

Table 2.4. Numbers (%) of deaths due to different categories of disease, in those patients included in and excluded from the sample.

Category of disease	Not in sample	In sample	Total
Cancer	44 (5.9)	5 (6.2)	49 (5.9)
Heart	85 (11.4)	7 (8.6)	92 (11.1)
Stroke	122 (16.3)	13 (16.0)	135 (16.3)
bronchopneumonia + other conditions	331 (44.3)	33 (40.7)	364 (43.9)
bronchopneumonia only	139 (18.6)	21 (25.9)	160 (19.3)
Other	27 (3.6)	2 (2.5)	29 (3.5)
total	748	81	829

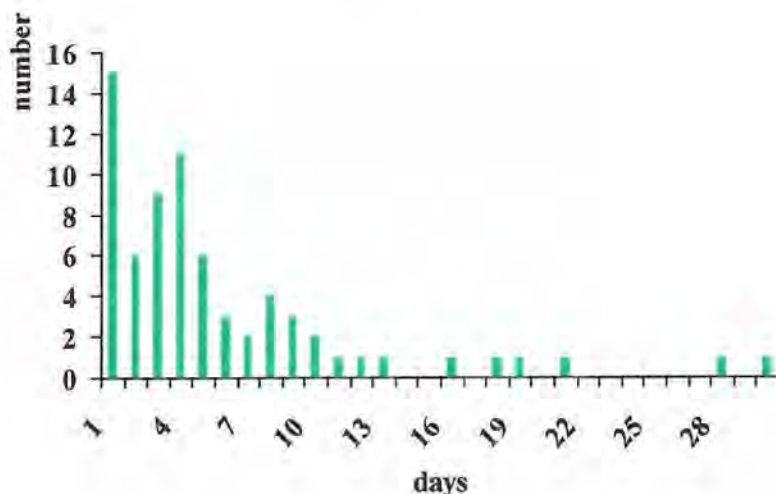
The patients in the sample were almost all elderly; all except two were aged 70 or over (one was aged 69 and one 60). Twenty-one (25.9%) were aged 90 or above (one was aged 100). Typically, patients had been transferred to Gosport following admission to an acute hospital for a major illness, the transfer to Gosport being arranged because the patient would have required more support than could have been provided in a nursing home. In some cases, the aim of transfer to Gosport was rehabilitation, for example, following a stroke or fractured hip. In others, the aim was long term care, as in patients with lasting disabilities following major strokes, or with terminal cancer. Many patients also had other comorbid conditions contributing to the development of dependence on nursing care, including advanced dementia and cardiovascular disease.

Table 2.5. Numbers (%) of patients who received opiate medication before death

	N	%
None	5	6.2
Diamorphine only	21	25.9
Oramorph and diamorphine	38	46.9
Other oral opiates and diamorphine	13	16.0
Other opiates, no diamorphine	4	4.9
Total	81	100.0

Most patients had received an opiate before death (Table 2.5). The most common pattern was initial use of Oramorph, followed by diamorphine subcutaneously. When used in a syringe driver in this way, diamorphine was invariably accompanied by other drugs. In 1988, diamorphine was used in combination with atropine, but in subsequent years it was combined with hyoscine and midazolam. In one case, the duration of opiate medication could not be determined from the records. The other 76 who received opiates were administered the drugs for a median of four days (range 1 – 120 days, inter-quartile range 7 days) (see Figure 2.1).

Figure 2.1. Duration of administration of opiate medication (chart excludes 2 patients at 42 days, 3 at 90 days and 1 at 120 days).



The pattern of use of opiates in these patients generally involved the administration of an oral opiate for pain or distress from whatever cause, followed by the use of subcutaneous diamorphine when the patient became unable to swallow oral medication. This process was usually triggered by a deterioration in health. An example taken from the medical records is as follows:

'further deterioration. Uncomfortable coughing, to have a tiny dose of oramorph regularly JAB' (JAB are Dr Barton's initials) (Case 1210).

Oramorph would also be commenced by other doctors, for example:

Oedema worse, relative feels patient has had enough. Oramorph started. (Signature not clear) (Case 1209).

If the patient deteriorated further, subcutaneous diamorphine would be used, for example:

'Further deterioration in general condition. In pain, confused and frightened. sc analgesia commenced. JAB' (Case 1139).

or:

'patient has deteriorated over weekend, pain relief is a problem. I suggest starts sc analgesia and please make comfortable. I am happy for nursing staff to confirm death. JAB' (Case 708).

The initial dose of diamorphine varied from 5 mg to 80 mg in 24 hours, doses below 20 mg being administered intramuscularly, and doses of 20 mg or more being administered subcutaneously by syringe driver. Of the 60 patients in whom the starting dose of diamorphine could be established, the most common dose was 40mg (50.8%), followed by 20 mg (31.7%) (Table 2.6). Of the 19 who received 20 mg diamorphine in 24 hrs, the dose of oral morphine being administered before

diamorphine was commenced could be identified in seven. The mean total daily dose of oral morphine in these cases was 27.1 mg. Of the 31 who received a starting dose of diamorphine of 40 mg in 24 hours, the daily dose of oral morphine before changing to subcutaneous diamorphine could also be established in seven cases, and the mean morphine dose in these was 44.3 mg. It is generally recommended that to obtain an equivalent level of pain relief, the dose of diamorphine on transfer from oral morphine should be one third of the total daily oral dose (see Chapter One). If this guidance is followed, a starting dose of subcutaneous diamorphine of 20 mg would equate to a daily dose of oral morphine of 60 mg, and a 40 mg dose of diamorphine would equate to a 120 mg dose of oral morphine in 24 hours.

Table 2. 6. Numbers (%) of patients receiving different starting doses of diamorphine

Diamorphine (mg)	N	%
5	1	1.7
10	2	3.3
15	1	1.7
20	19	31.7
30	2	3.3
40	31	50.8
60	1	1.7
80	3	5.0
Total	60	

The use of opiates was not confined to patients with cancer. Only two (15.4%) patients who were certified as having died from strokes did not receive an opiate, and only three (9.1%) of those who were certified as dying from bronchopneumonia associated with other conditions did not receive an opiate (Table 2.7).

Table 2.7. The certified causes of deaths of patients and the numbers (%) who received an opiate.

	Opiates					Total
	none	diamorphine only	oramorph then diamorphine	other opiates then diamorphine	other opiates	
cancer	0	1 (20.0)	3 (60.0)	0	1 (20.0)	5
heart	0	2 (28.6)	2 (28.6)	2 (28.6)	1 (14.3)	7
stroke	2 (15.4)	3 (23.1)	8 (61.5)	0	0	13
bronchopneumonia with other conditions	3 (9.1)	10 (30.3)	15 (45.5)	5 (15.2)	0	33
bronchopneumonia alone	0	5 (23.8)	9 (42.9)	5 (23.8)	2 (9.5)	21
other conditions	0	0	1 (50.0)	1 (50.0)		2
Total	5 (6.2)	21 (25.9)	38 (46.9)	13 (16.0)	4 (4.9)	81

Typically, a deterioration in a patient's condition would not be investigated in depth. In many cases this would have been appropriate, since the advanced state of illness and impossibility of further curative or rehabilitative treatment had been well established. However, in some cases, the resort to opiate medication might have been, but was not, preceded by some investigation, or trial of analgesics other than opiates. The degree of assessment of pain recommended in the 'Wessex guidelines' was not usually evident in the records, and body maps to highlight areas of pain were not used. For example:

– *'frightened agitated appears in pain suggest transdermal analgesia despite no obvious clinical justification!! Dr Lord to countersign. I am happy for nursing staff to confirm death. JAB'* (Case 785).

In 18 (22.2%) cases the drug chart could not be reviewed because a copy had not been stored on microfiche. Nonetheless, in these cases it was possible to describe the use of opiate medication from entries in the medical and nursing records. Drug charts were almost always completed by Dr Barton. It was notable that in many cases, prescriptions for opiate medication had been entered by Dr Barton on drug charts on the day of the patient's admission, although the medication was not administered until some days or even weeks later. For example, in the case of a patient who had abdominal obstruction and had been admitted to Gosport from an acute hospital, diamorphine was entered onto the drug chart on the day of admission, but not administered until 16 days later (Case 597). Prescriptions for diamorphine typically indicated a range of dose, to enable adjustment without a new prescription being written. In the example just mentioned, the indicated dose was 20-80 milligrams subcutaneously in 24 hours, to be administered with hyoscine and midazolam. It was not unusual for entries in the records by Dr Barton on the day of admission to include the statement '*I am happy for nursing staff to confirm death JAB*' (e.g. Case 530).

The proportion of patients who received an opiate before death did not vary significantly from year to year (Table 2.8). Of the nine deaths that occurred between 1988 and 1990, seven had received an opiate, and it therefore appears that the almost routine use of opiates before death had been established at Gosport hospital long before the initial complaint in 1998.

Table 2.8. Numbers (%) of patients who received an opiate before death, 1988-2000 (Chi Sq 50.0, p not significant).

year	Opiates					Total
	<i>none</i>	<i>diamorphine</i>	<i>oramorph plus diamorphine</i>	<i>other plus diamorphine</i>	<i>other only</i>	
1988	1 (50.0)			1 (50.0)		2
1989	1 (25.0)	3 (75.0)				4
1990		2 (66.7)		1 (33.3)		3
1991	1 (20.0)	1 (20.0)	1 (20.0)	2 (40.0)		5
1992			1 (50.0)	1 (50.0)		2
1993		4 (36.4)	3 (27.3)	3 (27.3)	1 (9.1)	11
1994	1 (12.5)	3 (37.5)	4 (50.0)			8
1995		2 (28.6)	5 (71.4)			7
1996		1 (12.5)	6 (75.0)		1 (12.5)	8
1997	1 (9.1)	2 (18.2)	6 (54.5)	2 (18.2)		11
1998		1 (14.3)	3 (42.9)	2 (28.6)	1 (14.3)	7
1999		2 (16.7)	8 (66.7)	1 (8.3)	1 (8.3)	12
2000			1 (100.0)			1
	5 (6.2)	21 (25.9)	38 (46.9)	13 (16.0)	4 (4.9)	81

The medical records were often limited. In 32 (39.5%) of the cases reviewed, the records were judged to be too brief to enable an adequate assessment of care to be made. In particular, they did not always contain information about the decision to initiate opiate medication.

In the review, it was possible to relate information contained in the records to the information reported on death certificates. In 42 (51.9%) cases, the information on certificates was judged to be an incomplete statement of factors contributing to

death. In 16 of these, a recent fracture that had contributed to the patient's condition had not been reported on the death certificate. These included patients who had suffered a fractured hip and undergone operative fixation or partial hip replacement in an acute hospital prior to transfer to Gosport. Indeed, a fracture had not been mentioned on any of the death certificates in the sample. Typically, death in these cases was reported as being caused by bronchopneumonia.

Forty-eight records contained sufficient details to enable a judgement to be made about the appropriateness of care. In 32 (66.7%) of these, care was judged to have been appropriate. There were some concerns about the decision to start opiate medication in the remaining 16 (33.3%). The indications for starting the drugs were either not clearly stated, or if pain was mentioned it had not been investigated, and neither remedial treatment or alternative analgesia had been attempted. For example, the following was written in one set of records in Dr Barton's handwriting: *'marked deterioration over last 24 hrs. Persistent cough relieved by nebulised diamorphine in N/saline. Sc analgesia is now appropriate + neb if required'* (Case 587). No investigation of the cough was described nor treatment other than nebulised diamorphine.

Discussion

A number of qualifications about the review of records should be acknowledged. The information was obtained from the records only, and because of the pressure of routine care in a hospital ward, clinicians may often fail to record extensive details about patient care. In some cases, the drug charts that recorded prescribing and administration of opiate medication were not available because they had not been copied onto microfiche. More complete records, or information obtained through interviews of clinical staff or relatives, might have explained some of the findings

that, on the evidence of the records alone, gave rise to some concern. The sample included only patients whose deaths had been certified by Dr Barton. However, the records contained entries from other doctors, and demonstrated that they had made some treatment decisions.

The record review was undertaken to identify broad patterns of care, and therefore included a relatively large number of cases, albeit a sample from over 800 cases. An intensive, prolonged and in depth review of a small number of cases might have reached, in those cases, different conclusions. Nevertheless, despite these reservations, the review does raise questions about the care provided to patients at Gosport War Memorial Hospital.

Features of care

The first aim of the review was to determine whether features associated with the care of patients whose deaths were being investigated by the police could also be found in the sample.

