Factors affecting early unplanned readmission of elderly patients to hospital

E Idris Williams, Freda Fitton

Abstract

A random sample of 133 elderly patients who had an unplanned readmission to a district general hospital within 28 days of discharge from hospital was studied and compared with a matched control sample of patients who were not readmitted. The total group was drawn from all specialties in the hospital, and by interviewing the patients, their carers, the ward sisters, and the patients' general practitioners the factors causing early unplanned readmission for each patient were identified. Seven possible principal reasons were found: relapse of original condition, development of a new problem, carer problems, complications of the initial illness, need for terminal care, problems with medication, and problems with services. There were also contributory reasons, and it was usual for several of these to be present in each case. The unplanned readmission rate was 6%; the planned readmission rate was 3%. It was thought that unplanned readmission was avoidable for 78 (59%) patients. Patients in the study group and in the control group showed significant differences in certain characteristics—such as low income, previous hospital admission, already having nursing care, and admission by general practitioners—and this might help to identify patients who are likely to be readmitted in an emergency.

Introduction

During the past 20 years there has been a regular output of studies concerned with the discharging of elderly patients from hospital. Most describe difficulties in resettling these patients into the community.[1-5] One feature commented upon was unplanned readmission, which, though the rates have varied, has been as high as 20% in the first year.[6,7] Unpublished figures on readmission from selected health districts in the North West Region (1979) showed a 15% readmission rate for patients aged over 65; one third of the readmissions took place within the first 28 days (personal communication). Most studies were confined to patients who were discharged from departments of geriatric medicine,[8,9] or occasionally to elderly patients suffering from single specific disabilities.[10-12]

Attempts have been made to identify factors which might lead to readmission, such as type of discharge,[10] patient compliance,[13] occupational state,[11] contact with family,[12] age of patient,[12] chronic disability,[9] patient in a home for elderly people,[9] unavoidable relapse,[8,14] inadequate medical management,[8] and poor rehabilitation.[8] This study was designed to look at the process of discharge and to identify factors that cause early unplanned readmissions.

Department of General Practice, University of Nottingham, Queen's Medical Centre, Nottingham NG7 2UH
E Idris Williams, MD, *professor of general practice*
Freda Fitton, MA, *research fellow*

Correspondence to:
Professor Williams.

Description of study

The study was carried out during the 12 months to March 1985 in a district general hospital. A random sample of 133 patients aged 65 and over, who had an unplanned readmission within 28 days of discharge formed the study group. The next patient on the discharge register who matched the study patient for age, sex, and marital state but who had not been readmitted was recruited as a control. The main sources of data were from the patients and their principal carers. Interviews with the hospital ward sisters provided supporting data. With the patients' permission their general practitioners were sent a brief questionnaire.

A full interview was given by 213 patients (80%) (study and control) and a limited interview by a further 15 patients (6%). Lack of interview was usually due to the poor physical or mental condition of the patient. One hundred and ninety three carers were interviewed, accounting for 73% of the patients: in 49 cases (18%) no carer was identified. In the remaining 24 (9%) either the patient refused to give consent or the carer refused to be interviewed. In every case except one the ward sister was interviewed. There were 212 (80%) responses from 99 general practitioners.

Discharge and readmission rates

On the first admission most patients were discharged home. This applied to three quarters (4473) of the 5868 patients aged 65 and over who were admitted during the project. A total of 958 (16%) died during their first admission and 354 (6%) had not been discharged at the close of the data collection. A further 83 (1%) were transferred to other hospitals and were lost to the study. Of those who were discharged home, 272 (6%) were readmitted within 28 days as an unplanned event. Six of these patients died before they could be interviewed in hospital, and their next of kin were not approached because of the possibility of causing further distress. There was a planned second admission within 28 days for 139 (3%) of those patients who were discharged home.

