Medicaid Services, the Department of Health and Human Services, and the Hospital Quality Alliance.

Data on over 4,000 hospitals show that 27% of patients achieve a door-to-needle (D2N) time of <30 min, and only 32% achieve a D2N time of <90 min. Our analysis reveals a concerning trend correlating neighborhood income with quality of care for STEMI patients as it relates to the D2B and D2N times. Of greater concern is the overall rate of timely therapy, for both primary PCI and fibrinolytic agents. Terkelsen et al. (1) comment on the current controversy regarding the acceptable PCI-related delay in determining transfer to a PCI-capable hospital for primary PCI versus fibrinolysis. The meta-analysis from Nallamothu et al. (2,3) suggested a maximum of 60 min for PCI-related delay, after which fibrinolysis would result in greater benefit. This was incorporated in the 2004 ACC/AHA STEMI guidelines (4). Further meta-analyses have suggested that PPCLI was superior to fibrinolysis with even longer PCI-related delays (5,6). Current literature (2) does not provide a clear consensus on acceptable PCI-related delay, although the 2007 Focused Update of the ACC/AHA STEMI guidelines suggests a 40-min maximum acceptable PCI-related delay for patients living in the catchment area of non–PCI-capable hospitals. It also must be noted that these meta-analysis take into account a 30-min D2N time. Our analysis uncovers the very poor rates of provision of guideline-recommended care as it relates to fibrinolytic therapy. We believe that a closer look at the D2N times is warranted for a given institution before an automatic decision for applying that strategy can be recommended if the PCI-related delay is prohibitive of a primary PCI strategy. This of course presents a very complex situation because the benefit of fibrinolytic therapy with a D2N >30 min compared with primary PCI when there is significant PCI-related delay is unclear.

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REFERENCES

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Reply

We thank Drs. Vasaiwala and Vidovich for their interest in our recent viewpoint (1). Their observations from http://www.hospitalcompare.hhs.gov/ document that many patients are still given in-hospital fibrinolysis at unacceptable long door-to-needle (D2N) times. We agree that the wording in the 2007 Focused Update of the ACC/AHA 2004 Guidelines for the Management of patients with ST-Segment Elevation Myocardial Infarction (STEMI) (2) may be prohibitive for a primary percutaneous coronary intervention (PCI) strategy and in some scenarios favors a fibrinolytic strategy. We still hope that the writing committee responsible for the updated STEMI guidelines for future revisions accepts that: 1) primary PCI is superior to fibrinolysis up to a PCI-related delay of 120 min; 2) the clock should start ticking at the same time when balancing primary PCI against fibrinolysis as the choice of reperfusion strategy; 3) pre-hospital diagnosis is important irrespective of reperfusion strategy to ensure either pre-hospital fibrinolysis or pre-hospital rerouting to high-volume PCI centers; and 4) in-hospital fibrinolysis should only be considered in self-presenters at rural hospitals without easy access to a PCI center. We would also recommend that the committee responsible for the ACC/AHA Performance Measures for Adults With STEMI/NSTEMI consider system delay as a future performance measure and recommend fibrinolysis only if the expected system delay when performing primary PCI is