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Increasing prescription of drugs for secondary prevention after myocardial infarction

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Mortality from acute myocardial infarction is reduced after treatment in the recovery period by the selective use of aspirin, β blockers, warfarin, and angiotensin converting enzyme inhibitors.¹ Despite evidence from trials, the use of β blockers has not been translated into clinical practice.² Most patients with myocardial infarction are managed by general physicians and general practitioners, but immediate coronary care is increasingly complex and the choice of drug for secondary prevention has increased, adding to the confusion. Cardiologists need to guide management decisions without necessarily taking over complete care of patients with cardiovascular disease. We audited the use of drugs for secondary prevention before and after an intervention aimed at increasing their use.

Subjects, methods, and results

About 75% of patients with suspected myocardial infarction are admitted to the coronary care unit³ and managed by the admitting medical firm according to guidelines provided by the cardiologist. On a daily

ward round the consultant cardiologist supervises management, but on discharge patients return to the care of the admitting physician. The last time the cardiologist has direct contact with the patient may be less than 48 hours after admission.

We audited 170 consecutive admissions (128 men; average age 63 years, range 31-90) to the coronary care unit from 1 February 1992 to 31 July 1992 with a confirmed diagnosis of acute myocardial infarction.³ Readmitted patients were excluded. In 120 (71%) a thrombolytic drug was given, and 146 (86%) patients were discharged alive. Drugs prescribed for secondary prevention at discharge and at the first outpatient appointment, four to six weeks later, were noted. Notes were assessed for contraindications to the prescription of β blockers.

In December 1992 a stamp was introduced into the notes of patients with myocardial infarction on day 2 in the coronary care unit, which stated the cardiologist's recommended drug treatment for secondary prevention. Criteria for the choice of drug were derived from published trials.¹ The recommendation was for two drugs (aspirin plus another), since there are few published data on the efficacy of multiple drug combinations for secondary prevention. Following this a repeat audit of 185 consecutive patients (126 men; average age 66 years, range 25-90) admitted between 1 February 1993 and 31 July 1993 was performed. One hundred and twenty five (68%) were given thrombolysis, and 153 (83%) were discharged alive.

More patients were discharged taking β blockers and angiotensin converting enzyme inhibitors after the intervention (table). The number of patients not discharged on a β blocker in the absence of a documented contraindication fell from 20/66 (30%) to 7/72 (10%) ($P < 0.01$, Fisher's exact test). In 1992 only 29% (29/99) of case notes stated reasons why β blockers were not given and contraindications were not always clear; the reason for not prescribing an alternative was stated in only 3/55 (5%). In 1993 the stamp was identified in the notes of 117/153 (76%) patients and the recommendation was not followed in 25 (21%) patients. The reasons for this were numerous and detailed in 18/25 case notes, ranging from adverse drug reactions (8), development of contraindications after discharge from the coronary care unit (4), and choice of

Details of treatment used for secondary prevention after myocardial infarction before and after the intervention

Therapy		1992 No (%)	1993 No (%)	P value
Dual	Aspirin + another	74 (51)	115 (75)	$\chi^2=18.2$, $P < 0.0001$ Not significant $P < 0.0001$, Fisher's exact
	Other (no aspirin)	17 (12)	19 (12)	
	Aspirin only	51 (35)	17 (11)	
None	No treatment for prophylaxis	4 (3)	2 (1)	Not significant $\chi^2=3.8$, $P=0.05$ $\chi^2=8.1$, $P < 0.01$ Not significant Not significant Not significant
	β blocker	47 (32)	67 (44)	
	Angiotensin converting enzyme inhibitor	29 (20)	54 (35)	
	Calcium blocker	16 (11)	18 (12)	
	Oral anticoagulant	9 (6)	12 (7)	
	Aspirin	125 (86)	132 (86)	

other drugs (6). In 1992, of 118 patients followed up at one month, 40 (34%) were prescribed β blockers, of whom 36 had been discharged taking the drug. This compared with 53/116 (46%) in 1993 and 51.