Characteristics of patients

Of the 266 patients who took part in the study 170 (64%) were women and 96 (36%) were men. Most were aged between 70 and 79: 59 (62%) of the men and 85 (50%) of the women; 148 (56%) patients were widowed, separated, or divorced, and 104 (39%) were married. Because of matching for age, sex, and marital state it was not relevant to compare the study and control groups for these variables. The sample of patients, however, was found to have the same distribution by age, sex, and marital state as all people over 65 who were admitted to the hospital during the study. Low income was an important factor in emergency readmission. A greater proportion of the study patients had an income of less than £55 per week ($\chi^2=12{\cdot}2$, 3 df, $p<0{\cdot}01$). Although it was not significant, social classes I and II were underrepresented in the study group and social classes IV and V overrepresented. Two hundred and twenty seven lived in private accommodation, 31 in warden controlled housing, and eight in local welfare homes. There was no correlation between living accommodation and unplanned readmission. Over half of the total group (153; 58%) lived with other people, two thirds of these lived with their spouse. There was no significant difference between the study and control groups in this respect. The national figure for people over 65 living alone is 30%.[15]

Principal reasons for readmission

All 133 study patients had unplanned readmissions.

TABLE I—*Principal reasons for unplanned readmission*

Reasons for readmission	No (%)	Mean age (years)	No of men	No of women	No (%) living alone	Interval between discharge and readmission (days)	
						Median	Range
Relapse of initial illness	67 (51)	79·9	26	41	30 (45)	11	1-27
New problem developed	20 (15)	74·3	5	15	6 (30)	9	1-20
Carer problems	19 (14)	79·5	4	15	9 (47)	7	1-27
Complications of initial illness	7 (5)	71·0	1	6	4 (57)	3	1-25
Terminal care	8 (6)	74·6	5	3	1 (12)	15	7-27
Medication problems	8 (6)	79·0	4	4	4 (50)	8	1-23
Problems with services	4 (3)	80·0	3	1	3 (75)	14	4-24
Whole group	133 (100)	76·9				9	1-27

A review of each case showed that there were often several factors contributing. In each instance it was possible to identify one principal reason, although this was sometimes difficult because two factors seemed to be of almost equal importance. The review was undertaken by EIW and independently by FF. A satisfactory consensus emerged, and it was not necessary to refer cases to an independent reviewer. There were seven possible principal reasons for readmission (table I). The most important was relapse of the original medical condition. The new problem group consisted of those who developed a new condition that did not relate to the original one. Many of the readmitted patients had carer problems. In only five of these was the carer a spouse. In the remainder they were other relatives, apart from two, who were a lodger and a neighbour. A few people were readmitted because of complications of the original illness, usually orthopaedic, and a few for terminal care. All of these last suffered from neoplastic disease. For six of these the carer was a husband or wife who was also elderly and in poor health. We had expected that problems with medication might be a contributory rather than a principal reason for readmission. But for eight patients problems with medication directly caused the readmission. Finally, four patients were readmitted because of failure in formal services. All were due to difficulties in communication between the hospital and the district nursing services.

The median interval between discharge and readmission for the 133 patients was nine days, and this varied with the reason for readmission (table I). Complications, problems with medication, and carer problems resulted in quick readmission; unplanned terminal care and problems with services took longer to emerge as factors. Although the numbers were small, they may suggest a trend. There was no significant difference in the distribution of reasons for readmission between men and women. For those who were readmitted because of relapse, new problems, or terminal care greater proportions of patients in each category did not live alone.

There was no significant difference between the readmission rates for each of the specialties concerned. More study patients were admitted at first admission to geriatric medicine care (43; 32%) than control patients (36; 27%), but this was not significant. Other specialties had nearly equal numbers of study and control patients. Predischarge home visits were more likely to have taken place from the geriatric medicine department than from the other hospital departments ($\chi^2=13·5$, 1 df, $p<0·001$).

TABLE II—*Contributory factors in unplanned readmission (study patients) (n=133 except where stated)*

Contributory factors	No	%
Carer problems (n=100)	83	83
Discharged too soon:		
Opinion of carer or patient	77	58
General practitioner's opinion (n=83)	26	31
Lack of information from hospital to general practitioner (n=104)	49	47
Living alone	57	43
Poor health on discharge—opinion of carer or patient	49	37
Inadequate preparation for discharge	49	37
Incontinence (urinary and faecal)	44	33
Problems with medication	39	29
Problems with services	24	18
Relapse of initial illness	18	14
General practitioner's failure to visit	15	11
Very confused: opinion of hospital or patient or carer	13	10
New problems developed	4	3
Discharged self	2	2
Complication of initial illness	1	1

TABLE III—*Comparison between study and control patients regarding factors that might contribute to readmission*