1. All patients were severely ill, having major disabling, or progressive conditions, or illnesses that were unlikely to substantially improve. They were heavily dependent on nursing care, and many had been intensively investigated and treated in acute hospitals before transfer to Gosport.
2. The precise reasons for admission were not always clear from the records, but some patients had certainly been admitted for rehabilitation. The majority of patients, however, had major clinical problems.
3. 93.8% of patients received an opiate, and almost half received Oramorph (Table 2.5). Opiate medication was frequently prescribed on the day of admission, although there was no immediate indication for their use, and they

were sometimes not administered until after several days or weeks. There was little evidence of use of weak or moderate analgesics before resort to oral morphine, opiate medication being used when patients suffered a deterioration in their condition. Further investigation or active treatment were often not undertaken, and alternative analgesics were generally not used first. If pain was a feature of a patient's deterioration, a detailed assessment of the reasons for pain was not usually recorded.

4. Diamorphine was administered to 72 (88.9%) patients, almost always by syringe driver and accompanied with other drugs with sedative properties, most commonly midazolam and hyoscine. Diamorphine was used in all categories of condition (Table 2.7). In those patients in whom the dose of oral morphine could be established, the starting dose of diamorphine tended to be higher than would have been expected. The two potential explanations are that oral opiates were not being administered at sufficient doses to control pain, or that the doses of diamorphine were greater than required.
5. In most cases, opiates were not used for prolonged periods, 47 (61.8%) patients dying within five days of starting treatment.
6. The records were generally brief. On occasions, details were either not recorded, or no entries were made when the patient had been assessed by a doctor, although the consultation was mentioned in the nursing records. The reasons for starting opiate medication were often not adequately recorded, and in 39.5% of cases it was not possible to assess the appropriateness of care.
7. The conservative attitude to treatment identified in the records of the cases being investigated by the police was also evident in the records of the sample. The quotations included above serve to illustrate this finding. The

initial medical assessment of a patient on admission was often concluded with the phrase 'Please make comfortable'.

8. In the case of patients whose deaths had been preceded by a bone fracture (most commonly the hip), Dr Barton did not note the fracture on the medical certificate of cause of death. The Office of National Statistics (ONS) encourages the practice of voluntary referral to the coroner by the certifying doctor of deaths due to accidents (whenever the accident occurred) (Devis and Rooney, 1999). It is conceivable that the local coroner would have undertaken at least some investigation into a number of the deaths that had followed fractures.

The pattern of care

The review included records of patients who died from 1988 to 2000. The findings reveal a distinct pattern dating from 1988. Indeed, the almost routine use of opiates before death appears to date from at least as early 1988, but it is conceivable that this practice was in use before this, and before Dr Barton was appointed as clinical assistant.

The patients admitted to Gosport War Memorial Hospital under the care of the Department of Medicine for Elderly People were old and frail. They had major illnesses and were heavily dependent on nursing care. In managing these patients, the culture at Gosport throughout the period appeared, from the records, to have been conservative with regard to treatment and modest with regard to expectations of improving patient health. It may be summed up in Dr Barton's own words, frequently written in the records: 'Please make comfortable'. This approach may have been entirely correct for many of the severely ill and dependent patients

admitted to Gosport. However, it is possible that in some patients, a more active clinical approach would have extended life.

Opiates were used extensively, and often without recourse to other analgesics, detailed assessment of the cause of pain, agitation or deterioration, or active treatment. The doses of diamorphine appear to have been higher than prior doses of oral morphine would have suggested were required, and most patients died within a few days of starting opiates. These observations might be interpreted as indicating that management of patients with terminal illnesses, in placing so much emphasis on the comfort of the patient, were in advance of those followed elsewhere in the health service. However, they might also be interpreted as indicative of a conservative approach to treatment, and even a premature resort to opiates that in some cases may have shortened life.

The lack of detail recorded in the notes about medical decisions, and contrast between the detailed notes written by the consultants and the short entries of other doctors – sometimes written within a few hours of each other – suggests that the level of supervision and teamwork was poor. The failure of the records to provide a coherent description of a patient's illness and care, the often disjointed nature of entries by different doctors, and the lack of detail about some decisions may have been a consequence of inadequate discussion between members of the clinical team on patient management.

The completion of medical certificates of cause of death was inadequate. In particular, the pattern of not reporting recent fractures was not appropriate.

References

Devis T, Rooney C (1999). Death certification and the epidemiologist. *Health Statistics Quarterly*, Spring, 21-33.

Chapter Three: Deaths at Gosport War Memorial Hospital, 1987-2000:

A review of Medical Certificates of Cause of Death (MCCDs) counterfoils

Introduction

Medical certificates of cause of death are supplied in books, each book containing 50 certificates. Each certificate is attached to a counterfoil from which it is detached when it is issued. At Gosport, only one book of MCCDs was in use at any one time, the book being held in an office close to the mortuary. It was hospital policy that MCCDs should be issued from the centrally held book, and the books of counterfoils have been retained for a number of years. Consequently, the counterfoils are likely to represent a reasonably complete record of deaths for which an MCCD was issued, although deaths that were referred to the coroner would have been excluded. This chapter describes the findings from review of these counterfoils.

The counterfoils record selected information that is also entered on the MCCD itself, including the deceased's name, date of death, the place of death, and the cause of death. From early 1988, the counterfoils of the books of certificates in use at Gosport also required the certifying doctor to state the deceased's age.

Method

Information from all the available counterfoils was entered into a database. The specific data items are shown in Table 3.1.

Table 3.1. Information obtained from the MCCD counterfoils.

1	Name
2	Gender
3	Age
4	Date of death
5	Certified cause(s) of death
6	Doctor completing the certificate
7	Place of death

The counterfoils were completed in the certifying doctors handwriting. Dr Barton had a distinctive signature almost invariably written with black ink. Consequently, deaths she had certified could be readily and confidently identified. However, the signatures of the other doctors were generally less distinctive, and consequently it was not possible to reliably identify other doctors. The other doctors would have included general practitioners who had cared for patients admitted to general practitioner beds, and doctors attending patients of the Department of Medicine for Elderly People when Dr Barton was not on duty.

Results

1. Numbers of deaths

The numbers of certificates issued each year by Doctor Barton and other doctors are shown in Table 3.2.

Table 3.2. Numbers (%) of MCCD counterfoils each year, 1987-2000, completed by Dr Barton or other doctors at Gosport.

Year	Other docs	Dr Barton	Total
1987	105 (98.1)	2 (1.9)	107
1988	85 (74.6)	29 (25.4)	114
1989	71 (69.6)	31 (30.4)	102
1990	72 (65.5)	38 (34.5)	110
1991	59 (65.6)	31 (34.4)	90
1992	68 (68.0)	32 (32.0)	100
1993	57 (36.5)	99 (63.5)	156
1994	56 (34.6)	106 (65.4)	162
1995	74 (47.7)	81 (52.3)	155
1996	100 (54.3)	84 (45.7)	184
1997	106 (55.2)	86 (44.8)	192
1998	107 (50.0)	107 (50.0)	214
1999	71 (43.6)	92 (56.4)	163
2000	81 (70.4)	34 (29.6)	115
2001	103 (98.1)	2 (1.9)	105
Total	1214 (58.7)	854 (41.3)	2069

Between 1987 and 2001, Dr Barton completed 854 MCCDs, 41.3% of all those issued at the hospital. The numbers issued by Dr Barton rose from 1988, when she issued 25% of all those issued in the year, to 1994 when she issued 64% of the total. There was a rise in the total numbers coincident with the rise in proportion issued by Dr Barton, and it was not until 2000 when the total number returned to the levels typical of the years 1987-1992. Dr Barton issued two MCCDs in 2001 for patients

who had died in general practitioner beds, the year after the termination of her clinical assistant post.

2. Age and gender of deceased patients

The mean age of Dr Barton's deceased patients was 82.8 years, but for the other doctors the mean was 78.8 (t 9.31, df 1807, $p < 0.001$). The difference in age is probably explained by the admission criteria for the different hospital wards. The gender of the deceased could be identified in 2033 (98.3%) of the 2069 cases, and among Dr Barton's patients 478 (56.8%) were female, in comparison with 623 (52.3%) among the other doctors (Chi Square 3.95, df 1, $p 0.047$).

3. Certified cause of death

The cause of death, grouped into the six categories as defined in Chapter Two, given by Dr Barton and other doctors are shown in Table 3.3.

Table 3.3: Numbers (%) of deaths certified as due to groups of conditions by Dr Barton and the other doctors (Chi Sq 507.9, df 5, $p < 0.001$).

	Other docs	Dr Barton	
cancer	424 (38.6)	49 (5.8)	473
heart conditions	165 (15.0)	100 (11.8)	265
stroke	106 (9.7)	139 (16.4)	245
bronchopneumonia + other conditions	235 (21.4)	367 (43.3)	602
bronchopneumonia alone	21 (1.9)	162 (19.1)	183
other condition	147 (13.4)	31 (3.7)	178
total	1098	848	1946

Dr Barton's patients were less likely to have been certified as dying primarily because of cancer or heart conditions, but more likely to have died from bronchopneumonia with or without other conditions, or from strokes. Case mix will explain at least some of these differences. Thus, local general practitioners appear to have admitted patients with cancer to Gosport Hospital for terminal care, but Dr Barton was responsible for the care of other groups, including people with Alzheimer's disease or other forms of dementia, and those recovering from strokes or in need of rehabilitation for other reasons.

4. Deceased seen after death, and post-mortems

Dr Barton was more likely to have reported personally seeing the deceased after death (98.6% vs 86.9%, Chi Sq 89.3, df 2, $p < 0.001$). Dr Barton reported that in 99.4% of deaths, no post mortem or referral to the coroner occurred; the proportion for the other doctors was 98.4%. These cases will not have included all cases reported to the coroner, since no MCCD would have been issued by the doctor in those cases that the coroner chose to investigate. In such cases, a certificate would be issued by the coroner at the conclusion of the coronial investigation. Therefore, the deaths indicated as referred to the coroner on the counterfoils are likely to include only those in which a discussion took place with the coroner or coroner's officer, and that concluded that an MCCD should be issued by the doctor.

5. Day, calendar quarter and week of death

The date of death was used to identify the day of week of death. In the case of both Dr Barton's patients and the patients whose deaths were certified by other doctors, the pattern was as expected, with approximately equal proportions of deaths occurring on each day of the week (Table 3. 4). A marginally greater proportion of Dr Barton's patients died during the winter (October to March), a factor that might be explained by seasonal factors influencing the types of conditions with which patients

were admitted, or because Dr Barton was more likely to take vacations between April and September (Table 3.5). Table 3.6 shows the distribution of deaths during the year when the certified cause of death was given as bronchopneumonia only. Dr Barton issued a greater number of certificates giving this cause of death, although the temporal distribution was no different to that of the other doctors.

Table 3.4. Numbers (%) of patients certified as dying on each day of the week (Chi Sq 5.1, df 6, not significant).

	doctor		total
	other doctors	Dr Barton	
1	174 (15.7)	113 (13.3)	287
2	147 (13.2)	111 (13.0)	258
3	154 (13.9)	122 (14.3)	276
4	151 (13.6)	137 (16.1)	288
5	139 (12.5)	117 (13.7)	256
6	176 (15.9)	132 (15.5)	308
7	169 (15.2)	119 (14.0)	288
	1110	851	1961

**Table 3.5. Numbers (%) of patients certified as dying in each calendar quarter
(Chi Sq 11.2, df 3, p < 0.01)**

quarter	doctor		total
	Other doctors	Dr Barton	
Jan-Mar	269 (24.1)	235 (27.6)	504
Apr-Jun	288 (25.8)	199 (23.4)	487
Jul-Sep	294 (26.3)	182 (21.4)	476
Oct-Dec	266 (23.8)	236 (27.7)	502
	1117	852	1969

**Table 3.6. Numbers (%) of deaths in different quarters certified as due to
bronchopneumonia alone (Chi Sq 0.67, df 3, not significant).**

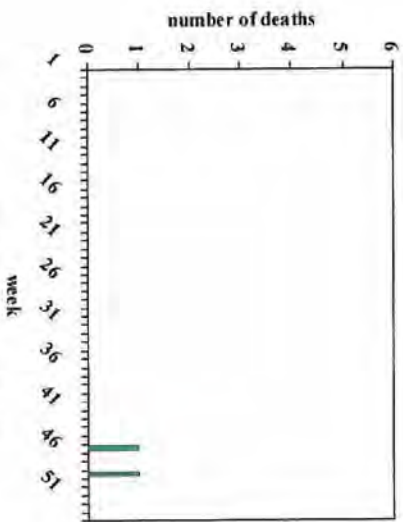
quarter	Doctor		total
	other doctors	Dr Barton	
Jan-Mar	7 (31.8)	51 (31.5)	58
Apr-Jun	6 (27.3)	33 (20.4)	39
Jul-Sep	3 (13.6)	28 (17.3)	31
Oct-Dec	6 (27.3)	50 (30.9)	56
	22	162	184

The distribution of deaths according to week of the year may also be used to identify clusters of deaths, and variations in the numbers of deaths at different times. Table 3.7 shows the mean number of deaths per week certified by Dr Barton from 1988 until July 2000, when she ceased employment at Gosport hospital. The findings demonstrate the increase in the numbers of deaths from 1993, the year in which Dryad and Daedalus wards were opened.