Comment

This study shows that widely accepted and proved treatments for preventing reinfarction and death after recovery from myocardial infarction are still underused despite evidence from clinical trials¹ and expert advice.⁴ The use of a simple method of marking the case notes resulted in an increase in prescriptions for β blockers, so that only 10% of eligible patients were discharged without this treatment. β blocker usage was continued beyond the first outpatient appointment following hospital discharge, suggesting that side effects and complications were not the cause of the initial low prescribing. Trials of angiotensin converting enzyme inhibitors after infarction were published only in 1992-3 and their use in clinical practice was facilitated by the intervention. The lag time from trial publication to implementation would be expected to be much longer.⁵ Recommendations made on day 2 of admission were followed in almost

80% of cases. Despite the fact that the recommendation appeared in the notes of only 76% of patients there was improvement in the second group as a whole.

In conclusion, a simple method of flagging the medical records to highlight a therapeutic decision appears to be beneficial. The study also shows that a specialist can influence the practice of a wide range of general physicians after only a short period of patient contact.

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Audit of reports of randomised clinical trials published in one journal over 45 years

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The randomised clinical trial is considered to be one of the most reliable and therefore most important methods of investigation in medicine. This is because the random allocation of patients to an intervention or control group and the ignorance of patient and observer of what treatment is being undergone is believed to exclude subjectivity and selection bias that could interfere with the results.

Published reports of randomised clinical trials began to appear in the late 1940s,¹ since when many have appeared. Not all randomised clinical trials ever performed can be retrieved from the international literature.² Since the late 1980s randomised clinical trials have been increasingly analysed in systematic reviews and meta-analyses.³ The first phase of data collection for a systematic review of randomised clinical trials involves identifying as high a proportion as possible of the potentially relevant trials. A call for help in establishing an international register of randomised clinical trials was made at the initiation of the Cochrane Collaboration towards the end of 1992 to establish a database of systemic, up to date reviews of randomised clinical trials of health care.⁴

The *Nederlands Tijdschrift voor Geneeskunde* (Dutch Journal of Medicine), a general medical scientific weekly, has contributed to the Cochrane Collaboration by identifying all articles published that might be eligible for inclusion in a systematic review of randomised clinical trials.

Material, methods, and results

We defined randomised clinical trial as "a study design in which patients are allocated at random to an intervention group undergoing a particular intervention whether for diagnostic, preventive, or therapeutic purposes, or to a control group." At the editorial office all original papers obviously reporting trials which had been published in the *Dutch Journal of Medicine*

between 1 May 1948 and 1 May 1993 were identified. This was done by reading all the original papers published in this period. Then we studied the method of randomisation.

The whole study took about 10 weeks. Of the total of 6820 original papers published in the studied period 89 papers (1.3%) described a trial. The method of randomisation was explained in a clear way in 38 of these (0.6% of the total). The year of publication of the 89 reports is reflected in the table.

Comment

Like the *BMJ*, the *Nederlands Tijdschrift voor Geneeskunde* published its first randomised clinical trial in 1948: "Een onderzoek naar de suppressieve werking van paludrine bij malaria tertiana" (A study of the suppressive action of paludrine in tertian malaria) by Dr S Klopper of Wormerveer, in collaboration with Miss D Slop, analyst, and Miss C Op 't Land.⁵ During the five years following publication of this first report nine randomised clinical trials were published, compared with 25 reports in the past five years.

The 89 trials found in our journal have been submitted for inclusion in the international register of randomised clinical trials. As suggested by Dickersin *et al*,² the key word "randomised clinical trial" has been introduced at the journal (and included in the electronic records since 1986), so that retrieving trials will be easier in the future, improving the quality of reporting.

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Number of randomised clinical trials and total number of published original articles in the "Nederlands Tijdschrift voor Geneeskunde" 1 May 1948 to 1 May 1993

Period	Randomised clinical trials (n=89)	Total number original articles (n=6820)
1948-52	5	706
1953-7	5	765
1958-62	1	739
1963-7	14	705
1968-72	5	671
1973-7	8	658
1978-82	15	816
1983-7	11	870
1988-93	25	890