

“Chest pain—please admit”: is there an alternative?

A rapid cardiological assessment service may prevent unnecessary admissions

Emergency medical admissions are important. They continue to rise year after year; consume substantial NHS resources; disrupt other NHS activities; and generate winter bed crises.^{1 2} Patients with acute central chest pain account for 20-30% of emergency medical admissions.^{3 4} Most are admitted because of concern about unstable coronary heart disease. Yet fewer than half will have a final diagnosis of acute myocardial infarction or unstable angina.⁴ Patients without high risk coronary heart disease thus account for over half those presenting with chest pain and over 10% of all emergency medical admissions. Such patients could be safely managed without admission, and most would prefer it. The current system is therefore both ineffective and inefficient. Any scheme which safely avoided these unnecessary admissions might save resources, reduce stress for patients, and, crucially, reduce the worrying false negatives—those missed cases of high risk coronary heart disease.^{5 6}

The key issue is thus the sensitivity of the risk stratification techniques and hence the underlying diagnostic methods and “triage” algorithms.^{6 7} Most frank acute myocardial infarctions can be rapidly diagnosed on the basis of history, resting electrocardiogram, and rapid cardiac enzyme assays, principally creatine kinase, myoglobin, and troponins.^{8 9} Similarly, frank unstable angina can usually be recognised clinically and the individual patient’s risk stratified reliably using the resting electrocardiogram and troponin measurements.^{8 9}

The greatest problem arises from the other patients with chest pain, often of recent onset. These patients do not describe severe prolonged episodes of classic cardiac pain with associated symptoms or a typical crescendo pattern of angina. They do, however, make up the bulk of the overnight, “chest pain-enzyme negative” or “chest pain-infarct excluded” admissions that are increasingly common.⁵⁻⁹

An ideal system would allow rapid assessment of such patients and their categorisation into high risk patients requiring admission; intermediate risk patients with angina but no need for urgent admission; and low risk patients, unlikely to have clinically important coronary disease. The first group would avoid the potential problem of inadequate investigation during too brief an admission. The third, low risk, group could be safely reassured and their admission avoided.

Rapid assessment chest pain services offer two crucial additional factors. Firstly, they provide standardised evidence based management using an exercise electrocardiogram and an algorithm or guideline.⁵

Secondly, patients are reviewed by a hospital cardiologist with an expertise honed by seeing many such patients, unlike most junior hospital doctors.

But are rapid assessment chest pain services reliable and safe? In Edinburgh Davie et al recently described 317 patients referred by general practitioners with new or increasing chest pain and seen within 24 hours.⁵ Only 18% with acute coronary syndromes needed admission; the rest were sent home, including 30% with stable coronary heart disease. Crucially, the half (49%) with non-cardiac chest pain were immediately reassured. This appeared safe and effective: six month follow up in 90% of the patients showed no deaths and a low level of symptoms and high level of satisfaction.⁵ This study also showed that psychosomatic chest pain seems to be common. Newby et al reported similar results after 1001 general practitioner referrals.¹⁰ Almost 60% of their patients had non-cardiac chest pain. Hospital admissions were halved, from an expected 268 to 123 patients, an admission rate of only 12%.¹⁰ This experience of “same day diagnosis” confirms smaller early series from Harefield,¹¹ Hillingdon,¹² and Southampton¹³ and recent longer term follow up from Glasgow.¹⁴ In the United States evidence has steadily accumulated on chest pain units which involve only brief admission.¹⁵

These data are far from perfect. Most are from cohort studies with variable inclusion criteria and losses to follow up. The true effect size of a rapid assessment chest pain service may be a reduction in admissions of anything from 20% to 80%. This level of evidence has been enough to persuade several hard pressed health authorities to support the introduction of a new service. Others may argue, however, that such services could attract more patients and increase referrals for angiography and revascularisation. NHS costs would then rise rather than fall.

Unbiased data from a randomised controlled trial are therefore essential. The issues that need to be addressed include optimal design, the precise components of the intervention, the ethics of health service randomisation, the key endpoints, and the best outcome measures for both professionals and patients.

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Vaccines and medicines for the world's poorest

Public-private partnerships seem to be essential

Three million children die every year in poor countries from diseases that can be prevented by vaccination.¹ Millions more die from diseases—like malaria and AIDS—that should be preventable by vaccines if they were developed. Unfortunately existing vaccines are not reaching these children because of failures in delivery systems, lack of resources, and the high price of some newer vaccines. Moreover, new vaccines may not be developed because private companies can't foresee a good return. The same story of huge need and market failure applies to drugs: of 1223 drugs developed between 1975 and 1997 only 11 were for tropical conditions.²

The problems seem huge. Yet there was an upbeat end to a meeting on the problem in Carmel, California, last month organised by the Institute of Global Health and the Global Forum for Health Research. The issue is rising up political agendas around the world, and new public-private partnerships are being devised to increase access to vaccines and drugs and develop new ones. Reducing deaths from communicable diseases would be a rich prize because these account for three quarters of the mortality gap between the rich and the poor world.¹

Although the meeting ended optimistically, the problems at the moment are getting worse. The AIDS epidemic in the developing world is spiralling out of control, with India, for instance, on course to develop the high prevalence seen in subSaharan Africa. Malaria is in danger of becoming untreatable, and drug resistant tuberculosis is spreading.

A global approach is needed to tackle the problems. International organisations must coordinate efforts. Rich countries need to recognise their responsibility to contribute resources. Poorer countries must change their health systems, and some—like India—should probably increase their investment in health. Recognition is growing, particularly in the World Bank, that investing in health is one of the best ways to counter poverty and promote economic development.

Similarly the public and private sectors will need to work together in new ways to make vaccines and drugs available to the world's poor. The public sector alone cannot solve the problem because almost all new vaccines and drugs come from private companies. Yet private companies cannot solve the problem alone because their obligations to their shareholders mean seeking the highest returns—which tend to come from developing products for the rich world.

There are two main ways in which new vaccines and drugs for the poor world might be produced: "push" mechanisms that reduce the cost of producing new vaccines and drugs, and "pull" mechanisms that increase the market for them. Push mechanisms include public funding for research into the diseases of the poor, research tax credits for companies, help with development of new products, funding for clinical trials, and making it easier to register new products. Pull mechanisms include commitments to purchase new products once they are developed, tiered pricing (whereby the rich pay more than the poor), and tax credits on sales. Evidence must be gathered on the effectiveness or otherwise of the various mechanisms.

Many public-private partnerships are emerging that use a combination of these mechanisms. One of the best known is the International AIDS Vaccine Initiative, founded in 1996 with money from governments, corporations, and foundations (including those of Rockefeller, Bill Gates, and Elton John). It works by increasing public support for an AIDS vaccine, advancing the science, and encouraging industrial participation in vaccine development. It loans money to biotechnology companies with good ideas and helps manage research and development, usually putting together a biotechnology company, a development group, and a developing country.

The South African AIDS Vaccine Initiative, which has links with the international initiative, is a public-private partnership that aims to have an AIDS vaccine for southern Africa by 2005. The Medicines for Malaria Venture aims to produce a new antimalarial

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The full text of a draft consensus statement sent to the White House from the Carmel meeting appears on the BMJ's website