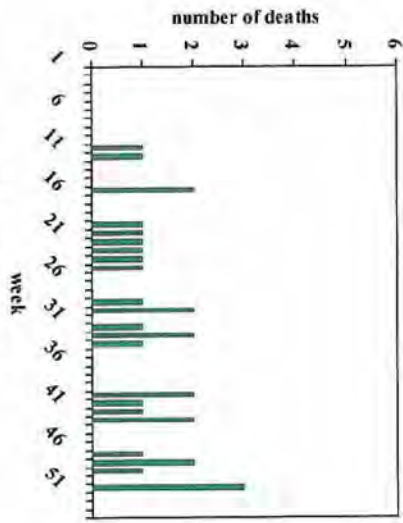
Table 3.7. Mean and standard deviation (SD) of numbers of deaths certified by Dr Barton per week, 1988- 2000.

year	minimum	maximum	number	mean	SD
1988	0	3	29	.53	.77
1989	0	2	31	.58	.69
1990	0	5	38	.72	.97
1991	0	3	31	.58	.89
1992	0	2	32	.60	.77
1993	0	5	99	1.87	1.43
1994	0	6	105	1.98	1.63
1995	0	6	81	1.53	1.31
1996	0	5	84	1.58	1.18
1997	0	6	86	1.62	1.40
1998	0	6	107	2.02	1.57
1999	0	6	92	1.74	1.32
2000	0	4	34	1.31	1.19

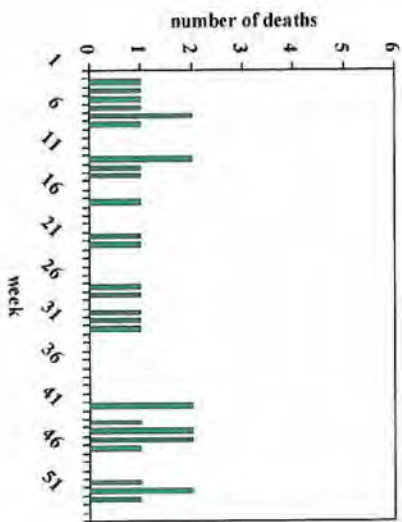
The Figures 3.1 to 3.15 in the following pages show the numbers of deaths certified each week from 1987 to 2001. They demonstrate the rise in the numbers of deaths from 1993 onwards, and suggest a decline in numbers may have occurred during 2000, although Dr Barton worked only until July in that year. The two deaths in 1987 would presumably have been for patients in general practitioner beds under the care of Dr Barton or one of her partners in her general practice. Other than the rise in numbers of deaths from 1993, the Figures do not indicate any clear clusters of deaths or patterns of concern.



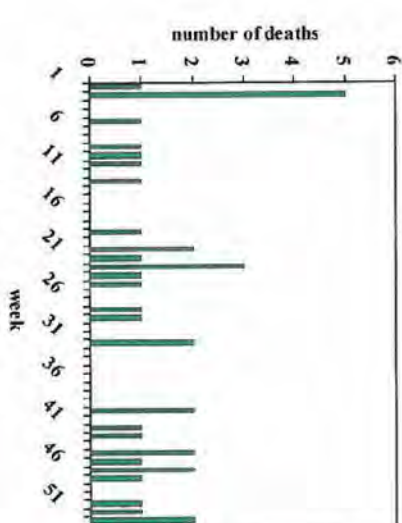
3.1. Deaths in 1987



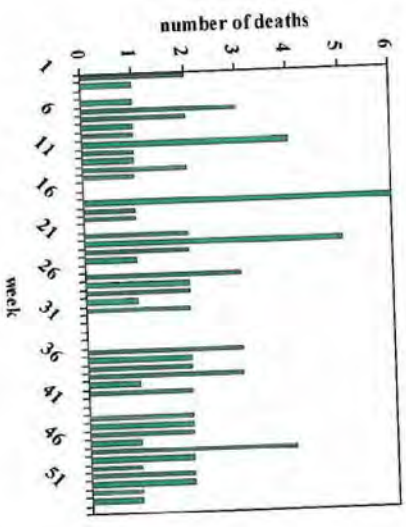
3.2. Deaths in 1988



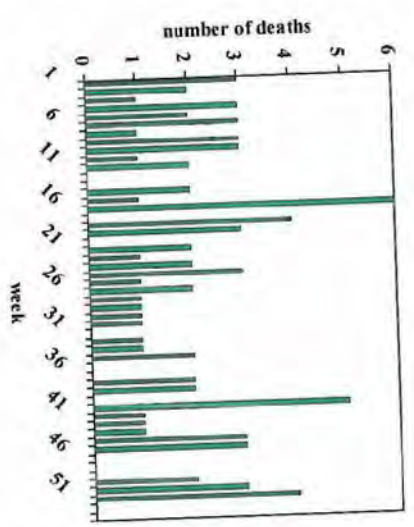
3.3. Deaths in 1989



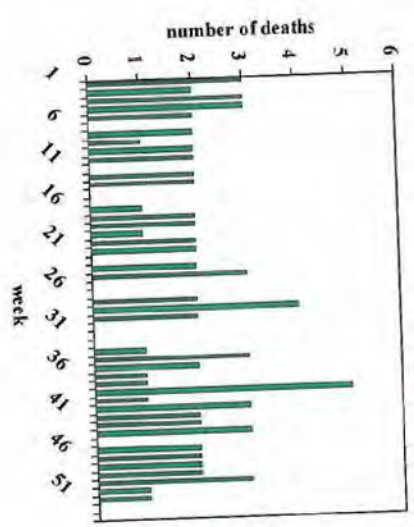
3.4. Deaths in 1990



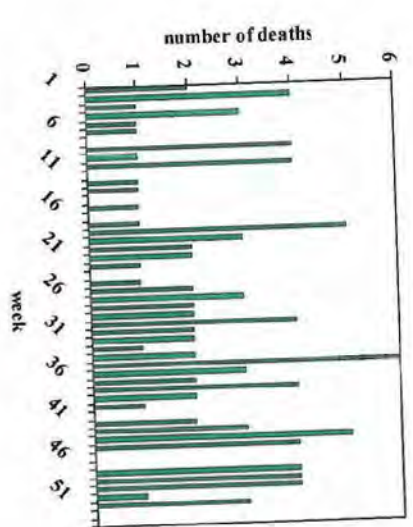
3.9. Deaths in 1995



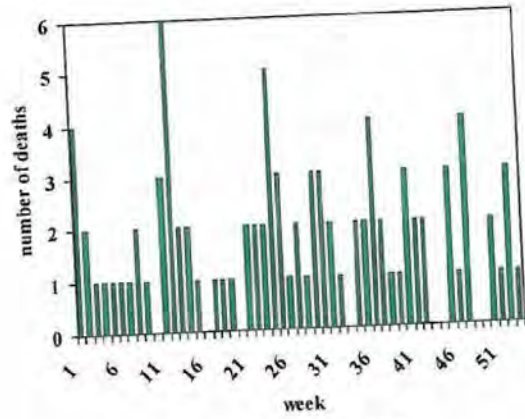
3.11. Deaths in 1997



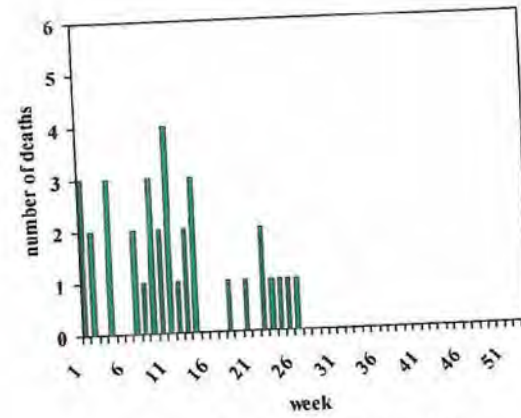
3.10. Deaths in 1996



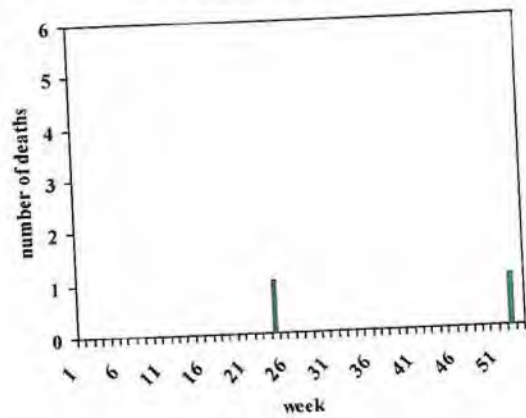
3.12. Deaths in 1998



3.13. Deaths in 1999



3.14. Deaths in 2000



3.15. Deaths in 2001

6. Patients on Dr Barton's wards

In some cases, doctors other than Dr Barton issued MCCDs for patients who died on wards specifically served by Dr Barton in her role as clinical assistant in the Department of Medicine for Elderly People. These wards were Redclyffe Annexe, and Dryad and Daedalus wards. Dr Barton also cared for some patients in the male and female wards, but these wards were not exclusive to patients of the Department. The completion of MCCDs by other doctors for patients in Redclyffe Annexe, or Dryad and Daedalus wards, could occur principally when Dr Barton was on leave or not on duty. Therefore, the case mix of these patients would tend to be similar to those whose deaths were certified by Dr Barton.

Tables 3.8 and 3.9 show respectively the certificates issued by the other doctors at the hospital and Dr Barton for deaths on different wards. These data reflect the fact that Dr Barton ceased responsibility for patients in Redclyffe Annexe and took on the new Dryad and Daedalus wards 1993/4.

Table 3.8. Deaths certified by doctors other than Dr Barton on wards at Gosport (Mulberry is a 40 bed assessment unit).

year	place of death							total		
	Gosport (ward not stated)	Redclyffe	male ward	female ward	Daedalus ward	Dryad ward	Sultan ward		Mulberry	
1987	66	9	9	11					95	
1988	61	3	13	5					82	
1989	52	3	3	10					68	
1990	52	2	9	9					72	
1991	37	1	10	11					59	
1992	35	1	16	15					67	
1993	34	2	3	6	3			8	56	
1994	15	5			2			33	55	
1995	12				12	5		35	10	74
1996	28	7			10	6		37	11	99
1997	10	3			8	7		45	33	100
1998	23	5			12	11		35	18	93
1999	12	7			6	9		27	10	71
2000	20	5			13	12		22	9	81
2001	59	8			1	4		25	6	103
	523	61	63	67	67	54		267	97	1175

Table 3.9. Deaths certified by Dr Barton on different wards at Gosport.

year	place of death						Total	
	Gosport (ward not stated)	Redclyffe	male ward	female ward	Daedalus ward	Dryad ward		Sultan ward
1987	1	1						2
1988	2	6	11	1				20
1989	1	19	8	1				29
1990		23	13	2				38
1991		18	11	2				31
1992		23	8	1				32
1993		51	7	6	35			99
1994		58	1		42		4	105
1995	1	4			42	33	1	81
1996					48	32	3	83
1997					39	47		86
1998					51	51	5	107
1999					42	49	1	92
2000					15	17	2	34
2001						1	1	2
	5	203	59	13	314	230	17	841

The mean age of patients who died on each ward was different (Table 3.10).

Patients in Redclyffe, Daedalus and Dryad wards tended to be older than those in the other wards. Greater proportions of patients who died in Redclyffe, Daedalus and Dryad wards were female than those who died in Sultan ward (Table 3.11).

Table 3.10. Mean age (years) of patients who died in different wards. (N=1799, p <0.005)

Ward	number	mean age	95 % confidence intervals
Gosport hospital, ward not specified	427	78.4	77.4 – 79.4
Redclyffe	250	82.8	81.8 – 83.7
Male ward	109	78.1	76.4 – 79.9
Female ward	68	80.3	77.7 – 82.8
Daedalus	381	82.5	81.8 – 83.2
Dryad	284	83.7	82.9 – 84.5
Sultan	280	77.0	75.6 – 78.4

Table 3.11. Numbers (%) of males and females who died in wards in Gosport hospital.

ward	gender		total
	male	female	
Gosport, ward not stated	244 (47.8)	266 (52.2)	510
Redclyffe	68 (26.2)	192 (73.8)	260
male ward	115 (96.6)	4 (3.4)	119
female ward		78 (100.0)	78
Daedalus ward	173 (46.1)	202 (53.9)	375
Dryad Ward	135 (47.7)	148 (52.3)	283
Sultan Ward	142 (51.1)	136 (48.9)	278
total	877 (46.1)	1026 (53.9)	1903

7. Certified cause of death

The certified cause of death could be determined from 2052 (99.2%) of the 2069 counterfoils available. Table 3.12 shows, for all deaths regardless of place of death in Gosport Hospital, the numbers of deaths certified as primarily due to one of six groups of conditions. Dr Barton was more likely to give bronchopneumonia or stroke as the cause of death (Chi sq 529.6, df 5, $P < 0.001$). A potential explanation is case mix – patients with dementia or stroke would have been admitted to Redclyffe, Dryad and Daedalus wards. Another possibility is excess use of sedative medication, leading to development of bronchopneumonia.