Problem	No (%) of study patients	No (%) of control patients	Significance
1 Carer's problems: (n=193, 100 study, 93 control)			
Health affected	54 (54)	34 (37)	$\chi^2=5$, 1 df, $p<0·05$
Frustration and restriction	67 (67)	34 (37)	$\chi^2=16·7$, 1 df, $p<0·0005$
Difficulty with communication	31 (31)	13 (14)	$\chi^2=7$, 1 df, $p<0·01$
2 Too early discharge: general practitioner's opinion (n=179, 83 study, 96 control)	26 (31)	11 (12)	$\chi^2=14·4$, 1 df, $p<0·001$
3 Poor health on discharge: ward sister's opinion (n=265, 132 study, 133 control)	13 (10)	5 (4)	$\chi^2=9·25$, 2 df, $p<0·01$
4 No advice given at discharge (n=263, 130 study, 133 control)	66 (51)	43 (32)	$\chi^2=9·2$, 1 df, $p=0·002$
5 Incontinence (urinary or faecal) (n=265, 132 study, 133 control)	22 (17)	16 (12)	$\chi^2=1·2$, 1 df, NS
6 Problems with medication after discharge (n=266, 133 study, 133 control)	42 (31)	50 (38)	$\chi^2=1·1$, 1 df, NS
7 Problems with services after discharge (n=266, 133 study, 133 control)	52 (39)	44 (33)	$\chi^2=1·0$, 1 df, NS
8 No general practitioner visit after discharge (n=260, 128 study, 132 control)	36 (28)	50 (38)	$\chi^2=3$, 1 df, NS
9 No discharge notice to general practitioner (n=207, 101 study, 106 control)	30 (30)	8 (8)	$\chi^2=15·4$, 1 df, $p=0·0001$

Contributory reasons for readmission

In nearly every case there were contributory reasons that made readmission more likely (table II). Each of the seven principal reasons for readmission could also have been contributory. For example, a problem with medication might have been a prime cause but relapse and carer difficulties may have been strong contributory factors. Altogether 15 such reasons were identified, of which carer problems were the most common. The practical and emotional strain of caring for an elderly patient who has been discharged from hospital was clearly apparent during the interviews. Premature discharge as assessed by carers and patients was the second most common contributory factor (77; 58%) for study patients. Although the assessments were subjective, and as they were retrospective they might be biased, confirmation was given by the general practitioner in 24 cases. The general practitioners stated that in their opinion discharge was premature for 26 (31%) of the 83 patients about whom they commented. Other contributory reasons were medication problems; failure of services; poor preparation for discharge in terms of assessment, advice, and too short notice; failure of notification to general practitioners, and, in turn, their failure to visit patients who were discharged. For readmitted patients more than one contributory factor was often present and sometimes many; there were nine for one patient.

Seven control patients were readmitted during the fifth and sixth week after discharge, which suggested that in that group readmission factors were also present. It was possible to compare the study and control groups for some of these factors (table III). As can be seen, problems were present in both groups, although often significantly more so in the study group.

The reason for the different numbers of patients with problems with services and failure of the general practitioner to visit for the study group in table III compared with actual contributory factors in table II is that when deciding on principal and contributory

factors it was necessary to take into account the significance of each factor in causing the actual readmission. Sometimes factors were present but were not directly causal.

Apart from problems that were judged to be principal or contributory reasons for readmission there were other significant differences between the study and the control groups. The study group had an overall lower level of income ($\chi^2=12{\cdot}2$, 3 df, $p<0{\cdot}01$) and were more likely to have been in hospital more than once previously ($\chi^2=114{\cdot}9$, 1 df, $p<0{\cdot}001$), or to have had a district nurse ($\chi^2=6{\cdot}5$, 1 df, $p<0{\cdot}05$) or social worker ($\chi^2=7{\cdot}9$, 1 df, $p<0{\cdot}01$) visiting. They were also more likely to have been admitted to hospital by their own general practitioner ($\chi^2=6{\cdot}2$, 1 df, $0{\cdot}02>p>0{\cdot}01$) and were less likely to have been admitted from the outpatient department or day hospital ($\chi^2=11{\cdot}7$, 1 df, $p<0{\cdot}001$) and to have had carers engaged in the task of washing them ($\chi^2=4$, 1 df, $p<0{\cdot}05$) and dressing them ($\chi^2=9$, 1 df, $p<0{\cdot}01$). The study group carers were more likely to have had their sleep disturbed ($\chi^2=3{\cdot}4$, 1 df, $p<0{\cdot}05$) and have problems communicating with their patients ($\chi^2=7$, 1 df, $p<0{\cdot}01$).

