

## PSYCHOLOGICAL REACTIONS TO A CORONARY CARE UNIT

Elizabeth L. Cay, Norman J. Vetter, Alistair E. Philip and P. Dugard<sup>1</sup>

*From the Coronary Care Unit, Royal Infirmary of Edinburgh,  
Department of Psychiatry, University of Edinburgh and Medical  
Research Council Unit for Epidemiological Studies in Psychiatry*

**ABSTRACT.** 203 consecutive male patients who had received initial treatment in the C.C.U., Royal Infirmary, Edinburgh, were interviewed in the medical ward of transfer on the day following discharge from the Unit. The patients' reactions to their treatment in the C.C.U. (6 beds in separate sound-damped rooms) were ascertained and an assessment of their psychological state which included a measurement of anxiety was carried out. Of the patients, 129 had a proven M.I., 99 being seen after their first M.I. 179 (88%) were reassured by the Unit, 15 (7%) were indifferent and 9 (5%) had been upset by the C.C.U. Patients with current M.I. were more likely to be reassured than patients without M.I. Procedures in the Unit did not upset the patients. Indifference or non-reassurance occurred for psychiatric reasons. Transfer from the C.C.U. to the ward did not present problems. Dependence on the machines, a transient phenomenon, occurred in only 10 patients.

The successful rehabilitation of patients with acute myocardial infarction begins as soon as they enter hospital. Fisher (1) has said "the feeling of security . . . the way the patient is treated in the initial period will have a lot to do with the kind of adjustment he makes later on in rehabilitation". For this reason, the study of physical, psychiatric and social factors influencing the rehabilitation of patients with ischaemic heart disease which is at present being carried out in Edinburgh takes as its starting point an examination of the psychological reactions of the patients to their initial treatment in the Coronary Care Unit of the Royal Infirmary.

The early fears that intensive care for patients with acute M.I. would result in severe adverse psychological disturbance (2, 3, 4) have not been substantiated in two recent studies by Hackett (5) and Dominian & Dobson (6). Though minor

<sup>1</sup> Paper read at the Council in Rehabilitation of the International Society of Cardiology

psychological disturbance in the form of anxiety or depression was to be found in many of their patients with M.I. there was an absence of severe upsets. Both studies found that about half their patients were reassured by the intensive care situation while the others were either indifferent to it or experienced it as anxiety-provoking. Rather disturbing was Dominian's finding that the most severely ill of his patients after a first M.I. were the least likely to be reassured. These studies were carried out in a particular type of intensive care setting, namely several beds in a single monitoring area with free communication between the patients.

The Coronary Care Unit in which the present study was carried out differs in that it consists of six single, sound-damped rooms, grouped in a semi-circle round a monitoring bay from which all the patients are under direct observation. The patients cannot see their own monitoring equipment nor that of any other patient, nor can they hear what occurs in adjoining rooms or at the monitoring bay. The Unit was planned in this particular way because the physicians instrumental in its setting up felt that patients with acute M.I. should be treated in isolation during the initial stage of their illness. The disturbance to the patient that occurs during resuscitation procedures and the death of a neighbouring patient, anxiety-provoking circumstances in which arrhythmias might arise, is thus avoided (7).

### METHOD OF THE STUDY

The study group consists of 203 consecutive male patients who were treated in the Coronary Care Unit and who survived the acute attack long enough to be transferred to one of the six general medical wards in the hospital.

Table I. *Diagnostic classification of patients treated in C.C.U.*

Group A: Patients with first M.I.	99 (49%)
Group B: Patients with second or subsequent M.I.	30 (15%)
Total	129 (63.5%)
Group C: Patients without M.I. with no previous history M.I.	47 (23%)
Group D: Patients without M.I. with previous history M.I.	27 (13%)
Total	74 (36.5%)

Patients without M.I. were included as well as those with M.I. as they constitute an appreciable proportion of patients being treated in the Unit.