Table 3.12. Cause of death in groups, according to whether Dr Barton or other doctors signed the certificate.

Cause of death	Other doctors	Barton	total
cancer	460 (38.3)	50 (5.9)	510
heart	172 (14.3)	100 (11.8)	272
stroke	112 (9.3)	139 (16.4)	251
bronchopneumonia plus another	263 (21.9)	368 (43.3)	631
bronchopneumonia only	22 (1.8)	162 (19.1)	184
other	173 (14.4)	31 (3.6)	204
	1202	850	2052

It was possible to identify from the counterfoils 946 patients who had died in Daedalus, Dryad and Sultan wards. The admission criteria for these wards were different, and this is reflected in the differences in the certified causes of death among patients who died in these wards (Table 3.13). Since Dr Barton was responsible for patients in Daedalus and Dryad wards, and general practitioners were responsible for patients in Sultan ward, it is possible that the differences observed in the certified causes of deaths between these doctors would be at least partly explained by the different characteristics of the patients they cared for.

Table 3.13. Numbers (%) of deaths certified as due to different causes on Daedalus, Dryad and Sultan wards (Chi Sq 344.8, df 10, p<0.005).

	ward			total
	<i>Daedalus ward</i>	<i>Dryad ward</i>	<i>Sultan ward</i>	
cancer	21 (5.5)	24 (8.5)	158 (56.0)	203
heart	51 (13.4)	37 (13.0)	36 (12.8)	124
stroke	95 (25.0)	29 (10.2)	10 (3.5)	134
bronchopneumonia plus another	135 (35.5)	103 (36.3)	44 (15.6)	282
bronchopneumonia only	56 (14.7)	65 (22.9)	13 (4.6)	134
other	22 (5.8)	26 (9.2)	21 (7.4)	68
	380	284	282	946

There were also variations in the certified causes of death according to the gender of patients, cancer being less frequently given as the cause of death among males, and bronchopneumonia alone more frequently among females (Table 3.14). However, this difference was not apparent when the analysis was confined to patients whose deaths had been certified by doctors other than Dr Barton (Table 3.15).

Table 3.14. Numbers (%) of male and female patients certified as dying due to certain causes (Chi Sq 19.8, df 5, $p < 0.001$)

cause of death	gender		total
	male	female	
cancer	244 (28.0)	241 (23.6)	485
heart	114 (13.1)	137 (13.4)	251
stroke	104 (12.0)	129 (12.6)	233
bronchopneumonia plus another	278 (32.0)	305 (29.9)	583
bronchopneumonia only	57 (6.6)	124 (12.1)	181
other	73 (8.4)	85 (8.3)	158
	870 (100.0)	1021 (54.0)	1891

Table 3.15. Numbers (%) of male and female patients certified by doctors other than Dr Barton as dying due to certain causes (Chi 3.9, df 5, not significant).

cause of death	gender		total
	male	female	
cancer	218 (42.7)	219 (39.5)	437
heart	66 (12.9)	91 (16.4)	157
stroke	44 (8.6)	53 (9.5)	97
bronchopneumonia plus another	113 (22.2)	112 (20.2)	225
bronchopneumonia only	9 (1.8)	12 (2.2)	21
other	60 (11.8)	68 (12.3)	128
	510 (100.0)	555 (100.0)	1065

A comparison between certificates issued by Dr Barton and the other doctors restricted to selected wards would reduce the likelihood that case mix would explain

any observed differences. From 1987, 745 MCCDs were issued by Dr Barton and 166 by other doctors for patients in Redclyffe Annexe and Daedalus and Dryad wards. The mean age of the patients was similar (Dr Barton 83.0, the other doctors 82.5, not significantly different), as would be expected if the case mix had been the same. Among Dr Barton's patients, 439 (59.5%) were females, and among the patients of the other doctors 103 (57.2%) were females (difference not statistically significant). However, the other doctors gave bronchopneumonia alone as the cause of death in only 3% of cases, but among Dr Barton's patients the proportion was 20% (Chi Square 88.3, df 5, p 0.000) (Table 3.16).

Table 3.16. Causes of death among patients of Redclyffe Annexe, Daedalus and Dryad Wards, 1987-2001, comparing those certified by Dr Barton and other doctors.

cause of death	ward					
	Redclyffe		Daedalus ward		Dryad ward	
	<i>other</i>	<i>Dr Barton</i>	<i>other</i>	<i>Dr Barton</i>	<i>other</i>	<i>Dr Barton</i>
cancer	3 (5.9)	2 (1.0)	6 (9.2)	14 (4.5)	5 (10.0)	18 (7.9)
heart	7 (13.7)	12 (5.9)	11 (16.9)	40 (12.7)	6 (12.0)	31 (13.5)
stroke	8 (15.7)	23 (11.4)	18 (27.7)	77 (24.5)	4 (8.0)	25 (10.9)
bronchopneumonia plus another	23 (45.1)	125 (61.9)	17 (26.2)	118 (37.6)	19 (38.0)	84 (36.7)
bronchopneumonia only		36 (17.8)	1 (1.5)	55 (17.5)	4 (8.00)	58 (25.3)
other	10 (19.6)	4 (2.0)	12 (18.5)	10 (3.2)	12 (24.0)	13 (5.7)
	51	202	65	314	50	229

8. Hospital Episode Statistics

To determine whether there were a greater number of deaths than would have been expected among patients admitted to Gosport under the care of the Department of Medicine for Elderly People, a method is required for estimating the numbers of deaths that would have been expected. Since Gosport hospital is a community hospital, a comparison with other community hospitals would be a logical approach.

Information on admitted patient care delivered by NHS hospitals from 1989 is provided by Hospital Episode Statistics (HES), and HES were requested to provide information for this review. HES employs a coding system, each patient episode being assigned a series of codes that indicate the hospital in which care was provided, the type of speciality concerned, and the diagnosis. The codes are entered into a database in each NHS hospital, and the information is then collated at a national level by the Department of Health.

In order to identify those patients who were cared for in the Department of Medicine for Elderly People in Daedalus and Dryad wards at Gosport, specific codes indicating the speciality, hospital and ward would have been desirable. However, HES at a national level records information by hospital trust, but not necessarily by local hospital or specific ward. Thus, the national data do not allow the ready identification of patients who were cared for in the two wards at Gosport that are the focus of this review. Episode statistics that identified the ward were, however, available at Gosport hospital, but only relating to the years 1998 onwards. Consequently, data about most of the years of interest were not available.

Even if complete data for all the years of interest had been available, the difficulties would not have been resolved. The reason for employing HES data is to enable

comparisons between the mortality rates in Gosport hospital with those of similar community hospitals elsewhere who were caring for similar groups of patients over the same period. The level of detail in the central HES data does not, however, permit the identification of a satisfactory group of comparable community hospitals and similar group of patients. For example, even when HES codes are selected that identify patients who have been transferred between hospitals following initial admission because of a stroke, the mortality rate (approximately 30%) is substantially lower than that in Gosport (see Table 4.3). An uncritical acceptance of this finding would lead to the conclusion that patients admitted to Gosport were more likely to die than if they had been admitted elsewhere, whereas in fact the patients who were admitted to Gosport were more severely ill than those in the best comparison group yet identified from the central HES data. The collection of episode statistics directly from a sample of community hospitals would ensure that more detailed information would be obtained. However, since a comparison would only be possible from 1998, and it would be impossible to eliminate the effects of case-mix among patients admitted to different hospitals, it would be impossible to place much confidence on the findings of such a comparison. Consequently, an analysis using HES data has not been undertaken in this review.

Discussion

Two points about the use of counterfoils as a source of data should be discussed first.

1) identification of all deaths

In this analysis of deaths identified from the counterfoils of MCCDs stored at Gosport hospital, some deaths may not be included, for example deaths referred to the coroner; in a few cases the doctor may not have issued the certificate from the

Gosport hospital certificate book. However, a comparison with the numbers of certificates for deaths at the hospital completed by Dr Barton and certificates identified by National Statistics shows the number to be virtually identical (Tables 3.1 and 6.1), and therefore the data from counterfoils are likely to be sufficiently complete to permit conclusions to be drawn.

2) completion of counterfoils

The writing of some doctors was difficult to read, and the signatures of many could not be interpreted. However, the counterfoils completed by Dr Barton were easily identified. She had bold and confident handwriting, and used distinctive black ink. Also, occasional counterfoils were not fully completed, although this problem was uncommon and will not have influenced the findings of the analysis. Although Dr Barton usually specified the ward in which patients had died, other doctors often gave less detail and usually only indicated Gosport hospital as the place of death. However, this lack of detail is unlikely to have been systematic, and therefore it is possible to be reasonably confident in the findings of the comparison between deaths in different wards.

Findings

The analysis has identified the following concerns:

1. In her role as clinical assistant in the Department of Medicine for Elderly People, Dr Barton issued a large number of MCCDs between 1987 and 2000. Between 1988 and 1992, the numbers were between 29 and 38 per year, but from 1993 the numbers increased to between 81 and 107 per year, falling to 34 in 2000, the year in which Dr Barton left the hospital in July. Dryad and Daedalus wards opened in 1993-4, a factor that is likely to explain the increase in numbers of deaths in these years owing to differences in the types of patients admitted to these wards. Patients in Redclyffe Annexe commonly suffered from dementia,

but those admitted to Dryad and Daedalus had a wider range of severe clinical problems.

2. The proportion of deaths certified by either Dr Barton or other doctors occurring on each day of the week was more or less the same. In comparison with other doctors, Dr Barton issued a lower proportion of MCCDs during the summer months, but this finding is likely to be explained by annual leave being taken during the summer months.
3. The case mix of patients is likely to explain most of the observed differences between MCCDs issued by Dr Barton and those issued by other doctors. For example, patients under her care tended to be older than patients whose deaths were certified by other doctors.
4. It is notable that the patients admitted to Sultan ward, under the care of their general practitioners, were more likely to have been certified as dying due to cancer. They were also younger than patients who had died in Daedalus and Dryad wards.
5. The effect of case mix is probably reduced in an analysis that compared deaths in Redclyffe Annexe, Daedalus and Dryad wards that had been certified by Dr Barton or by other doctors. In this analysis, the mean age and proportion who were female was similar. However, Dr Barton gave bronchopneumonia alone as the cause of death significantly more frequently than the other doctors. The review of records (Chapter Two) highlighted that patients who had been certified as having died of bronchopneumonia had had other significant conditions, including recent fractures of the hip. Furthermore, a high proportion of these patients had received opiates before death. Consequently, although case mix almost certainly explains much of the difference between patients in the Department of Medicine for Elderly People managed by Dr Barton and those under the care of other general practitioners, concerns about the use of opiates

and the possible contribution they may have made to the deaths of some patients cannot be ruled out.

Chapter Four: Admissions to Dryad Ward

Introduction

The admissions book for Dryad ward has been retained by the hospital, and contained information about all admissions from 1993, the year of first opening of the ward. The information recorded in the book included dates of admission and discharge (or death), the time of day of deaths, some indication of the reasons for admission, and the place the patient had been admitted from. This information was studied in order to identify the characteristics of patients admitted to Dryad ward, and aspects of the care they had received.

It should be noted that Daedalus ward did not have a similar book, although a day-book appears to have been employed. This did not contain information helpful to this review.

Methods

There had been a total of 715 admissions from the opening of the ward in 1993 until the end of 2001. The admissions book recorded the date of admission and the date of discharge or death, and it was therefore possible to calculate the length of admission. Table 4.1 shows the mean length of admissions by year of admission, for the 676 (94.5%) admissions in which the admission and discharge date could be identified. There was some variation between years, with admissions during 1998 having the shortest mean length.