There was also evidence of differences at the time of discharge. The study group more often had the services of a district nurse ($\chi^2=4$, 1 df, $p<0{\cdot}05$) or social worker ($\chi^2=12{\cdot}7$, 1 df, $p=0{\cdot}0001$) arranged at discharge and had general practitioners who were more dissatisfied with information from the hospital ($\chi^2=10{\cdot}8$, 1 df, $0{\cdot}01>p>0{\cdot}001$) and had had fewer notices of discharge from the hospital ($\chi^2=15{\cdot}5$, 1 df, $p=0{\cdot}0001$). Fewer study patients were asked to attend outpatient departments after discharge ($\chi^2=9{\cdot}4$, 2 df, $p<0{\cdot}01$).

There were some differences which, although clear, were not significant. Study patients were more likely to be readmitted the first time into the geriatric department, had more medication, and were much more likely to have had five items prescribed at discharge. Also, study patients were more likely to be discharged in the evening and were less likely to use their own transport. The study patients were less likely to have carers who were spouses. The carers of study patients had more long standing illness and their health was less likely to be good; they experienced more recent family problems and had patients who needed more help with bathing, laundry, cooking, shopping, and housework.

Preventability

An assessment was made by EIW as to whether readmission was preventable. It was noted that readmission could have been avoided if more effective action had been taken in one or more of five areas: preparation for and timing of discharge, attention to the needs of the carer, timely and adequate information to the general practitioner and subsequent action by the general practitioner, sufficient and prompt nursing and social services support, and management of medication. It was considered that for 78 patients (59%) readmission might have been avoided if proper arrangements had been made in these areas.

Discussion

This study differs from those mentioned above because it concentrated on early unplanned readmission of elderly patients from all specialties. The design was based on random sampling and comparison with a matched control group. When determining the reasons for readmission, however, a case study method of assessment was used, and this proved to be satisfactory. Sometimes subjective assessments were supported by statistical findings.

Because of different study methodology it was difficult to compare the rates of readmission in this study with those of other studies. Hodkinson and Hodkinson showed that 36% of all admissions to their geriatric department were readmissions.[9] As Rosin has suggested, multiple readmission is also part of the readmission picture and makes true recording difficult.[16] It is hard, therefore, to get definitive unplanned readmission rates, but the rate of 15% from all specialties within 12 months in the North West Region is probably a reasonable estimate of what might prevail nationally. The 6% unplanned rate in the present study approximates to the 5% for readmission within the first 28 days reported in the North West Region. Planned readmission rates in the first 28 days were found to be 3% in the present study.

The patients who took part in the study were admitted to a wide range of specialties, and the department of geriatric medicine cared for one third. There was no significant difference between the readmission rates of specialties. A further paper will describe the discharge procedure, but from the sisters' opinions of the condition of patients at discharge there was evidence that those whose first admission was to the department of geriatric medicine had had more severe illness. Although there was a suggestion of a higher readmission rate among these patients, it was not significant. Using a predischarge visit to the patient's home as a marker, the fact that patients in the department of geriatric medicine were significantly more likely to get such a visit supports Victor and Vetter's view that discharge planning is better in departments of geriatric medicine.[17]

Early readmission of elderly patients is a distinct phenomenon, and there are identifiable reasons for this. The ones found in our study agree broadly with those in other studies. Victor and Vetter[14] and Hodkinson and Hodkinson[9] suggested that readmission is due mainly to relapse or breakdown in the original condition. Victor and Vetter, however, were not confident that readmission was precipitated by social factors in the community or that inadequate after care contributed to early readmission. Graham and Livesley identified unavoidable medical deterioration, inadequate medical management, non-compliance, social problems, and inadequate rehabilitation as factors.[8] This is a different classification from the one used in our study, but there is some overlap and many reasons are similar.

