



Efforts to Reduce Door-to-Balloon Time in Acute ST-Elevation Myocardial Infarction: Results from 15 Primary Percutaneous Coronary Intervention Centers in Taiwan

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Objectives:

The purpose of this study was to determine if enrollment in the Door-to-Balloon (D2B) Alliance was associated with increased likelihood of patients with ST-elevation myocardial infarction (STEMI) received primary percutaneous coronary intervention (PPCI) within 90 min of hospital presentation.

Methods:

The Taiwan D2B Alliance, launched in July 2009 by Taiwan Joint Commission on Hospital Accreditation, sought to achieve the goal of having 75% of STEMI patients receiving PPCI within 90 min of hospital presentation. We enrolled 15 PPCI centers across Taiwan, from July 2008 to February 2010. The D2B Alliance conducted several strategies and tools to reduce D2B times, including: 1) activation of the catheterization (cath) laboratory by emergency physicians; 2) single-call activation of the cath laboratory; 3) cath team is available within 30 min of being paged; 4) standardized protocol and drug package for STEMI in Emergency Department (ED); 5) single cath devices package; 6) prompt (within 1 week) data feedback to PPCI staff; 7) senior management commitment; 8) team-based approach to D2B improvement efforts. We examine changes in D2B times before and after the launch of the D2B Alliance.

Results:

A total of 1,386 patients, at 15 PPCI centers from July 2008 to February 2010, were included in our analysis. Out of the 1,386 patients, 781 and 605 were enrolled before (from July 2008 to June 2009) and after (July 2009 to February 2010) the launch of the D2B Alliance, respectively. Compared with those enrolled before launch of the D2B Alliance, the following interval were improved significantly after launch of the D2B Alliance: 1) the time of underwent electrocardiogram in ED (17.0 ± 16.6 min vs. 7.4 ± 4.7 min, $p = 0.04$); 2) the time of the diagnosis of STEMI (24.0 ± 18.2 min vs. 8.7 ± 6.1 min, $p = 0.01$); 3) the time of the cath team is available after being paged (27.1 ± 10.6 min vs. 17.6 ± 8.5 min, $p = 0.03$); 4) duration of patients stay in ED (78.1 ± 36.5 min vs. 53.9 ± 15.0 min, $p = 0.04$); 5) interval of patients

transport from ED to cath laboratory (25.3 ± 27.6 min vs. 7.7 ± 3.1 min, $p = 0.03$); 6) mean D2B time (128.8 ± 42.9 min vs. 85.7 ± 19.0 min, $p = 0.002$); and 7) medium D2B time (110.5 ± 31.0 min vs. 86.4 ± 33.3 min, $p = 0.05$). No statistically significant differences were noted in the following interval before and after launch of the D2B Alliance: 1) the time of arrival of cardiologists in ED (9.9 ± 8.4 min vs. 10.2 ± 7.4 min, $p = 0.94$); and 2) the interval of cath laboratory door to balloon time (27.5 ± 8.0 min vs. 25.0 ± 7.1 min, $p = 0.41$). Before launch of the D2B Alliance, 37.3% of patients received PPCI within 90 min. This numbers increased monthly during the period of joining the D2B Alliance, and achieved 82.4% ($p < 0.001$) in Feb. 2010.

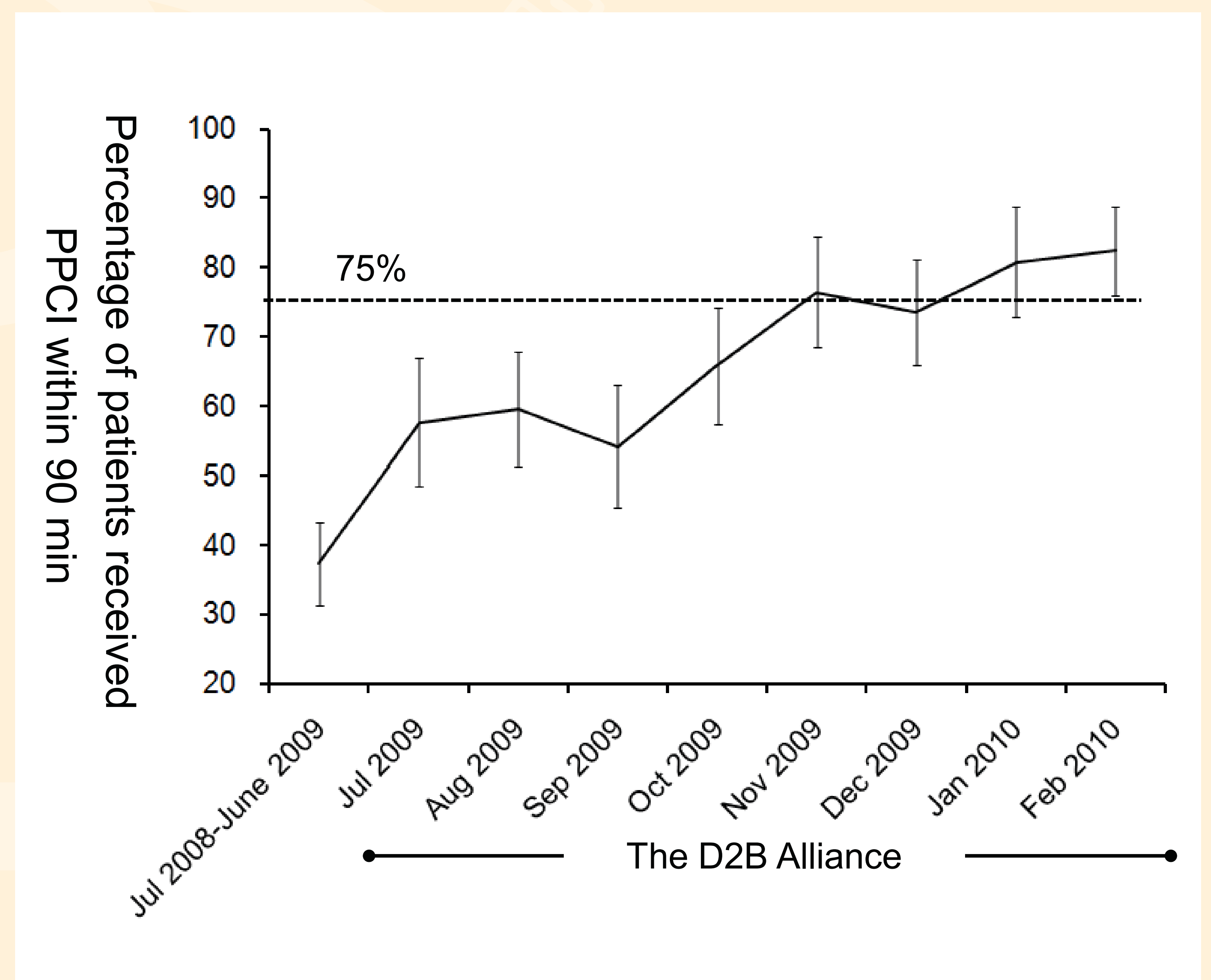


Figure 1. Percentage of STEMI patients with D2B time within 90 min, from July 2008 to February 2010

Conclusions:

We found significant improvements in D2B times among the 15 PPCI centers after the launch of the Taiwan D2B Alliance. In addition, the D2B Alliance reached its goal of 75% of patients with STEMI having D2B times within 90 min by the end of the study. The recommended strategies and tools provide important factors for improvement of D2B times.