Table 4.1. Mean length (days) of stay on Dryad ward, days, 1993-2001.

year	number of admissions	mean (days)	95% CI for mean		minimum	maximum
			Lower	Upper		
1993	37	148.6	87.6	209.5	4	652
1994	68	41.7	24.7	58.7	1	326
1995	52	88.8	41.9	135.6	1	856
1996	43	56.0	33.6	78.3	1	345
1997	67	33.9	19.3	48.6	1	365
1998	103	36.0	28.1	43.9	0	195
1999	131	42.5	32.4	52.6	0	406
2000	90	65.8	47.4	84.2	1	487
2001	85	67.5	48.5	86.6	4	409
Total	676	57.1	50.0	64.1	0	856

The mean age of patients on admission to Dryad ward is shown in Table 4.2, according to year of admission, for the 708 (99.0%) cases in which the patient's age could be identified. There was no significant difference between years. The admissions book did not record the gender of patients, but gender could be inferred from the names of 712 (99.5%) of the 715 cases. Of these 414 (58.1%) were female.

Table 4.2. Mean age (yrs) at admission to Dryad ward, 1993-2001.

year	number of admissions	mean (yrs)	95% CI for mean		minimum	maximum
			Lower	Upper		
1993	38	82.1	79.7	84.4	66.0	97.0
1994	75	83.7	82.0	85.3	64.4	100.0
1995	56	82.6	80.6	84.5	66.9	99.0
1996	45	83.0	81.0	84.9	69.8	95.2
1997	71	81.8	79.9	83.8	66.3	98.0
1998	105	83.2	81.7	84.6	67.1	100.0
1999	133	83.6	82.3	84.8	65.0	98.2
2000	89	82.7	81.2	84.2	67.0	100.0
2001	96	80.9	79.2	82.6	61.0	100.0
Total	708	82.7	82.1	83.21	61.0	100.0

The Dryad ward admissions book recorded whether the patient died or was discharged. Table 4.4 indicates that the proportion of patients who were discharged

alive was less than 50% until 1999. Between 1993-5, 80% of admitted patients died on the ward.

Table 4.3. Numbers (%) of admissions followed by death or discharge, Dryad ward, 1993-2001.

year	Outcome		Total
	died	discharged	
1993	29 (80.6)	7 (19.4)	36
1994	59 (84.3)	11 (15.7)	70
1995	42 (80.8)	10 (19.2)	52
1996	31 (70.5)	13 (29.5)	44
1997	48 (69.6)	21 (30.4)	69
1998	64 (61.5)	40 (38.5)	104
1999	58 (43.9)	74 (56.1)	132
2000	35 (38.5)	56 (61.5)	91
2001	39 (45.3)	47 (54.7)	86
	405	279	684

The causes of death of patients of Dryad certified by Dr Barton are shown in Table 4.4. These data were taken from the MCCD counterfoils (see Chapter Three).

Table 4.4. Deaths on Dryad ward certified by Dr Barton

	Cause of death						Total
	<i>cancer</i>	<i>heart</i>	<i>stroke</i>	<i>bronchopneumonia plus another</i>	<i>bronchopneumonia only</i>	<i>other</i>	
1995	2	4	2	15	8	1	32
1996	1	3	5	17	5	1	32
1997	2	11	4	23	6	1	47
1998	3	4	6	15	18	5	51
1999	7	6	5	12	15	4	49
2000	3	2	3	2	6	1	17
2001					1		1
	18	30	25	84	59	13	229

The admissions book recorded brief information about the patient's illnesses at the time of admission. On a few occasions, this information included an indication of the reason for admission, for example respite care. Table 4.5 summarizes the findings. Medical/mental problems refer in the Table to either dementia or a mix of medical conditions with the additional problem of confusion or dementia; "post-op" indicates people who have had a recent operation, most commonly surgery following a fractured hip.

Table 4.5. Numbers (%) cases admitted to Dryad ward with different primary problems, 1993-2001.

Year	Diagnostic group							Total
	<i>stroke</i>	<i>general medical problems</i>	<i>medical/mental problems</i>	<i>heart problems</i>	<i>Cancer</i>	<i>post op</i>	<i>respite care/social admission</i>	
1993	9 (23.7)	19 (50.0)	6 (15.8)	2 (5.3)	2 (5.3)			38
1994	10 (13.5)	31 (41.9)	14 (18.9)	2 (2.7)	3 (4.1)	14 (18.9)		74
1995	7 (12.5)	23 (41.1)	13 (23.2)		7 (12.5)	5 (8.9)	1 (1.8)	56
1996	1 (2.5)	20 (50.0)	10 (25.0)		7 (17.5)	2 (5.0)		40
1997	4 (5.7)	29 (41.4)	16 (22.9)	5 (7.1)	8 (11.4)	8 (11.4)		70
1998	6 (5.8)	42 (40.4)	11 (10.6)	3 (2.9)	9 (8.7)	23 (22.1)	10 (9.6)	104
1999	10 (7.6)	47 (35.9)	10 (7.6)	6 (4.6)	11 (8.4)	38 (29.0)	9 (6.9)	131
2000	8 (9.0)	38 (42.7)	8 (9.0)	2 (2.2)	10 (11.2)	20 (22.5)	3 (3.4)	89
2001	11 (12.4)	30 (33.7)	16 (18.0)	1 (1.1)	8 (9.0)	9 (10.1)	14 (15.7)	89
Total	66	279	104	21	65	119	37	691

General medical problems were the commonest reason for admission in all years, but the proportion of admissions for other problems varied. Stroke was a relatively common reason for admission in 1993, and dementia with or without other medical problems was also relatively common until 1998. The proportion of patients who had been admitted following surgery increased from 1998, as did admissions for respite care.

The admissions book also recorded information about the source of admission. This information is summarised in Table 4.6. Dolphin Day Hospital is the day hospital based in Gosport War Memorial Hospital.

Table 4.6. Sources of admission to Dryad ward, 1993-2001.

year	home	rest/nursing home	acute hospital	Sultan ward	another ward at Gosport	Dolphin day hospital	
1993	4 (10.5)	2 (5.3)	23 (60.5)	8 (21.1)	1 (2.6)		38
1994	8 (10.7)	2 (2.7)	56 (74.7)	8 (10.7)	1 (1.3)		75
1995	6 (10.9)	2 (3.6)	42 (76.4)	3 (5.5)	1 (1.8)	1 (1.8)	55
1996	2 (4.4)	4 (8.9)	36 (80.0)	2 (4.4)	1 (2.2)		45
1997	3 (4.2)		56 (78.9)	7 (9.9)	3 (4.2)	2 (2.8)	71
1998	13 (12.4)		82 (78.1)	4 (3.8)	5 (4.8)	1 (1.0)	105
1999	19 (14.4)	2 (1.5)	103 (78.0)	1 (0.8)	4 (3.0)	3 (2.3)	132
2000	8 (8.8)	1 (1.1)	76 (83.5)	1 (1.1)	4 (4.4)	1 (1.1)	91
2001	23 (24.5)	2 (2.1)	49 (52.1)	8 (8.5)	12 (12.8)		94
Total	86	15	523	42	32	8	706

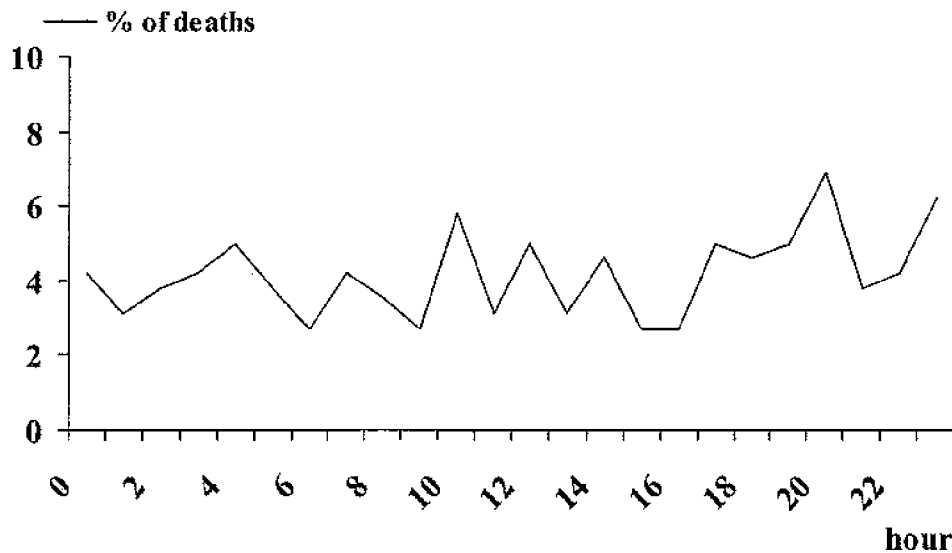
Most patients admitted to Dryad ward had been transferred from acute hospitals. Only in 2001 did the proportion of admissions directly from home approach 25%, a finding that is likely to be partly explained by the increase in admissions for respite care (Table 4.5).

The time of death had been recorded in the admissions book in 260 cases (64.2% of the 405 deaths on the ward). Deaths are reasonably equally distributed among hours of the day (Table 4.7 and Figure 4.1).

Table 4.7. Time of death (data recorded in only cases only).

hour	year of admission									total
	1993	1994	1995	1996	1997	1998	1999	2000	2001	
0	1 (5.0)	4 (11.4)		1 (5.9)	1 (3.3)			4 (15.4)		11 (4.2)
1	1 (5.0)	2 (5.7)	2 (6.7)	1 (5.9)		1 (2.3)			1 (4.3)	8 (3.1)
2	1 (5.0)	1 (2.9)	3 (10.0)		1 (3.3)	2 (4.5)	1 (2.9)	1 (3.8)		10 (3.8)
3	1 (5.0)	1 (2.9)			1 (3.3)	2 (4.5)	5 (14.3)	1 (3.8)		11 (4.2)
4		3 (8.6)	2 (6.7)		2 (6.7)	1 (2.3)	3 (8.6)	1 (3.8)	1 (4.3)	13 (5.0)
5	1 (5.0)		1 (3.3)	1 (5.9)	2 (6.7)	2 (4.5)		2 (7.7)	1 (4.3)	10 (3.8)
6			1 (3.3)		2 (6.7)	3 (6.8)			1 (4.3)	7 (2.7)
7	1 (5.0)	2 (5.7)	2 (6.7)	1 (5.9)	3 (10.0)		1 (2.9)	1 (3.8)		11 (4.2)
8		2 (5.7)	1 (3.3)	2 (11.8)	1 (3.3)				3 (13.0)	9 (3.5)
9	1 (5.0)				1 (3.3)	3 (6.8)	1 (2.9)		1 (4.3)	7 (2.7)
10	1 (5.0)	3 (8.6)	1 (3.3)		2 (6.7)	5 (11.4)	2 (2.7)		1 (4.3)	15 (5.8)
11	2 (10.0)		1 (3.3)	1 (5.9)	1 (3.3)	1 (2.3)	1 (2.9)		1 (4.3)	8 (3.1)
12			2 (6.7)	2 (11.8)	4 (13.3)	2 (4.5)		2 (7.7)	1 (4.3)	13 (5.0)
13		3 (8.6)		2 (11.8)	1 (3.3)	2 (4.5)				8 (3.1)
14	2 (10.0)	1 (2.9)			1 (3.3)	3 (6.8)	1 (2.9)	3 (11.5)	1 (4.3)	12 (4.6)
15		1 (2.9)	1 (3.3)		2 (6.7)		2 (5.7)	1 (3.8)		7 (2.7)
16						1 (2.3)	2 (5.7)	2 (7.7)	2 (8.7)	7 (2.7)
17	1 (5.0)	1 (2.9)	2 (6.7)	1 (5.9)	1 (3.3)	2 (4.5)	2 (5.7)	1 (3.8)	2 (8.7)	13 (5.0)
18		2 (5.7)	2 (6.7)	2 (11.8)		1 (2.3)	3 (8.6)	2 (7.7)		12 (4.6)
19	4 (20.0)	1 (2.9)	2 (6.7)	1 (5.9)		1 (2.3)	3 (8.6)		1 (4.3)	13 (5.0)
20	1 (5.0)	2 (5.7)	3 (10.0)	2 (11.8)		1 (2.3)	3 (8.6)	3 (11.5)	3 (13.0)	18 (6.9)
21		1 (2.9)			2 (6.7)	3 (6.8)	2 (5.7)		2 (8.7)	10 (3.8)
22	1 (5.0)	2 (5.7)	2 (6.7)		1 (3.3)	3 (6.8)	1 (2.9)	1 (3.8)		11 (4.2)
23	1 (5.0)	3 (8.6)	2 (6.7)		1 (3.3)	5 (11.4)	2 (5.7)	1 (3.8)	1 (4.3)	16 (6.2)
Total	20	35	30	17	30	44	35	26	23	260

Figure 4.1. The percentage of deaths on Dryad ward, 1993-2001, in each hour of the day (n=260).