We found a more complicated picture. There was a variety of contributing factors, and for many patients there were several. Looking at the themes that emerged when examining the differences between the study group and the control groups some clustering was apparent and several aspects were seen to be important. These were severity of illness, difficulty with carers, preparation for discharge, medication, notice to general practitioners from the hospital and subsequent visits by general practitioners, economic state, and provision of services. The results also showed that it is possible to identify the patients who are more likely to be readmitted early. For example, those with a low income, those who have been in hospital previously, those already getting nursing and social care, those admitted by their general practitioners, and those whose carers are undertaking personal tasks.

We attempted to determine whether the readmissions were preventable and found that 59% were, which agrees closely with Graham and Livesley's figure of 58% of patients presenting to the hospital within two weeks of discharge.[8] We cannot comment about hospital policy concerning early discharge because of the wide range of specialties included. Hodkinson and Hodkinson argued that readmission

rates were not a feature of high or low turnover.[9] They pointed out that readmission, perhaps on several occasions, may be generally preferred to permanent admission, both by the patient and by the system. Our findings show that too early discharge was a common contributing factor in unplanned readmission. It is necessary therefore to be sure that readmission does not occur because of avoidable failures either in the discharge procedure or in resettlement. Seeking only one cause for readmission of a patient is both simplistic and unrealistic.

Although an unplanned readmission rate of 6% might not cause much concern, the fact that nearly 4% of those discharged were readmitted unnecessarily seems unacceptable. We propose to describe in detail the process of discharge, general practitioner response, the carers, medication problems, and formal services. Apart from readmission, it is important that many problems were also present in the control group, and this highlights the risks at discharge from hospital. The moment of discharge is an important point in a patient's life, and there should be guidelines for those working in both hospital and community. For the hospital we suggest the following: assess home circumstances; check that there are carers at home; give adequate warning to relatives and carers; ascertain that discharge is appropriate; assess the patient's capability for self care at home; arrange transport so that the patient can get home during the day; go through a written medication check list with the patient or carer or both; ensure that advice is understood by the patient or carer or both; confirm arrangements for services; check that some professional in the community knows that the patient is being discharged; ring the general practitioner's surgery with brief details; be aware of special circumstances where early readmission is possible.

Similar guidelines should be followed by those in the community. We recommend that a person in the community is given the task of liaising closely with all departments in the hospital, the carers, the formal services, and the general practitioner. Each patient who is discharged should be visited by someone from the practice within 48 hours to check for the presence of a carer and the needs, medication, services, general condition, and follow up requirements. It is also necessary to check on whether advice given by the hospital is understood, especially in circumstances where readmission may be possible.

It would be beneficial to provide progressive care by establishing a halfway house to which some patients could be sent before going home to allow adequate rehabilitation and assessment to take place. We recommend that such a scheme should be started experimentally and carefully evaluated.

Some discharged patients are likely to have economic problems. Health and social workers should advise all discharged elderly patients who satisfy the conditions to apply for an attendance allowance. A case could be made for this to be paid to all elderly discharged patients routinely for a limited period, and a continuation being applied for in the normal way.

These suggestions and guidelines are broadly similar to those outlined in a recent Department of Health circular on discharging patients from hospital, which are based on good communication between the various services.[18] Consideration should also be given to providing elderly patients and their carers with a written account of instructions at discharge with a summary of the principal features of the illness. Finally, community care is often held as the ideal for old people. It is a concern that at a crucial point this care has not been given as effectively and efficiently as it should be.

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ANY QUESTIONS

If the cytology report from a cervical smear states "no endocervical cells seen" should the test be repeated?

Most cervical cancers arise at the transformation zone, the junction between squamous and columnar epithelia of the cervix. The aim of a cervical smear should be to sample this area adequately. While the presence of endocervical cells in a smear is the best evidence that the zone has been sampled cytologists have long argued about the practical significance of a smear lacking endocervical cells.

Some authors suggest that the detection of abnormalities corresponding to cervical intraepithelial neoplasia is greater in smears with endocervical cells than those without.[1] Others argue that the absence of such cells makes no difference to the detection rates.[2,3] This uncertainty has prompted varying professional responses. Official policy in Holland is to repeat any smear lacking endocervical or metaplastic cells.[4] The laboratory in which I work also repeats smears in which we would normally expect endocervical cells to be present. Elias *et al* have shown that only 0·7% of cyclically menstruating women consistently lack endocervical cells in their smears.[5] Many laboratories in this country, however, do not have the resources to carry out such a policy while its value remains unclear.—FRASER MUTCH, consultant cytologist, Glasgow

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