The patients were interviewed by the psychiatrist in the medical ward on the day after their transfer from the Unit. At this stage in their illness the physical condition of the patients dictated the length and scope of the interview so the information available at this time was, of necessity, limited. For each patient the following schedule was completed:

1. The presence of psychological disturbance, which included both neurotic and organic symptoms, in the C.C.U.

2. The patient's reaction to the C.C.U. He was classified as being reassured, as not reassured or as indifferent to his stay in the Unit.

3. The patient's reaction on discharge from the C.C.U. He was classified as being glad or sorry to leave the Unit, or as indifferent to his transfer.

4. A clinical diagnosis of psychiatric symptoms present at the time of interview was made.

5. If the investigator considered that the physical state of the patient permitted, a measurement of anxiety as a psychological state was undertaken. The instrument used was form A of the Cattell 8—Parallel Form Anxiety Scale.

The procedures carried out on the patient in the C.C.U. and his length of stay in the Unit were detailed by the physician, who also made an assessment of the physical severity of the illness quite independently of any psychiatric assessment. The difficulty arose that there is no

one accepted measurement of the severity of a M.I. Prognostic indices are based on the one fact about which there can be no controversy—death—and the indices estimate the likelihood of the patient's dying given various operative factors. The problem is that a patient dying with sudden ventricular fibrillation may feel very little amiss till that point, while the sufferer from myocardial ischaemia may feel wretched. For the purposes of this study, therefore, indices which rely on mainly clinical material were chosen to estimate the severity of the illness, namely the Peel Index and the Norris Index (8, 9). These were calculated for the patients without M.I. as well as for those with M.I.

## RESULTS

### *Characteristics of the study group*

The ages of the patients ranged from 16 to 79 years with a mean of 55 years.

The patients fell into four natural subdivisions according to their diagnostic classification as shown in Table I. Group A comprised 99 patients (49%) with a first M.I.; Group B, 30 patients (15%) with a second or subsequent M.I.; Group C, 47 patients (23%) who did not have a current M.I. and had no history of a previous M.I.; and Group D, 27 patients (13%) with no current M.I. but with a previous history of M.I. Two-thirds of the group treated in the C.C.U. had a definite M.I. while the most frequent diagnosis made in the remaining patients was myocardial ischaemia.

The diagnostic groups differed in some respects. Group B were on average slightly older than the other patients. All patients in groups B and D had prior knowledge that they had heart disease. Of patients with a first M.I., 79 (80%) denied prior knowledge, though premonitory anginal symptoms were in fact present in 40 out of these 79 patients. Similar findings obtained in group C. The significance of angina is, therefore, not appreciated in a large proportion of patients

Table II. *Procedures in the C.C.U.*

Treatment	First M.I. (%)	Subsequent M.I. (%)	No M.I., no history M.I. (%)	No M.I., previous M.I. (%)	Total (%)
Routine	54	60	87	93	68
Drip	22	23	—	7	15
Pacing catheter	11	7	4	—	7
DC Countershock	1	—	2	—	1
Resuscitation	12	10	7	—	9
	n = 99	n = 30	n = 47	n = 27	n = 203

Table III. Grading of physical severity on discharge from C.C.U.

Correlation coefficient between Peel and Norris Indices = 0.6

	First M.I.	Subsequent M.I.	No M.I., no history M.I.	No M.I., previous M.I.
Peel Index	12.9	21.2	7.1	13.6
Norris Index	5.7	6.7	2.8	3.9

who, in the main, ascribe their symptoms to indigestion.

Patients with current M.I. stayed longer in the Unit than did those without current M.I. For the two groups without current M.I. the mean stay was 1.5 days whether or not there was a history of a previous M.I. The patients admitted with a first M.I. had a mean stay of 3.2 days while those admitted with a subsequent M.I. stayed 2.6 days.

The procedures carried out in the C.C.U. are shown in Table II. Procedures for the correction of arrhythmias are carried out significantly more frequently in those patients with a current M.I. when they are compared with those without current M.I. ( $X_1^2 = 25.0$ ,  $p < 0.0005$ ). 14 patients of the group had a cardiac arrest and, in the main, the resuscitation procedures were confined to these patients.