Discussion

Some qualifications about the admissions book as a source of data must be noted. There were occasional errors in the book, for example the admissions of some patients had not been entered on the day of admission, and some information was occasionally missing, for example the source of admission. Nevertheless, the book was generally complete, and can be assumed to represent a reasonable description of admissions throughout the period.

The information from the admissions book reveals a changing pattern of cases being admitted to Dryad ward. Most patients were admitted from acute hospitals and with general medical problems, dementia or after surgery. However, from 1998, the proportion with dementia decreased, and there were increases in the proportions of admissions that were for respite care or following surgery. These changes in case mix are important when interpreting changes in mortality. The proportions of admissions that ended in death declined from 1997. However, the annual number of

admissions increased, and consequently the total numbers of deaths did not decrease until 2000. It is not possible to describe in detail the changes in case mix of patients admitted to Daedalus and Sultan wards, but it is almost certain that changes did occur. There may also have been changes in case mix in the period 1988 – 1993 with respect to admissions to Redclyffe Annexe, and the male and female wards. It follows that any comparisons in mortality rates between those in the wards of the Department of Medicine for Elderly People at Gosport or between Gosport and other community hospitals must be interpreted with considerable caution.

More or less similar proportions of patients died in each hour, as would normally be expected. The finding of a predictable distribution of deaths throughout the hours of the day serves to reduce concern about the possibility of sudden death following the administration of lethal drug doses.

Chapter Five: Prescribing of opiate drugs

Introduction

Many of the concerns about deaths at Gosport War Memorial Hospital relate to the use of opiates. The misuse of Drugs Act 1971 and the Misuse of Drugs Regulations 1985 stipulate that registers are kept of the administration of opiate drugs such as diamorphine, morphine and fentanyl. Registers must be bound, and entries must be in chronological order. This Chapter describes an investigation of the information contained in the controlled drug registers retained at Gosport Hospital.

Method

The surviving controlled drugs registers used at the hospital were obtained and reviewed. The relevant registers that were still available are shown in Table 5.1. No data were available from the male ward. Comparisons between wards were possible for some years, although the data were not always complete.

The controlled drug registers contained a record of every dose of opiate drug administered to each patient. It was possible to identify the first and last doses of each drug administered, and the quantity of drug in each dose.

Table 5.1. The periods for which controlled drug registers from different wards were available.

Ward	Dryad	Daedalus	Sultan	Redclyffe	Female ward	Male ward
<i>Period covered by registers</i>	25.6.95 – 5.3.02	6.10.96 – 14.8.02	13.7.94 – 31.10.01	27.2.93 – 28.10.95	30.8.87 – 8.9.94	No register available

Results

1. Numbers of patients who died who received opiates

Information was available from both the MCCD counterfoils (see Chapter Three) and the controlled drug registers, and it was possible to identify those who had received opiates during their final illness by matching counterfoils and register entries. The years 1997-2000 were selected, since the controlled drug register data from Dryad, Daedalus and Sultan were complete for this period. Table 5.2 shows the numbers and proportions of cases given an opiate before death, according to whether the MCCD was signed by Dr Barton or another doctor. A greater proportion of patients of Dr Barton received an opiate (Chi Square = 30.1; df 1, $p < 0.001$).

Table 5.2. Numbers (%) of patients dying 1997-2000 who were prescribed at least one dose of an opiate before death.

Doctor signing MCCD	Opiate prescribed		Total
	<i>yes</i>	<i>no</i>	
Dr Barton	211 (74.0%)	74 (26.0%)	285
Another doctor	146 (51.8%)	136 (48.2%)	282
Total	357 (63.0%)	210 (37.0%)	567

Dr Barton was more likely to prescribe an opiate to patients who were certified as dying from bronchopneumonia with other conditions, bronchopneumonia alone, or other conditions (Table 5.3). In the Table, all the certified causes of death have been grouped into the six categories employed in Chapters Two and Three.

Table 5.3. The numbers (%) of patients dying 1997-2000 from groups of conditions who had been prescribed an opiate by Dr Barton or other doctors.

Cause of death	doctor	opiate		total	Sig (df 1)
		yes	no		
Cancer	Barton	15 (68.2%)	7 (31.8%)	22	0.2
	Another	78 (80.4%)	19 (19.6%)	97	
Heart	Barton	26 (59.1%)	18 (40.9%)	44	0.58
	Another	11 (36.7%)	19 (63.3%)	30	
Stroke	Barton	37 (69.8%)	16 (30.2%)	53	0.19
	Another	16 (55.2%)	13 (44.8%)	29	
bronchopneumonia with other conditions	Barton	64 (76.2%)	20 (23.8%)	84	0.001
	Another	27 (37.5%)	45 (62.5%)	72	
bronchopneumonia only	Barton	57 (83.8%)	11 (16.2%)	68	0.01
	Another	3 (42.9%)	4 (57.1%)	7	
other conditions	Barton	12 (85.7%)	2 (14.3%)	14	0.001
	Another	10 (21.7%)	36 (78.3%)	46	

The analysis in Table 5.3 was repeated for all deaths that occurred in Redclyffe Annexe up to and including 1994. Patients in the Annexe were generally the elderly mentally infirm, and Dr Barton was the responsible doctor at the Annexe until approximately 1994 (see Table 3.9). The findings do not indicate differences in use of opiates between Dr Barton and the other doctors, although none of the other doctors gave bronchopneumonia alone as the cause of death in this period. However, a comparison involving deaths in Redclyffe from 1995 indicates leads to different findings. None of the patients whose deaths were certified by other doctors had received an opiate, although all three of those certified by Dr Barton had (Table 5.5). A test of statistical significance has not been performed since the numbers of cases involved was small. However, there does appear to have been a change in the use of opiates at the end of life at about the time Dr Barton ceased to have principal

Table 5.4. The numbers (%) of patients dying 1993-1994 in Redclyffe Annexe from different causes who were prescribed an opiate by Dr Barton or other doctors.

Cause of death	doctor	opiate		total	sig
		Yes	no		
Cancer	Barton	1 (50.0)	1 (50.0)	2	0.17
	Another		3 (100.0)	3	
Heart	Barton	5 (41.7)	7 (58.3)	12	0.24
	Another	1 (16.7)	5 (83.3)	6	
Stroke	Barton	6 (27.3)	16 (72.7)	22	0.93
	Another	1 (25.0)	3 (75.0)	4	
Bronchopneumonia with other conditions	Barton	41 (33.1)	83 (66.9)	124	0.39
	Another	3 (50.0)	3 (50.0)	6	
Bronchopneumonia Only	Barton	23 (65.7)	12 (34.3)	35	-
	Another	-	-	0	
Other conditions	Barton		10 (100.0)	10	-
	Another		3 (100.0)	3	

Table 5.5. Numbers (%) of patients dying from different causes in Redclyffe Annexe, 1995 or later.

Cause of death		opiate		total
		yes	no	
Heart	other		1 (100.0)	1
	Dr Barton		1 (100.0)	1
Stroke	other		4 (100.0)	4
	Dr Barton	1 (100.0)		1
bronchopneumonia plus another	other		17 (100.0)	17
	Dr Barton	1 (100.0)		1
bronchopneumonia only	other			
	Dr Barton	1 (100.0)		1
Other	other		5 (100.0)	5
	Dr Barton			

responsibility for patients in Redclyffe Annexe. One explanation for this finding is that the type of patients being cared for in the Annexe changed at the same time, but an alternative is that the practice of almost routine use of opiates before death was discontinued.

2. Deaths on Dryad ward

Since information was available about admissions to Dryad ward, including some indication of the reason for admission, and whether the patient was discharged alive or had died on the ward, it has been possible to estimate the proportions of patients admitted with different types of illnesses who received opiates, and whether they died. Those patients who received at least one dose of opiate were included in this analysis.

The findings are summarized in Table 5.6. The illness groups are stroke, general medical problems, medical and mental problems, heart problems, cancer, post-operative cases such as fractured neck of femur, and respite care. Thus, of the 17 patients admitted with strokes between March 1995 and August 1998, 10 died, of whom 8 received an opiate. None of those discharged alive had received an opiate. Some patients in all illness groups received an opiate except for those in the respite care group. Of those who were admitted with strokes, 47% received an opiate, the proportion for general medical problems was 71.7%, medical and mental problems 73.2%, heart problems 71.4%, cancer 66.7%, and post-operative cases 60.9%.

Some qualifications must be made about these data. First, 10 patients had been recorded as receiving an opiate although the admissions book did not record them as having been admitted. These patients were omitted from the analysis. The most

likely explanation is that these patients were on a different ward, the drugs been transferred between wards. Second, no account has been made of the dose, numbers of doses, type of opiate received or administration route. The data will

Table 5.6. Patients on Dryad ward who received an opiate, March 1995 – August 1998, according to illness group and outcome (died or discharged). N=209.

illness group	had an opiate	Outcome		Total
		<i>died</i>	<i>discharged</i>	
stroke	No	2 (22.2)	7 (77.8)	9
	yes	8 (100.0)		8
	total	10 (58.8)	7 (41.2)	17
general medical problems	No	7 (26.9)	19 (73.1)	26
	yes	55 (83.3)	11 (16.7)	66
	total	62 (67.4)	30 (32.6)	92
medical/mental problems	No	3 (27.3)	8 (72.7)	11
	yes	29 (96.7)	1 (3.3)	30
	total	32 (78.0)	9 (22.0)	41
heart problems	No		2 (100.0)	2
	yes	5 (100.0)		5
	Total	5 (71.4)	2 (28.6)	7
cancer	No	5 (62.5)	3 (37.5)	8
	yes	16 (100.0)		16
	Total	21(87.5)	3 (12.5)	24
post op	No	3 (33.3)	6 (66.7)	9
	yes	12 (85.7)	2 (14.3)	14
	Total	15	8	23
respite care/ social admission	No		5 (100.0)	5
	Total		5 (100.0)	5

therefore include a number of patients who received only one or two doses, although this would be unlikely to change the general conclusion from the table. Third, it is difficult to judge whether individual patients did have a level of pain that justified the use of opiate medication. Without a case by case review, the appropriateness of opiate medication for each patient cannot be determined.

3. Quantities of opiates prescribed per patient

An analysis was undertaken to compare the total amount of opiate prescribed per patient by Dr Barton and other doctors at Gosport. A random sample of patients who had died, and who had been prescribed an opiate, was identified, from those who had died on Dryad, Daedalus or Sultan wards, and for whom complete data from controlled drug registers were available. A total of 46 patients were included, 21 being patients whose deaths had been certified by Dr Barton, and 25 whose deaths had been certified by other doctors. Seventeen patients had died on Dryad ward, nine on Daedalus ward, and 20 on Sultan ward. The amount of opiate prescribed for a patient was calculated by identifying the number of doses, and quantity of drug in each dose, for each drug administered to each patient. Thus, if a patient had been administered subcutaneous diamorphine 20 mgm per day for three days, the total amount would be 60 mgm.

There was no significant difference in the total amount in mgms of diamorphine recorded as administered during the terminal illness, the mean for Dr Barton's patients being 113 mgms (SD 211 mgms) in comparison with 1300 mgms (SD 3354 mgms) for the other doctors (t-test p 0.13). The mean quantity of oramorph for Dr Barton's patients was 276 mgms (SD 276 mgms) and for the other doctors 169

mgms (SD 168 mgms) (t-test p 0.6). None of Dr Barton's patients in the sample had received morphine sulphate tablets, although seven in the comparison group had. One patient of Dr Barton had received fentanyl, and one patient of the other doctors had received methadone.

Some caution is needed in drawing definitive conclusions from this analysis since it did not involve review of the clinical records, and the sample was small.

Nevertheless, the findings do not suggest that Dr Barton's patients had received opiates for prolonged periods.

Discussion

The findings of the review of prescribing of controlled drugs indicate that patients in Gosport Hospital whose deaths were certified by Dr Barton were more likely to have been prescribed an opiate (most commonly diamorphine or oramorph). The excess was most evident among patients who were certified as dying from bronchopneumonia with or without other conditions, or from some other condition that was not cancer or cerebro- or cardio-vascular disease. This finding is a cause for concern, since the use of opiates for pain relief in terminal care is more common in conditions in which pain would be expected, in particular cancer. Furthermore, a high proportion of the initial cases referred to the police by concerned relatives had been certified as dying due to bronchopneumonia. It does appear that the practice of almost routine use of opiates before death in Redclyffe Annexe changed when Dr Barton ceased principal responsibility for patients in the Annexe. This may have been a consequence of a change in the practice followed by the doctors who took over from Dr Barton, or a change in the mix of patients who were admitted to the Annexe.

