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Angioplasty prolongs survival in high risk patients with confirmed heart attack

Research question Can angioplasty reduce overall mortality compared with fibrinolysis in patients with heart attack?

Answer Yes. Primary angioplasty reduces overall mortality among patients identified as high risk by the TIMI (thrombolysis in myocardial infarction) score

Why did the authors do the study? Patients with confirmed heart attack who have a percutaneous coronary intervention are less likely to die or have another heart attack or stroke than patients treated with fibrinolytic drugs. But primary angioplasty is not widely available, and it's still unclear whether this invasive treatment reduces all cause mortality. These authors suspected that angioplasty was most likely to be life saving for patients at highest risk of death, and they did this study to find out. They also wanted to know if it was feasible to triage patients on admission using the simple TIMI (thrombolysis in myocardial infarction) score. This score has been shown to identify patients at high risk of death after a heart attack.

What did they do? They reanalysed data from a previous randomised trial comparing fibrinolysis (alteplase) with primary angioplasty in 1527 people with confirmed myocardial infarction. Using the TIMI score, they assigned patients to high risk or low risk subgroups, and compared what happened to them over three years. The TIMI score, which was not available at the time of the original trial, scores patients according to their age (75 years = 3 points; 65-74 years = 2 points), systolic blood pressure (< 100 mm Hg = 3 points), heart rate (> 100 bpm = 2 points), Killip class (class 2-4 = 2 points), weight (< 67 kg = 1 point), anterior ST segment elevation (1 point), time delay between symptoms and treatment (> 4 hours = 1 point), and medical history (angina, diabetes, or hypertension = 1 point). Patients scoring ≥ 5 out of a possible 14 were classified as high risk, the rest as low risk.

What did they find? In the 393 high risk patients, primary angioplasty reduced all cause mortality at three years compared with alteplase (25.3% *v* 36.2%; hazard ratio 0.66, 95% CI 0.45 to 0.94). That's equivalent to a number needed to treat of nine. Angioplasty did not reduce all cause mortality compared with fibrinolysis in the 1134 low risk patients (8.0% *v* 5.6%, P = 0.11). Angioplasty looked like a better treatment for high risk patients even when they had to be transferred to get it (mortality 24.6% *v* 36.8%, P = 0.02, number needed to treat 8). The authors conclude that the TIMI score can identify those heart attack patients for whom primary angioplasty could be life saving.

What does it mean? We already know that primary angioplasty reduces all cause mortality among patients with cardiogenic shock after a heart attack. This study, which is basically a subgroup analysis of a previous randomised trial, extends that benefit to other high risk patients. In hospitals that don't do primary angioplasty, the TIMI score could be a useful tool for identifying patients most likely to benefit from angioplasty, so they can be transferred quickly. The score is simple to calculate, requiring data that are usually readily available on admission.

Thune et al. Simple risk stratification at admission to identify patients with reduced mortality from primary angioplasty. *Circulation* 2005;112:2017-21

Editor's choice

Bentham's head

Not far from the *BMJ*, near the entrance hall of University College London, sits Jeremy Bentham, the great 18th century educator and benefactor—and the father of utilitarianism. His body was preserved on his own instruction as an "auto-icon" but his head, damaged in the preservation process and for a long time stored under his chair, is now locked away safe from student pranks. The head on his body is made of wax. Why do I mention all this? Because this week's journal echoes Bentham's philosophy—that our aim should be to acheive the greatest good for the greatest number of people. It's a philosophy that seems hard to argue against. But as articles in this week's journal show, the devil is in the detail.

This week we publish the final two articles in the series on cost effective strategies for achieving the millennium development goals (p 1431, p 1457). As a means of deciding how to achieve the greatest good for the greatest number, you won't get much better than this—cost effectiveness analyses based on systematic reviews of randomised trials, in which the authors uniquely take into account the fact that interventions don't act in isolation. The good news is that there is no shortage of highly cost effective strategies for developing countries. The bad news is that there is a dire shortage of funds: $18.5bn, to be precise. Given this funding crisis, the authors have done the world an important service in identifying what to prioritise when resources are tight. As they say, governments and others will be more willing to give money if they think it will be used effectively.

As a strategy for acheiving rational use of limited resources, it's hard to beat well trained and motivated generalists (p 1462). Broadly based diagnostic skills are, say Iona Heath and Kieran Sweeney, "a uniquely valuable healthcare commodity." The subtext of their article is that we undervalue these skills at our peril. And indeed, the United Kingdom's primary care led healthcare system is the envy of much of the world, as was confirmed to me at a meeting of our US advisers in Phoenix, Arizona, last week. Sadly though, the inverse care law is still with us (p 1449)—those in need are least likely to receive the best care—which means that interventions aimed at improving health for the poor tend to help the better off more. One solution for UK primary care, say Mackay and colleagues (p 1449), is to create the most attractive career opportunities where the need is greatest. For the wider world, there is no magic bullet for tackling inequity (the unrestrained market is certainly not one, p 1464, p 1483), but a new report from the World Bank provides many examples of how to reach the poor in different settings (p 1417).

I started out on this column feeling rather gloomy, but summarising all this encouraging stuff has left me more optimistic. With all these good people arguing on the side of right, sense will surely prevail. Which means I can, with some relief, put aside the rather complicated picture I had in mind when I started—of Jeremy Bentham with his head in his hands.

Fiona Godlee *editor (fgodlee@bmj.com)*