The 203 patients in the study had an appreciable amount of minor psychiatric symptomatology during their stay in the C.C.U. A history of anxiety in the C.C.U. was given by 58 patients (29%), 47 (23%) said that they had been depressed, 45 (22%) had had difficulty in concentration, 6 (3%) were elated, 93 (46%) had had difficulty in sleeping and 87 (43%) suffered from loss of appetite. There was no difference between the diagnostic groups in any of these symptoms

Table IV. Reaction to the C.C.U.

Reaction	First M.I. (%)	Subsequent M.I. (%)	No M.I., no history M.I. (%)	No M.I., previous M.I. (%)	Total (%)
Reassured	90	80	81	67	83
Dependent	3	10	4	7	5
Indifferent	5	3	13	11	7
Not reassured	2	7	2	15	5
	$n = 99$	$n = 30$	$n = 47$	$n = 27$	$n = 203$

with the exception that those patients with current M.I. were significantly more likely to suffer from loss of appetite than were the patients without current M.I. ( $X_1^2 = 18.8$ ,  $p < 0.0005$ ). This finding is most likely a reflection of physical severity, and anorexia during the acute stage of the illness cannot be regarded as a neurotic symptom. Severe psychiatric disturbance (toxic delusional episodes) were found in only 7 patients.

The diagnostic groups differed in the physical severity of their illness when they were graded on discharge from the C.C.U. The Norris Index, as shown in Table III, appears to give more weight to the present symptoms than does the Peel Index, while the Peel Index regards a history of a previous M.I. more severely, but the correlation between them is high (correlation coefficient,  $r = 0.6$ ). The two indices are, therefore, to a large extent measuring the same thing, and since they separate the diagnostic categories they offer a satisfactory means of assessing the physical severity of the acute attack.

On the day following transfer from the C.C.U., 126 patients (62%) of the group were assessed clinically as having psychiatric symptoms. Anxiety and depression occurred most frequently. Only 5 patients still had evidence of an organic confusional state.

#### Reaction of the patients to the C.C.U.

How the patients reacted to their initial treatment in the C.C.U. is demonstrated in Table IV. The great majority of the group, 179 patients (88%) were reassured by their stay in the C.C.U., 15 (7%) were indifferent to it and 9 patients (5%) said that they had been upset by the Unit. Dependence on the machines and fear at the thought of leaving the safety of the Unit occurred in only 10 patients. The physical diagnosis obviously influenced the reactions of the patients as signifi-

Table V. Reasons given by patients for reassurance in the C.C.U.<sup>a</sup>

Reason	No. of patients (%)
Staff efficiency	91
Continuous monitoring	84
Individual care	70
Privacy of single room	51
Frequent visiting by relatives	37

<sup>a</sup> More than one reason given by many patients.

cantly more patients with M.I. were reassured when they were compared with those without current M.I. ( $\chi^2_1 = 5.6$ ,  $p < 0.025$ ). When it is considered that the procedures in the Unit were largely carried out on the patients with current M.I., the evidence is suggestive that these procedures do not upset the patients. Of the 14 patients with a cardiac arrest (the group on whom the resuscitation procedures were carried out) all said that they had been reassured by their stay in the Unit. On the other hand, dependence on the machines was not related to the procedures carried out. It occurred fairly evenly throughout the diagnostic groups, and was observed more frequently in those patients who had been treated by routine methods alone. Furthermore, only one of the patients with a cardiac arrest was afraid to leave the Unit.

The reasons why the patients reacted favourably to the C.C.U. were then examined as shown in Table V. The confidence engendered by the efficiency of the staff and the individual care and attention given to the patients were stressed by the majority of those reassured. They regarded the monitoring and the procedures carried out as evidence that they were receiving modern up-to-date treatment. This is a group of patients who described very vividly their anxieties as they realised just before admission to hospital that they had probably had a heart attack. Most said they felt a sense of security and safety immediately on admission to the C.C.U. Their first contact with the Unit personnel (usually a member of the nursing staff) was crucial in establishing this confidence. Clear rational explanations of the role of the monitoring equipment are necessary to dispel fears that the sight of the complicated machinery may arouse, and it is noteworthy that prac-

tically all of the patients regarded the explanations given to them as satisfactory. The sense of security given to those patients who were reassured by the Unit, therefore, derived from the C.C.U. itself—the modern scientific treatment methods and the way in which these are implemented by the staff.