The finding that the quantities of opiate prescribed, in the analysis of a random subsample, did not indicate that Dr Barton had prescribed opiates over prolonged periods is reassuring. However, this finding does not eliminate the possibility that some patients were given opiates unnecessarily. Therefore, the findings of the analyses reported here are consistent with a practice of prescribing opiates to an inappropriately wide group of older patients.

Chapter Six: Analysis of medical certificates of cause of death (MCCDs)

Introduction

This Chapter presents the findings of an analysis of numbers of deaths in general practice certified by Dr Barton. The aim was to determine whether there were greater numbers of deaths than would have been expected, and therefore reasons for concern about the care of patients in general practice. Although most of the review is concerned with deaths in Gosport hospital, it was necessary to be certain that there were no reasons for concern about deaths in the community.

Methods

The data relate to the deaths certified by Dr Barton and a sample of general practitioners chosen because they were caring for similar groups of patients in Gosport at the same time as Dr Barton. There were nine general practices in Gosport, one of which was the practice of Dr Barton and her partners (referred to as the index practice). Levels of deprivation were classified into four levels. In the index practice 6.9% of registered patients were classified in one of the four levels (0.4% in the highest level of deprivation), but in the first control practice 8.4% (2.5% in the highest level) and in the second control practice 7.9% (0.5% in the highest level) were classified in one the deprivation levels. Thus, the comparison practices had a marginally higher proportion of deprived patients. In the index practice, 15.6% of patients were aged 65 years or over; in the first control practice 11.3% and in the second control practice 18.3% of patients were aged 65 years or over. Consequently, the analysis took account of the differences in the age of patients

between practices, but did not account for deprivation since the differences were small.

The MCCDs were identified by National Statistics (see Chapter Two). Deaths from 1993 onwards certified by any of the general practitioners of the three practices were identified using the computer database maintained by National Statistics. Deaths prior to 1993 have not been stored on computer, and therefore a hand search was required of the notifications in the death register of files completed in the registration districts serving the Gosport area (Gosport, Fareham 1, and Havant). The data from these sources had been provided by registrars from the death certificates completed by the general practitioners and additional information provided by the person reporting the death to the registrar (the informant). In this review, information from each death notification was entered into a database for analysis.

The deaths certified by the general practitioners included those that had occurred at home, in nursing homes, or in hospitals, in particular Gosport War Memorial Hospital.

Results

Table 6.1 presents information about the numbers of deaths certified by the sample of GPs who were partners in one of the three practices included in this analysis. The figures for Dr Barton are similar to those identified from certificate counterfoils held at the hospital (see Table 3.2).

Table 6.1. Annual number of deaths, 1987-2002.

year	certifying doctor																					total	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21		Dr B
1987	8	20	7					6	10	11	13			2	15	12	3	9	11		17	2	146
1988	4	8	4					10	12	10	11				5	8	5	5	6	1	15	28	132
1989	4	11	10					20	9	13	14				6	9	8	8	5	2	9	39	167
1990	20	11	7	5				8	17	13	17				10	13	1	4	4			41	171
1991	16	20	13	9				7	5	12	11				11	10	7	5				37	163
1992	5	10	8	18				9	10	8	13				9	10	3	5				36	144
1993	8	10	13	7	3			8	9	7	11	1			5							97	179
1994	4	8	5	9	4			12	4	5	12				9							106	178
1995	7	12	8	9	2			8	10	18	9	13	9		6							81	192
1996	15	9	11	11	7			10	5	9	5	11	9									86	188
1997	7	6	3	10	5	1		19	13	5	9	6	8									92	184
1998	5	9	7	10	5	8		2	13	9	15	12	14									108	217
1999	7	9	4	10	4	12	8		2	9	13	9	1	7								94	189
2000	3	5	5	7	5	11	4			7	6	13	7									35	108
2001	7	17	9	1	1	13	2		1	5	4	6	8	1								5	80
2002	9	8	4	9	5	8	5		7	5	5	5	10										80
	129	173	118	115	41	53	19	129	143	148	173	69	48	2	76	62	27	36	26	3	41	887	2518

Deaths in Gosport hospital

Dr Barton's partners provided cover at Gosport hospital during her absences (due to vacations and other reasons). Figures 3.1 to 3.15 reveal periods of one or more weeks in which Dr Barton did not issue a certificate for a patient who had died in Gosport hospital, and one explanation for these weeks is that she was on vacation. A comparison of death certification rates by her partners, relating to patients on Daedalus and Dryad wards during those periods of absence, with certification rates by Dr Barton on the same wards when she was present would be of particular interest. A high death rate when Dr Barton was present and a lower rate when she was on leave would raise questions about the impact of her clinical practice on mortality rates.

However, some difficulties of interpretation might remain since mortality during her absences could in part reflect effects of her practice when present, possibly leading to attenuation of observable differences. Also, the delay of the admission of

seriously ill patients until Dr Barton's return may serve as an explanation for differences in deaths rates between normal and holiday periods. Unfortunately, it has proved impossible to obtain information about the doctors' rota for Daedalus and Dryad wards and the analysis reported below differs from a straightforward comparison in two respects:

- a) Since individual wards cannot be consistently identified from the place of death details on the certificates, the analysis relates to deaths from all wards at Gosport certified by Dr Barton or her partners. These include deaths of patients in Sultan ward who would have been under the care of their general practitioner as well as deaths in Dryad and Daedalus wards, under the care of the Department of Medicine for Elderly People.
- b) Since records of Dr Barton's rota are no longer available, an indirect method of inferring (some of) these periods of absence has been used, as described below, but the validity of this method cannot be verified directly.

Absence of Dr Barton has been inferred from prolonged periods between consecutive deaths certified by her. Such periods could of course occur by chance even when Dr Barton is present. A variety of period lengths has been investigated. The principal results below are based on periods of at least 14 consecutive days, since use of shorter periods are more prone to error, such as uncertainty over the exact start and end dates.

Rates of certification by Dr Barton, except during those periods in which there was at least 14 days between successive certifications by her, were compared with rates of certification by the seven other practice partners in those same 14+ day periods. Incidence ratios (and 95% confidence intervals) were: 1.67 (0.88-3.59) in 1998, 3.78 (1.91-8.52) in 1999, and 1.25 (0.49-4.11) in 2000. If the three 1998-2000 years were considered together, the incidence ratio was 2.24 (1.47-3.55).

In interpreting these ratios, it is helpful to consider the magnitude and direction of possible biases. End-estimate bias in the 14-day intervals is unlikely to exceed 15% (two end days in 14 days); they could operate in either direction (that is increasing or decreasing the true estimate). If Dr Barton had been absent for periods shorter than 14 days, this will lead to under estimation of her rates. If the 14+ day periods are chance occurrences not corresponding to her absence, her rates will be overestimated, by up to 30%. If, as noted earlier, Dr Barton's practice while present impacted on her partners' certification rates during her absence, the incidence ratio might be reduced.

Taking these factors into account, it is difficult to draw secure conclusions. The incidence ratio in 1999 was markedly raised, and this finding may point to a method for exploring further any potential impact of Dr Barton's clinical practice on mortality rates. It has not been possible to obtain reliable information about holiday periods in this review, but this may be possible in the continuing police investigation, in which case the pilot analysis included here should be repeated using valid holiday data.

Deaths at home or in nursing or residential homes

Table 6.2 presents information relating to deaths at home, or in residential or nursing homes, certified by the same group of GPs. Since Dr Barton was required to care for patients in Gosport War Memorial Hospital, she may be expected to have undertaken a reduced workload in the general practice. The findings indicate that Dr Barton issued fewer certificates than most of the other GPs, although some (probably part-timers, or doctors leaving general practice between 1993-5) issued fewer. This finding is reassuring, since it reduces concern about care given to patients in the community. It is notable that Dr Barton issued no certificates in 2002.

Table 6.2. Annual number of deaths at home or in residential/nursing homes certified by GPs, 1987-2002.

year	certifying doctor																					Dr B	total
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21		
1987	4	13	7					4	6	7	10			2	10	9	3	5	4		10	2	96
1988	1	6	2					9	10	6	8				3	5	4	5	6	1	10	9	85
1989	3	7	7					20	6	5	11				5	6	8	6	3	2	9	9	107
1990	12	6	5	3				7	15	9	11				7	7	1	4	3			3	93
1991	15	15	10	7				7	4	9	9				10	5	7	4				5	107
1992	2	6	6	10				7	8	5	11				6	6	2	4				4	77
1993	5	7	10	5	1			6	7	5	8	1			5							3	63
1994	1	5	4	7	4			9	3	3	10				5							2	53
1995	4	9	6	7	2			8	6	8	7	10	2		3							1	73
1996	10	5	6	8	5			7	3	3	4	6	1									2	60
1997	5	1	1	10	1			15	9	2	6	3	3									6	62
1998	5	7	6	9	1	6		1	8	4	6	9	4									1	67
1999	6	6	3	7	4	10	7		5	4	6	1	5									2	66
2000	2	3	4	4	4	11	2		5	5	7	6										1	54
2001	6	13	8	1	1	11	2	1	2	3	5	7	1									3	64
2002	9	7	3	7	1	7	5	3	4	4	4	7											61
	90	116	88	85	24	45	16	104	101	82	123	50	16	2	54	38	25	28	16	3	29	53	1188

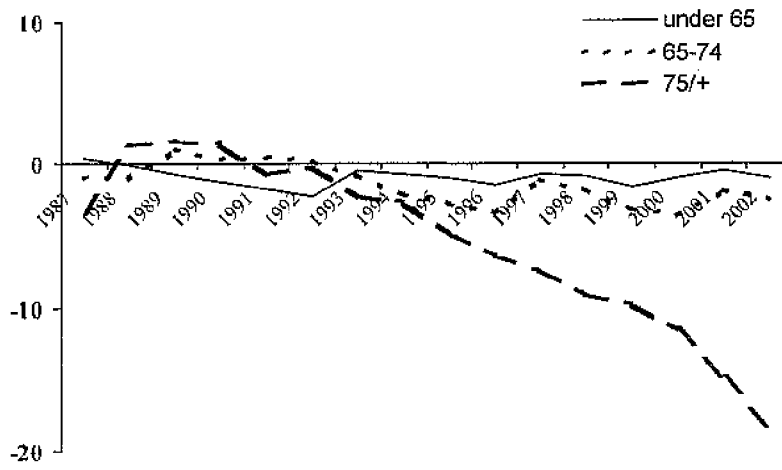
Although Table 6.2 provides some reassurance, a more detailed analysis is required that takes into account the numbers of patients registered with the included general practices. This additional information would enable calculation of the rate of deaths in the three practices, and provide a more meaningful comparison between Dr Barton and other doctors. Information about the numbers of patients registered with each general practitioner was obtained from the Hampshire and Isle of Wight Practitioners and Patient Services. Although the Agency was able to supply information from 1987 onwards about the numbers of patients in three age bands (0-64 years, 65-74 year, and 75 years and over), details on the numbers who were male and female were available only from 1996.

The number of patients registered with a general practitioner is not necessarily an accurate reflection of the number of patients the doctor directly cares for. Within a general practice, some doctors may undertake work outside the practice (as did Dr Barton) and therefore not care for so many patients in the practice. A doctor may

choose to work part-time for other reasons. Therefore, the numbers of patients registered with the doctor were not used in estimating mortality rates. Since detailed information about the work patterns of the general practitioners in the comparison practices was not available, the numbers of patients cared for by each general practitioner was taken to be an equal share of the total practice list size. For example, using this method, in a practice of five doctors and with a total of 10,000 registered patients, the numbers cared for by a single doctor would be assumed to be 2000.

Deaths among males and females combined up to 1995 are shown in Table 6.3 to 6.5, and deaths among males and females separately from 1996 to 2002 are shown in Tables 6.6 to 6.10. Each Table displays the numbers of deaths certified by doctors in the comparison practice, the numbers certified in Dr Barton's practice (the index practice), and the numbers certified by Dr Barton. The Tables also show the numbers of patients registered with the comparison and index practices, and the estimated number under the care of Dr Barton. These data are used to calculate the number of certificates that would have been expected to have been certified by Dr Barton based on the comparison practices, and the difference between the expected number and the number she did in fact certify. In all but two of the Tables, the total of the difference between the numbers expected and observed is less than zero. The cumulative difference between the expected and observed numbers of deaths in the three age bands is displayed in Figure 6.1.

Figure 6.1. The cumulative difference between the observed and expected numbers of MCCDs issued by Dr Barton, 1987-2002. (Deaths occurring at home, or in residential or nursing homes).



By 2002, the total difference between the observed and expected certificates issued by Dr Barton was -0.99 for patients aged 0-64, -2.54 for those aged 65 to 74, and -18.53 for those aged 75 and over. These figures provide further reassurance about the care given to patients in general practice.

