

Cardiac rehabilitation can be cost effective after a heart attack or an episode of unstable angina

Research question Is cardiac rehabilitation cost effective?

Answer A programme based on group exercise costs about \$A43 000 (\$32 000; £18 000; €26 500) for each quality adjusted life year saved, making it cost effective by conventional standards.

Why did the authors do the study? Rehabilitation programmes that focus on aerobic exercise may improve quality of life for selected patients, and even reduce mortality after a coronary event such as myocardial infarction. But there are few data examining the costs of these benefits (cost effectiveness).

What did they do? 113 Australian adults took part in a randomised trial comparing conventional care with 18 sessions of group cardiac rehabilitation. At each session they had 60-90 minutes of exercise, and 45 minutes of teaching or psychosocial counselling. Patients who were fit enough joined the trial after an uncomplicated heart attack or after recovering from an episode of unstable angina. They filled in validated questionnaires about their quality of life at baseline, after six months, and after one year (short form 36, and the utility based quality of life heart questionnaire). Patients and their general practitioners recorded use of healthcare resources, which the authors checked against medical records. These data were converted into costs.

Using their new quality of life data and data on survival from an old meta-analysis published in 1989, the authors estimated the extra cost of rehabilitation for each quality adjusted life year saved over one year. Costs were calculated from the perspective of the healthcare system. All analyses were intention to treat.

What did they find? Cardiac rehabilitation with exercise consistently improved patients' quality of life more than conventional care, although for most measures the gains failed to reach conventional statistical significance. Assuming (from previously published meta-analysis) that rehabilitation gave patients a 21% survival advantage over one year, the authors estimated that rehabilitation saved 0.0093 quality adjusted life years per patient. Rehabilitation cost an extra \$A395 per patient, so each quality adjusted life year cost \$A42 535. This figure is within the limits of cost effectiveness conventionally in Western countries.

In a sensitivity analysis, the final estimate of cost effectiveness was most vulnerable to changes in the impact of rehabilitation on quality of life. In the best case scenario, each QALY saved cost only \$19 685 dollars. In the worst, rehabilitation was no longer cost effective.

What does it mean? This analysis shows that cardiac rehabilitation based on group exercise can be cost effective for selected patients recovering from myocardial infarction or crescendo angina. The patients in this study were all under 75 and were well enough to exercise. The quality of life results might have been more convincing with a bigger sample size and better compliance. Only 40% (23/57) of the patients randomised to rehabilitation managed to attend most of the sessions.

The results should not be generalised to people over 75 or to other types of rehabilitation programme. This one was fairly intensive: patients had to attend three lengthy exercise sessions each week for six weeks.

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Editor's choice

Singing the body electronic

Five years ago we began a monthly journal aimed at primary care doctors in the United States. *BMJ USA* comprised articles selected from the weekly *BMJ* by a US based editor, along with commissioned commentaries and editorials. Despite the journal's popularity with readers, we couldn't attract sufficient support from the US pharmaceutical market, and last month's issue was the last.

This week we start "US highlights"—assembled on the same principle as the print journal *BMJ USA*—but available solely in electronic form from the *BMJ*'s website (<http://bmj.com/us-highlights>). The fact that *BMJ USA*'s editor, Douglas Kamerow, remains the *BMJ*'s US editor provides further continuity. In addition to selecting articles of interest to US doctors, he will be working to increase the number of such articles published in the *BMJ*.

If this cheap online model succeeds where the expensive print model failed, we could roll out "highlights" targeted at users in other countries. After the US our biggest non-UK markets for *bmj.com* are Australia, Canada, Italy, and Germany.

Could such an exercise in internationalism lead to a catastrophic change in the make up of the print *BMJ* from the point of view of UK readers? Not necessarily—the print *BMJ*, which goes mainly to UK doctors, could comprise material selected from *bmj.com* for its particular interest to the UK, just as the online "US highlights" is a selection of articles of US interest. The one place to find everything we published would be, as it is now, *bmj.com*.

As well as thinking more about what goes into the print *BMJ*, we think it's time to change its "look and feel." We've shortlisted three designs and we want readers to tell us which one they prefer. There's nothing new about consulting readers over such a crucial issue; last time we published the shortlisted designs in both the print journal and on *bmj.com* and received over 350 responses (although in those days postcards and letters outnumbered emails) (*BMJ* 1996;312:232). This time we're posting the designs on *bmj.com* and we'd welcome your feedback.

If electronic developments have changed the way that scientific journals are interacting with their readers then it is nothing compared with how they will revolutionise the delivery of health care—once such developments have got off the ground. Connecting for Health, the UK initiative responsible for the world's largest civil IT project (costing £6.2bn) had an unhappy Christmas with its all important "spine" crashing after a software upgrade (p 139).

It's now embarking on a charm offensive—although many of its intended users will take a lot of convincing (p 180). Nearly two years ago, we published Nancy Lorenzi's advice on surmounting non-technical barriers to the introduction of information systems (*BMJ* 2004;328:1146). Too bad this advice from Nashville, Tennessee, wasn't heeded when it could have made a difference.

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