A very different picture emerged when the 24 patients who were either indifferent to the Unit or were not reassured were examined. Table VI shows that patients who were anxious, depressed, had difficulty in concentration or had suffered from organic confusional symptoms while in the Unit were more likely to be indifferent to or upset by the Unit than were those without those psychiatric symptoms. Prior knowledge of heart disease and the procedures carried out in the Unit did not play a part in the patients' reactions to the Unit.

Of the 15 patients who were indifferent to the Unit, 13 were of disturbed personality. Other factors which contributed to their indifference were amnesia for their stay due to a confusional episode (2), the presence of overwhelming outside problems (4) which occupied their minds to the exclusion of their surroundings and depression accompanying prolonged physical illness (2). The 9 patients who were upset by the Unit were all abnormal personalities. The most frequent stated reasons for their dislike of the Unit were the lack of company and the ban on smoking. It would appear, therefore, that indifference to the C.C.U. or an unfavourable reaction to it occurs mainly

Table VI. Factors contributing to indifference or non-reassurance in C.C.U.

Factor present	Reassured patients (%)	Indifferent or non-reassured patients (%)	
Anxiety	24	68	$p < 0.0005$
Depression	19	54	$p < 0.0005$
Difficulty in concentration	19	46	$p < 0.005$
Organic confusional state	2	15	$p < 0.005$
Sleep difficulty	45	54	NS
Loss of appetite	40	42	NS
Prior knowledge of heart disease	44	46	NS
Procedures	34	21	NS

for psychiatric reasons either inherent in the patients themselves or as a result of outside problems—factors which are out of the control of the C.C.U. This finding was confirmed by the clinical assessment of the patient's psychiatric state on the day following his transfer to the ward. Significantly more of the patients diagnosed as having psychiatric symptoms were likely to have been indifferent to the Unit or upset by it than were the stable patients ( $X_1^2 = 13.2$ ,  $p < 0.0005$ ). Also the level of anxiety, as measured by the anxiety scale, was higher in the 24 patients who were indifferent to or not reassured by the Unit.

#### Reaction on Discharge from the C.C.U.

It might be expected that patients, reassured by the security of the continuous care in the C.C.U., would become anxious on their transfer to the open hospital ward. Of the 203 patients, 118 (58%) accepted their transfer happily, 15 (7%) said they were quite indifferent to the move, while the remaining 70 patients (35%) said they were sorry to leave the Unit. The physical diagnosis obviously played a significant part in the way patients regarded their transfer. More patients with M.I. were sorry to leave the Unit (43%) than were patients without current M.I. (19%), ( $X_1^2 = 7.1$ ,  $p < 0.01$ ). The factors contributing to the discharge reactions are examined in Table VII. The patients with M.I. missed the individual care and attention and the privacy of the single room. The other patients, who were told in the Unit that they had not had a heart attack, wanted to leave the Unit because they were lonely, they resented the smoking ban and what they con-

Table VII. Factors contributing to reaction on discharge from C.C.U.

Reason for discharge reaction	Patients with current M.I. (%)	Patients without current M.I. (%)	
Loss of individual care	44	20	$p < 0.001$
Loss of privacy	38	14	$p < 0.0005$
Desire for company	34	46	sig. at 10%
Smoking ban in C.C.U.	6	22	$p < 0.005$
Excess discipline of C.C.U.	3	10	sig. at 10%

Table VIII. Anxiety score on day after transfer from C.C.U.

