

Myocardial infarction: hospital and home management in Northern Ireland

E. LINDSAY McILMOYLE, MD
 M. McF. KERR, MRCP, MRCP
 ZELDA M. MATHEWSON, MB
 J.H. ELWOOD, MD, PhD
 A.E. EVANS, MD, MRCP, MFCM

SUMMARY. *Some 262 general practitioners in the Belfast area were asked to complete a questionnaire about their attitudes and practice regarding the management of myocardial infarction at home. Of the 211 responders, only nine per cent would sometimes consider home care for patients under 65 years of age, although 55 per cent would sometimes consider home care for those over 65 years and three per cent preferred home management for this age group. In the year preceding this study, seven per cent of these general practitioners treated only 22 myocardial infarction patients under 65 years of age at home (two per cent of all cases in the area). Home care for myocardial infarction patients appears to be less popular in Belfast than in other parts of the United Kingdom. The views of the general practitioners concerning home care are discussed.*

Introduction

WHILE many countries have reported downward trends in mortality rates for coronary heart disease, in Northern Ireland the rates remain high. A recent mortality league table for coronary heart disease shows Northern Ireland third highest for males after Finland and Scotland and second highest for females.¹ In this part of the United Kingdom 42 per cent of deaths in men aged 35–64 years are due to coronary heart disease and almost one per cent of men aged 55–64 years die from the condition each year.²

Belfast is a centre for the Monica Project, coordinated by the World Health Organization. The project aims to study trends in coronary heart disease mortality and morbidity over a 10-year period and to relate these trends to changes in known risk factors. One aspect involves registration of all events of myocardial infarction within a defined area. Accurate knowledge of the practice of Belfast general practitioners in relation to the management of myocardial infarction patients at home was a prerequisite for such a register. The purpose of this study was to establish the attitudes and practice of general practitioners in relation to hospital and home treatment for myocardial infarction and to compare these with the attitudes and practice of general practitioners elsewhere.

E.L. McIlmoyle, General Practitioner, Belfast; M. McF. Kerr, Research Fellow, Belfast Monica Project; Z.M. Mathewson, Research Fellow, Belfast Monica Project; J.H. Elwood, Professor of Community Medicine, The Queen's University of Belfast; A.E. Evans, Director, Belfast Monica Project.

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Methods

The area studied consists of the three Belfast urban health districts — north and west Belfast, south Belfast, and east Belfast and Castlereagh — and the adjacent district of north Down and Ards. The population of the study area is 512 000 persons (all ages), representing almost one-third of the total population of Northern Ireland. Approximately 60 per cent are city-dwellers, the remainder living in residential satellite towns and the dispersed farming communities of north Down.

There are 255 general practitioners within the study area. In addition, seven neighbouring general practitioners have more than five per cent of their patients within the area. A total of 262 general practitioners were therefore invited to answer a self-administered questionnaire (see Table 1). Non-responders were further approached by letter and by telephone. A final response of 211 (80 per cent) was achieved.

Results

Responders indicated the frequency with which they would consider home management of myocardial infarction patients above and below 65 years of age (Table 1, question 1). Table 1 summarizes the findings. In addition general practitioners were asked how many patients with myocardial infarction they had treated at home in the preceding year. Seven per cent of general practitioners had treated one or more patients under 65 years at home (22 patients) while 40 per cent had treated one or more patients over 65 years at home during the same period (184 patients). Thirty-two per cent of respondents had their own (or practice) electrocardiograph machine, six per cent owned a defibrillator and 27 per cent had an intravenous drip set (Table 1, question 5).

The high level of affirmative response to questions 6 and 7 suggested that responders interpreted these questions to include patients who were subsequently admitted to hospital. More than half of responding general practitioners (54 per cent) gave no antiarrhythmic agent in the acute stages of myocardial infarction. Lignocaine (given by 23 per cent of responding general practitioners) and atropine (18 per cent) were the drugs most frequently administered. Beta-blockers were given by only five per cent of responding general practitioners. The majority of general practitioners (97 per cent) were prepared to administer a strong analgesic; the most popular were morphine (45 per cent) and heroin (43 per cent). Sixty-three per cent of general practitioners administered these drugs intravenously, 16 per cent gave intramuscular injections and 15 per cent used either parenteral route.

Of responding general practitioners, 15 per cent worked in a practice with a disease register of myocardial infarction patients (Table 1, question 9).

The final question invited comment on which myocardial infarction patients under 65 years of age were suitable for management at home. One or more criteria for selection for home care were provided by 65 responders. These included five of the six criteria detailed by the Royal College of General Practitioners³ (Table 2) and also the availability of support from other members of the primary health care team, the availability of a telephone, the presence of other serious illness and the wishes of the patients or relatives. The frequencies of comments are given in Table 3. Some responders offered more than one comment.

Table 1. A questionnaire completed by general practitioners concerning their attitudes and practice regarding the management of myocardial infarction at home; numbers of respondents are given with percentages in parenthesis.

