not 180 minute) infarct-related artery patency and improved survival. To evaluate whether time to achieve reperfusion influences outcome in primary angioplasty (1º PTCA), we examined the relationship of door-to-balloon (D-B) time, i.e. between arrival at the hospital and inflation of the angioplasty balloon, in 3,648 patients (pts) treated with 1º PTCA at 421 hospitals in the U.S. from 11/94–present. D-B time was > 2 hours in 53% of pts, and > 3 hours in 29% of pts.; only 9% had D-B time ≤ 60 mins. Fewer women were treated with D-B time < 120 mins (41% vs. 49% of men, p = 0.0001); previous MI was more common if D-B time > 180 mins, but number of ECG leads with ST elevation was greater if D-B time < 120 mins. In the 2924 pts presenting within 6 hours (i.e. onset of pain to "door" time), mortality increased significantly as D-B time rose > 120 mins (figure). As expected, in late presenting pts (> 6 h), no additional influence of D-B time was observed.

Conclusions: 1) In this large observational study of over 3500 pts, in-hospital mortality with 1º PTCA was higher than that reported in smaller clinical trials. 2) In the 80% of pts presenting within 6 hours, mortality increased by nearly 50% in patients with door-to-balloon time > 120 mins, suggesting that when clinicians are choosing a strategy, if reperfusion cannot be achieved by 120 mins from hospital arrival, alternate reperfusion strategies (i.e. thrombolysis) should be considered.

2:45

717-4 Primary PTCA in Acute Myocardial Infarction: Results From a German Multicenter Registry

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Highly specialized institutions have reported excellent results of primary PTCA in acute myocardial infarction (AMI) which may not be achieved in average interventional departments. We have analyzed the database of a multicenter registry containing 64,915 consecutive PTCA-procedures performed in 60 German community hospitals from Oct.92 to June 95.2957 procedures (4.6%) were performed for AMI with a success rate of 88% and an in-hospital mortality of 11.3%. In a more detailed sub-registry 758 consecutive patients with primary PTCA for AMI (< 24 h) were enrolled from July 94 to June 95. Mean age was 60 ± 12 years, time to admission and start of PTCA-procedure was 247 ± 249 and 343 ± 322 min, respectively. 129 pts. (17%) were reported to be in cardiogenic shock. PTCA was anatomically successful (residual stenosis of the infarct-related lesion < 70%) in 92.7%, and TIMI-grade 3 perfusion was achieved in 90%. Peak CK was 916 ± 996 U/l. In-hospital mortality was 11.5%. Non-survivors were slightly older (64 ± 13 years). Patients in cardiogenic shock had a lower success rate (79%), and an in-hospital mortality of 50% (50/129). Patients who were not in cardiogenic shock had a death rate of 3.5% (22/629).

Conclusions: The success rate of primary PTCA in AMI in standard interventional institutions is comparable to what has been reported from highly specialized centers. Overall mortality is higher than reported previously, which may be due to a larger proportion of patients in cardiogenic shock who have a death rate of 50% despite successful intervention in the majority.

3:00

717-5 Adverse Outcomes Accompanying Primary Angioplasty (PTCA) for Acute Myocardial Infarction (AMI) — Dangers of Delay

Sachin Patel, Charles Reese, Robert E. O'Connor, Andrew J. Doorey. *Medical Center of Delaware, Wilmington, DE*

PTCA has been reported to be a very effective treatment for AMI. Based on these reports, after several years of occasionally performing PTCA in AMI, our institution began to use PTCA more frequently. Our cath lab has a small number of high volume practitioners (1500 interventions/year, 10 operators) with superb overall morbidity and mortality. Although most of the AMIs were clinically 'large', our results were unexpectedly poor even after eliminating patients who were in cardiogenic shock or who had absolute contraindications to thrombolytic therapy. Some patients became unstable and deteriorated while waiting for the cath procedure to begin.

	Emergency CABG	Mortality	Triage to Reperfusion
All Primary PTCA/AMI (n = 42)	18%	16%	134 min
Excluding Cardiogenic Shock and Contraindications (n = 38)	16%	13%	133 min

Conclusion: All hospitals capable of performing AMI PTCA may not enjoy results similar to published trials. AMI PTCA may present unique technical challenges, requiring extensive experience to master. Rapid reperfusion is critical, and the reported benefits of PTCA in AMI may only be obtained if the reperfusion times are relatively brief as they have been in the published clinical trials. Such time intervals may not be possible in all hospitals. Careful quality assurance and outcomes measurement are essential when changing to a therapy such as PTCA in AMI. Elucidating the best local AMI treatment is an issue of great economic and public health importance.