	First M.I.	Subsequent M.I.	No M.I., no history M.I.	NO M.I., previous M.I.
No. of patients tested	84 (85%)	24 (80%)	42 (89%)	22 (82%)
Mean anxiety score	5.8	4.9	5.9	5.4

sidered to be the excess discipline of the Unit. This finding suggests that speedy transfer for those patients who do not have an M.I. is indicated. As soon as they realise that they have not had a heart attack they quickly become bored and restless.

The successful weaning of the patients from the C.C.U. begins almost as soon as they are admitted. They are told that their stay in the C.C.U. is for a short time until their symptoms settle and they regard their discharge from the Unit as a sign that the crisis is over.

The reaction of the patient to his discharge from the C.C.U. bore no relation to the history of psychiatric symptoms in the Unit with the exception that patients who complained of being depressed in the Unit were more frequently glad to leave than were those who were not depressed. Also the procedures carried out in the Unit did not affect the reaction of the patient on his transfer. In particular, the patients who had a cardiac arrest did not differ in any way in their attitudes to transfer to the ward when they were compared with the rest of the group.

#### Anxiety in the patients on the day after transfer from the C.C.U.

Immediately after transfer from the C.C.U., clinical observation suggests that the patients have coped successfully with their stay in the C.C.U. and the subsequent discharge to the medical ward. Although a third of the group were sorry to leave the Unit, dependence on the machines was present in a very small number of patients.

On the day after their transfer, 85% of the group were judged physically fit to enable their level of anxiety to be measured. Table VIII shows that the mean scores within the four diagnostic categories were very similar, which suggests that the level of anxiety, how the patient reacts to his

Table IX. Level of anxiety in different treatment groups

Procedure	No. of patients	No. of patients tested	Mean anxiety score
Routine	137	121 (88%)	5.7
Drip	31	26 (84%)	5.4
Pacing catheter	15	12 (80%)	5.5
DC Countershock	2	1 (50%)	4.0
> 1 procedure (resuscitation)	18	12 (67%)	5.8

illness, is not related to its physical severity. This was confirmed by the calculation of the product-moment correlations between the anxiety score and the grading of physical severity.

Peel Index and Anxiety,  $r = -0.03$

Norris Index and Anxiety,  $r = -0.06$

Neither is anxiety related to the procedures carried out, as shown in Table IX. On the day following their transfer to the medical ward, those on whom therapeutic procedures were carried out are not more anxious than those who have had routine treatment alone. Similarly the length of stay in the C.C.U. was not associated with the anxiety level.

The reaction on discharge from the C.C.U. is a transient one. The regret felt by the 70 patients in leaving the C.C.U. was not reflected in an increased level of anxiety 24 hours later. In particular, dependence on the machines subsided very quickly and the mean score of the 10 patients who became dependent did not differ from other members of the group.

The level of anxiety for those patients after treatment in the C.C.U. can be compared with anxiety in other patients being treated in the same ward (mean score 5.8), and with a normal un-hospitalised population (mean score 4.6). Patients who have been transferred from the C.C.U. are not more anxious than other patients in the ward.

## CONCLUSIONS

1. Though an appreciable number of patients in the C.C.U. have evidence of minor psychiatric symptomatology, major psychotic disturbance occurs only rarely.

2. The great majority of patients (88%) are reassured by the intensive care situation. The group of patients for whom the Unit was designed, those with M.I., are more likely to be reassured than those who are admitted without M.I. There is no evidence from this study that the more severely ill patients, those who require procedures in the Unit, are upset by them. The small proportion of patients who are not reassured by the Unit react in this way for psychiatric reasons.

3. Patients cope with transfer from the Unit to the hospital ward well, and they are not more anxious immediately after transfer than their fellow patients in the ward. Preparation of the patients for transfer should begin very early in the course of their stay in the C.C.U. Even those who are sorry to leave the C.C.U. settle quickly in the ward. The most extreme form of this, dependence on the machines, occurs in very few patients, not by any means the most seriously ill, and is a transient phenomenon.

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*Address for reprints:*

E. L. Cay  
Coronary Care Unit  
Royal Infirmary  
Lauriston Place  
Edinburgh, Great Britain