Question	Answers									
1. Do you consider home management of the acute stages of myocardial infarction appropriate for patients:	Never		In exceptional circumstances			Sometimes		Preferred		
	Under 65 years of age? (<i>n</i> = 210)	126 (60.0)	66 (31.0)	18 (9.0)	0 (0.0)	65 years or age and over? (<i>n</i> = 210)	43 (20.0)	45 (21.0)	115 (55.0)	7 (3.0)
2. In the last 12 months have you treated any patients with acute myocardial infarction in the home? (<i>n</i> = 211)	None		Yes, patients aged <65 years		Yes, patients aged >65 years		Yes, patients of all ages			
	136 (64.0)	6 (3.0)	57 (27.0)	12 (6.0)						
3. How many patients under 65 years of age with myocardial infarction were treated at home during the last 12 months? (<i>n</i> = 211)	None		1 patient		2 patients		4 patients			
	197 (93.0)	10 (5.0)	2 (1.0)	2 (1.0)						
4. How many patients aged 65 years or more with myocardial infarction were treated at home during the last 12 months? (<i>n</i> = 209)	None	1	2	3	4	5	6	8	10	
	125 (60.0)	36 (17.0)	25 (12.0)	13 (6.0)	4 (2.0)	1 (0.5)	2 (1.0)	2 (1.0)	1 (0.5)	
5. Do you have:	Yes		No							
	Intravenous drip sets? (<i>n</i> = 208)	56 (27.0)	152 (73.0)							
	Electrocardiograph machine? (<i>n</i> = 210)	68 (32.0)	142 (68.0)							
	Defibrillator? (<i>n</i> = 208)	12 (6.0)	196 (94.0)							
6. Do you give antiarrhythmic drugs? (<i>n</i> = 192)	Yes		Yes		Yes		No			
	lignocaine	44 (23.0)	beta-blockers	9 (5.0)	atropine	35 (18.0)	104 (54.0)			
7. Do you give parenteral analgesia? (<i>n</i> = 208)	Morphine		Heroin		Other		No			
	94 (45.0)	89 (43.0)	18 (9.0)	7 (3.0)						
8. What is the parenteral route used? (<i>n</i> = 199)	Intramuscular		Intravenous		Intravenous/intramuscular		None			
	32 (16.0)	126 (63.0)	30 (15.0)	11 (6.0)						
9. Does your practice maintain a disease-based register in which myocardial infarction patients are recorded? (<i>n</i> = 210)	Yes		No							
	32 (15.0)	178 (85.0)								
10. Do you have any comments on which myocardial infarction patients under 65 years of age are suitable for home care?										

n = number of respondents to each question.

Discussion

Most patients dying from myocardial infarction do so early in the course of the illness⁴ and often from remediable complications.⁵ There is, therefore, a need for early medical intervention. In 1966 Pantridge introduced a mobile coronary care unit based at the Royal Victoria Hospital, Belfast.⁶ A similar programme was started at the Ulster Hospital, Dundonald in 1970,^{7,8} and a total of 13 early treatment services are now available in Northern Ireland. In Belfast, the median delay time from onset of symptoms to start of intensive care is less than two hours for those patients admitted by a mobile coronary care unit. These units are an established feature of treatment of myocardial infarction in Northern Ireland and are highly regarded by both the medical profession and the public.

Our results describe the current provision of coronary care by general practitioners in the Belfast area. Nearly all general

practitioners were prepared to relieve pain by a parenteral route. Half were prepared to treat arrhythmias while awaiting the arrival of the mobile coronary care unit. Defibrillators were not in common use and an electrocardiograph machine was not seen as essential. A minority of Belfast general practitioners (40 per cent) would consider treating myocardial infarction patients under 65 years of age at home and a very small proportion of myocardial infarction cases (two per cent) were managed in this way. The majority of general practitioners (69 per cent) who returned questionnaires declined to comment on their criteria for suitability for home care of patients under 65 years, but nine general practitioners gave reasons for wishing to send patients in this age group to hospital. The most common reason was their confidence in the efficiency of the mobile coronary care units in Belfast. Some general practitioners said that patients and relations expected hospital admission, and some doctors

Table 2. Guidelines of the Royal College of General Practitioners: factors to be considered in deciding on home or hospital management.

1. The time which has elapsed since infarction occurred.
2. The severity of the infarct.
3. The presence of dysrhythmia.
4. The age of the patient.
5. The social circumstances.
6. The geographical location of onset of symptoms.

Table 3. Comments by 65 general practitioners on choice of patients suitable for home care (absolute frequencies).

Absence of complications/condition stable	23
Late presentation (variously defined)	17
Suitable home circumstances	16
Supportive relatives	16
Serious collateral illness (including previous myocardial infarction)	14
Strong preference of patient or relatives	13
Mild or minor myocardial infarction	10
Support from primary health care team	4
Geographical position (country versus town)	3
Telephone	2

Table 4. Comparison of survey findings in Belfast, Edinburgh and Glasgow.