3:15

717-6 The Effect of Institutional Experience on the Outcome of Primary Angioplasty for Acute MI

Ronald P. Caputo, John J. Lopez, Robert C. Stoler, Craig B.H. Sukin, Kalon K.L. Ho, David J. Cohen, Richard E. Kuntz, Aaron Berman, Donald S. Baim, Joseph P. Carrozza. *Beth Israel Hospital, 330 Brookline Ave, Boston, MA*

Primary Angioplasty (PTCA) is an effective treatment for acute myocardial infarction (AMI). We switched from thrombolysis to primary PTCA as the routine treatment for AMI in 2/94. Excluding patients receiving prior thrombolysis, 27 were treated before 2/1/95 (group 1). Interim analysis of time to treatment intervals was performed in 2/95. 35 patients were subsequently treated through 7/31/95 (group 2). Baseline characterics were similar in both groups (Table 1).

Table 1

	Group 1	Group 2	p
Age (yrs)	65 ± 10	61.7 ± 14	NS
3V CAD	48%	48%	NS
C. Arrest	37%	41%	NS
PCW > 20	41%	44%	NS
C. Shock	14%	14%	NS
Diabetes	19%	14%	NS

Patients in group 2 had significantly shorter time intervals from presentation to arterial puncture (Pr-Art), presentation to initial PTCA inflation (Pr-Bal) and arterial puncture to initial PTCA inflation (Art-Bal) (Table 2). In-hospital death, re-MI, or revascularization occurred in 41% (n = 11) of group 1 and 17% (n = 6) of group 2 patients respectively (p = 0.05). In-hospital mortality was 22% (n = 6) in group 1 and 5.7% (n = 2) in group 2 (p = 0.014). *Conclusions* 1) Routine PTCA for AMI is associated with a significant learning curve 2) Improved efficiency in providing PTCA can improve patient outcomes.

Table 2

	Group 1	Group 2	p
Pr-Art (min)	144 ± 115	86 ± 57	0.05
Pr-Bal (min)	187 ± 130	115 ± 57	0.02
Art-Bal (min)	43 ± 21	28 ± 13	< 0.01
Endpoint	41%	17%	0.04
Death	22%	6%	0.06

718 New Echocardiographic Approaches for Evaluation of Coronary Artery Disease

Monday, March 25, 1996, 2:00 p.m.–3:30 p.m.
Orange County Convention Center, Room 414B

2:00

718-1 Changes in Intramyocardial Blood Volume in Response to Non-Flow-Limiting Stenosis Can Be Quantified Using Mycardial Contrast Echocardiography

Clarence Wu, Peter Alibali, David Fischer, Rina Ghandi, Marc D. Feldman, Flordeliza S. Villanueva. *University of Pittsburgh, PA*

We hypothesized that increases in intramyocardial blood volume (vol) required to maintain normal resting flow during progressive coronary stenosis (stn) can be quantified using myocardial contrast echocardiography (MCE). A flow probe and variable occluder were placed around the LAD in 5 open chest dogs, and 5 degrees of non-flow-limiting coronary stn were created while measuring proximal and distal LAD pressure. Blood vol at each stage relative to baseline (ba) (V_{stn}/V_{ba}) was independently derived by measuring coronary resistance (R) beyond the stn [$V_{stn}/V_{ba} = \sqrt{R_{ba}/R_{stn}}$]. MCE was performed using aortic injection of Albunex®, and background-subtracted LAD bed time-intensity curves were fit to a gamma-variate function. V_{stn}/V_{ba} for MCE was calculated as the ratio of bubble transit rates (α_{ba}/α_{stn}). Resistance-derived V_{stn}/V_{ba} was proportional to stn gradient (r = 0.74), which varied from 5–52 mmHg. MCE detected up to an 80% vol increase at maximal stn. MCE – V_{stn}/V_{ba} was linearly related to but overestimated resistance – V_{stn}/V_{ba} (see Fig). This overestimation was absent if a model using arteriolar recruitment and vasodilation was considered, suggesting that both phenomena occur with graded stn.

MONDAY ORAL