Data	Glasgow	Edinburgh	Belfast
Percentage of general practitioners who would consider home care for patients <65 years of age			
Never	34	37	60
Exceptionally	30	39	31
Sometimes	33	22	9
Preferred	2	0	0
Percentage of general practitioners who treated patients aged <65 years at home during one year	26	10	7

$P < 0.001$ for comparison of Glasgow and Belfast result. P was not significant for comparison of Edinburgh and Belfast results.

admitted to hospital because of fear of complaint or litigation.

In 1974, discussions of alternatives to hospital care for myocardial infarction led to the publication of guidelines by the Royal College of General Practitioners, stating criteria for home or hospital care (Table 2).³ These recommendations are reflected in the comments received (Table 3) which also take into account the wishes of the patients.

In Great Britain, general practitioners have been encouraged to consider managing myocardial infarction cases at home. A tradition of home care has arisen in certain rural areas.⁹ Beds in coronary care units may not be available in sufficient numbers to meet local demand.¹⁰ There has also been criticism of coronary care units on grounds of cost effectiveness.¹¹ Table 4 shows a comparison of our results with the response of general practitioners in other centres to identical questions.¹² Belfast

general practitioners are less likely to treat patients under 65 years at home than their colleagues in Glasgow and Edinburgh.

There have been few previous surveys of the opinions of general practitioners on this issue. In a survey of general practitioners in Glasgow, Poole found that 16 per cent out of a total of 210 myocardial infarction cases were treated at home.¹³ Hampton and colleagues asked general practitioners in Nottingham to give their responses to hypothetical cases;¹⁴ 30 per cent of those who responded opted to treat a 45-year-old man with an uncomplicated myocardial infarction at home. Hypothetical situations, however, do not constitute a clinical trial and such a patient may well suffer an episode of ventricular fibrillation — there are no warning signs. McCormick treated 76 per cent out of a total of 93 early survivors (that is, those surviving more than 24 hours after onset of infarction) of myocardial infarction at home¹⁵ but this study took place over 16 years ago, and since then, the concept of coronary care has changed. Attempts have been made to compare the outcome of myocardial infarction in patients treated at home and in hospital.¹⁶⁻¹⁹ Mather and colleagues randomly allocated 450 patients out of a total of 1895 patients to home or hospital care.¹⁷ There was no significant difference in mortality between the two groups at 28 days. Many of the patients had greater than three hours delay between the onset of symptoms and the arrival of the coronary care team. The study therefore looked at a small group of patients, the majority of whom had already survived the most critical post-infarction period. It is hardly surprising that there was no difference in mortality.

Colling and colleagues compared 28 day mortality in patients treated at home and hospital, and found a slightly lower fatality in those treated at home.¹⁸ This was a retrospective study, however, and patients who stayed at home had a longer total delay time between onset of symptoms and coming under the care of the general practitioner than those who were admitted to hospital. In addition, more than 50 per cent of the hospital patients were treated in general medical wards.

Hill and colleagues studied 500 calls to a coronary care unit over a period of four years.¹⁹ A total of 264 patients were randomly allocated to home or hospital care, and of these, 150 had myocardial infarction. There was no difference in mortality between the two groups at six weeks, but, as pointed out,²⁰ the population of approximately 100 000 should have yielded 1200 cases of myocardial infarction in four years. Therefore, only about 12 per cent of all cases of myocardial infarction were considered for random allocation.

While it may be acceptable to treat at home the small group of patients who have survived myocardial infarction for several hours the hypothesis that home care in general is as good as hospital care, has yet to be proved. The criteria established by the Royal College of General Practitioners for deciding on home or hospital care seems to be widely accepted but their application varies greatly. We suggest that the practice of general practitioners in relation to home care is largely determined by the availability of a mobile coronary care unit service and coronary care unit beds. This may account for the low rate of home management of myocardial infarctions in the Belfast area. In other areas, it has been claimed that 'deficiencies exist in the pre-hospital phase of management.'²¹ Our survey suggests that pre-hospital care by Belfast general practitioners is of a high standard. This may be partly due to the fact that many younger doctors have worked in coronary care units.

Patients with myocardial infarction will continue to turn to their general practitioner for help, and it is important that the development of mobile coronary care unit services should not lead to the reduction of the role of the family doctor in this important area.

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Address for correspondence

Dr A.E. Evans, Belfast Monica Project, Department of Community Medicine, Mulhouse Building, Royal Victoria Hospital, Belfast, Northern Ireland BT12 6BJ.

PRIORITY OBJECTIVES FOR GENERAL PRACTICE VOCATIONAL TRAINING

Occasional Paper 30

One of the biggest problems in vocational training for general practice has been the need to design courses appropriate for doctors preparing to work in the widest of all medical roles. The need is to decide what subjects are important and what priority objectives should be.

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Occasional Paper 31

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