Table 6.3. Deaths and death rates/1000 patients under the age of 65 1987-1995 (males and females).

year	Patients in control practices	Deaths in control practice	Patients in index practice	Deaths in index practice	Rate /1000 in control practices	Rate /1000 in index practice	Dr Barton's list (estimate)	Certified by Dr Barton	Expected deaths	Observed - expected, Dr Barton
1987	15376	5	8644	10	.33	1.16	1729	1	.57	.43
1988	15457	5	8569	7	.32	.82	1714	0	.55	-.55
1989	15673	5	8665	3	.32	.35	1733	0	.55	-.55
1990	15490	5	8634	7	.32	.81	1727	0	.55	-.55
1991	13192	4	8644	5	.30	.58	1729	0	.52	-.52
1992	13009	4	8578	2	.31	.23	1716	0	.53	-.53
1993	12933	2	8535	4	.15	.47	1707	2	.26	1.74
1994	13055	1	10819	2	.08	.18	1803	0	.14	-.14
1995	13244	2	10745	4	.15	.37	1791	0	.27	-.27
Total observed - expected										-.94

Table 6.4. Deaths and death rates/1000 patients age 65 - 74 1987-1995 (males and females).

year	Patients in control practices	Deaths in control practice	Patients in index practice	Deaths in index practice	Rate /1000 in control practices	Rate /1000 in index practice	Dr Barton's list (estimate)	Certified by Dr Barton	Expected, Dr Barton	Observed - expected, Dr Barton
1987	1271	8	783	6	6.29	7.66	157	0	.98	-.98
1988	1315	8	788	9	6.08	11.42	158	1	.96	0.04
1989	1326	8	788	8	6.03	10.15	158	3	.95	2.05
1990	1331	7	785	7	5.25	8.92	157	0	.82	-.82
1991	1176	14	800	6	11.90	7.50	160	2	1.90	0.10
1992	1144	9	805	6	7.87	7.45	161	1	1.27	-.27
1993	1145	7	779	6	6.11	7.70	156	0	.95	-.95
1994	1157	9	986	2	7.78	2.03	164	0	1.28	-1.28
1995	1147	5	993	8	4.36	8.06	166	0	.72	-.72
Total observed - expected										-2.83

Table 6.5. Deaths and death rates/1000 patients age 75 and above 1987 – 1995 (males and females).

year	Patients in control practices	Deaths in control practices	Patients in index practice	Deaths in index practice	Rate /1000 in control practices	Rate /1000 in index practice	Dr Barton's list (estimate)	Certified by Dr Barton	Expected, Dr Barton	Observed – expected, Dr Barton
1987	1231	38	688	28	30.86	40.70	138	1	4.26	-3.26
1988	1231	31	687	25	25.18	36.39	137	8	3.45	4.55
1989	1234	52	677	31	42.14	45.79	135	6	5.69	0.31
1990	1227	29	667	38	23.63	56.97	133	3	3.14	-.14
1991	1138	46	640	31	40.42	48.44	128	3	5.17	-2.17
1992	1125	23	616	32	20.44	51.95	123	3	2.51	.49
1993	1087	27	622	19	24.84	30.55	124	1	3.08	-2.08
1994	1091	20	753	19	18.33	25.23	126	2	2.31	-.31
1995	1120	28	771	25	25.00	32.43	129	1	3.23	-2.23
Total observed - expected										-4.84

Table 6.6. Deaths and death rates/1000 patients age below 65 1996-2002 (females).

year	Patients in control practices	Deaths in control practices	Patients in index practice	Deaths in index practice	Rate /1000 in control practices	Rate /1000 in index practice	Dr Barton's list (estimate)	Certified by Dr Barton	Expected, Dr Barton	Observed – expected, Dr Barton
1996	6978	2	5307	0	.29	0	885	0	.26	-.26
1997	6983	0	5259	2	0	.38	877	0	0	0
1998	7078	1	5094	3	.14	.59	849	0	.12	-.12
1999	7233	2	4981	0	.28	0	830	0	.23	-.23
2000	7311	1	4964	2	.14	.40	827	1	.12	.88
2001	7379	3	4903	1	.41	.20	817	0	.33	-.33
2002	7407	2	4935	2	.27	.41	823	0	.22	-.22
Total observed - expected										-.28

Table 6.7. Deaths and death rates/1000 patients age below 65, 1996 - 2002 (males).

year	Patients in control practices	Deaths in control practices	Patients in index practice	Deaths in index practice	Rate /1000 in control practices	Rate /1000 in index practice	Dr Barton's list (estimate)	Certified by Dr Barton	Expected, Dr Barton	Observed - expected, Dr Barton
1996	6426	2	5244	1	.31	.19	874	0	.27	-.27
1997	6475	2	5238	2	.31	.38	873	1	.27	.73
1998	6509	0	5127	1	0	.20	855	0	0	0
1999	6665	4	5058	2	.60	.40	843	0	.51	-.51
2000	6839	2	5048	3	.29	.59	841	0	0.24	-.24
2001	7040	1	5005	2	.14	.40	834	1	.12	0.88
2002	7011	3	5003	0	.43	0	834	0	.36	-.36
Total observed - expected										0.23

Table 6.8. Deaths and death rates/1000 patients age 65 to 74, 1996-2002 (females).

year	Patients in control practices	Deaths in control practices	Patients in index practice	Deaths in index practice	Rate /1000 in control practices	Rate /1000 in index practice	Dr Barton's list (estimate)	Certified by Dr Barton	Expected, Dr Barton	Observed - expected, Dr Barton
1996	626	0	521	1	0	1.92	87	0	0	0
1997	620	2	508	0	3.23	0	85	0	.27	-.27
1998	618	3	498	0	4.85	0	83	0	.40	-.40
1999	634	3	508	1	4.73	1.97	85	0	.40	-.40
2000	668	1	533	3	1.50	5.63	89	0	.13	-.13
2001	685	0	535	2	0	3.74	89	2	0	2
2002	699	3	543	0	4.29	0	91	0	.39	-.39
Total observed - expected										.41

Table 6.9. Deaths and death rates/1000 patients age 65 – 74, 1996-2002 (males).

year	Patients in control practices	Deaths in control practices	Patients in index practice	Deaths in index practice	Rate /1000 in control practices	Rate /1000 in index practice	Dr Barton's list (estimate)	Certified by Dr Barton	Expected, Dr Barton	Observed – expected, Dr Barton
1996	529	4	461	4	7.56	8.68	77	0	.58	-.58
1997	526	3	472	5	5.70	10.59	79	3	.45	2.55
1998	543	3	457	2	5.52	4.38	76	0	.42	-.42
1999	538	6	450	0	11.15	0	75	0	.84	-.84
2000	552	3	469	2	5.43	4.26	78	0	.42	-.42
2001	577	1	474	0	1.73	0	79	0	.14	-.14
2002	593	2	478	2	3.37	4.18	80	0	.27	-.27
Total observed - expected										-12

Table 6.10. Deaths and death rates/1000 patients age 75 and above, 1996-2002 (females).

year	Patients in control practices	Deaths in index practice	Patients in index practice	Deaths in index practice	Rate /1000 in control practices	Rate /1000 in index practice	Dr Barton's list (estimate)	Certified by Dr Barton	Expected, Dr Barton	Observed – expected, Dr Barton
1996	752	25	471	9	33.24	19.11	79	2	2.63	-.63
1997	731	17	494	15	23.26	30.36	82	2	1.91	.09
1998	730	15	511	13	20.55	25.44	85	0	1.75	-1.75
1999	742	14	491	11	18.87	22.40	82	2	1.55	.45
2000	736	9	492	8	12.23	16.26	82	0	1.00	-1.00
2001	779	22	505	9	28.24	17.82	84	0	2.37	-2.37
2002	770	24	508	7	31.17	13.78	85	0	2.65	-2.65
Total observed - expected										-7.86

Table 6.11. Deaths and death rates/1000 patients age 75 and above, 1996 - 2002 (males).

year	Patients in control practices	Deaths in control practices	Patients in index practice	Deaths in index practice	Rate /1000 in control practices	Rate /1000 in index practice	Dr Barton's list (estimate)	Certified by Dr Barton	Expected, Dr Barton	Observed - expected, Dr Barton
1996	371	8	279	3	21.56	10.75	47	0	1.01	-1.01
1997	389	9	273	4	23.14	14.65	46	0	1.06	-1.06
1998	387	7	283	14	18.09	49.47	47	1	.85	.15
1999	408	9	281	8	22.06	28.47	47	0	1.04	-1.04
2000	415	8	280	10	19.28	35.71	47	0	.91	-.91
2001	448	9	293	5	20.09	17.06	49	0	.98	-.98
2002	461	8	308	8	17.35	25.97	51	0	.88	-.88
Total observed - expected										-5.88

Table 6.12. Numbers (%) of patients certified by Dr Barton or other general practitioners dying at home or in residential or nursing homes.

place of death	doctor		total
	Dr Barton	other GPs	
own home	28 (52.8)	533 (47.0)	561 (47.2)
residential or nursing home	25 (47.2)	602 (53.0)	627 (52.8)
	53	1135	1188

There was no significant difference in the proportion of patients who died at home or in residential or nursing homes between Dr Barton and the other general practitioners (Table 6.12). Of the 53 patients of Dr Barton who died at home or in residential or nursing homes, 41 (77.4%) were females in comparison with 648 (57.1%) of the 1135 certified by the other general practitioners (Chi Sq 8.5, $p < 0.003$).

Table 6.13. Numbers (%) of patients certified as dying from different conditions (Chi 17.6, df 5, $p < 0.004$).

cause of death	doctor		total
	Dr Barton	other GPs	
cancer	7 (13.2)	248 (21.9)	255 (21.5)
heart	23 (43.4)	336 (29.6)	359 (30.2)
stroke	2 (3.8)	115 (10.1)	117 (9.8)
bronchopneumonia plus	15 (28.3)	219 (19.3)	234 (19.7)
bronchopneumonia alone	5 (9.4)	51 (4.5)	56 (4.7)
other	1 (1.9)	166 (14.6)	167 (14.1)
	53	1135	1188

The mean age of the patients whose deaths were certified by Dr Barton was 76.4 years, and among the patients of the other general practitioners the mean age was 79.6 (not significantly different). Dr Barton certified a greater proportion of cases as due to heart conditions (Table 6.13), although it should be noted that the numbers of cases involved were small.

Discussion

The analyses reported in this Chapter were based on death notifications identified by National Statistics. The number of deaths certified by Dr Barton in Gosport hospital as indicated by these notifications was similar to that identified by the counterfoils of books of MCCDs, and it is reasonable to conclude that information about almost all deaths has been identified.

The findings indicate that the numbers of deaths certified by Dr Barton for patients who died at home or in residential or nursing homes was less than would have been expected if she had cared for the same number of patients as her partners. Since she undertook sessions in Gosport hospital, it is unlikely that she did in fact care for the same numbers of patients as her partners, but the proportion is difficult to estimate without the provision of information from the practice. Since a police investigation is underway, direct contact with the practice was judged to be inappropriate. Therefore, it has been assumed that each partner in the practice was responsible for more or less the same number of patients.

The analysis indicated that the numbers of deaths certified by Dr Barton was less than would have been expected in comparison with the other general practitioners. If Dr Barton had cared for fewer patients than her colleagues, a lower number of certificates would have been expected, and the finding almost certainly reflects the

fact the Dr Barton was indeed responsible for fewer patients than the other general practitioners. Nevertheless, the finding does provide reassurance about care of patients in general practice.

In an additional analysis, an estimate of any effect of holidays and other absences on mortality rates in Daedalus and Dryad wards was attempted. However, the assumptions required in this analysis make the findings of little direct value. Since no information about actual vacations and other periods of absence was available, it is impossible to be confident that the periods in which no certificates were issued occurred because Dr Barton was absent, or whether there were in fact, no deaths to be certified in those weeks. However, if more information about periods of absence can be obtained in the police investigation, this analysis should be repeated.

Chapter Seven: Conclusions

In this audit or review, information has been obtained from a variety of sources about the care delivered to patients of the Department of Medicine for Elderly People at Gosport War Memorial Hospital, including death notifications stored by National Statistics, the counterfoils of medical certificates of cause of death, clinical records, controlled drug registers, and ward admissions books. Whilst there are inevitable reservations about the completeness of these sources, when viewed together they enable conclusions to be reached. In this Chapter, the reservations about the data used in the review are summarised, the findings are outlined, and conclusions are presented. Relevant recommendations are also made.

The sources of information

It has not been possible to undertake a comparison of mortality rates between Gosport and other community hospitals because centrally held Hospital Episode Statistics data do not have sufficiently detailed provider codes to identify groups of patients similar to those admitted to Gosport. However, whilst such an analysis would be desirable, I would not expect that the findings would significantly alter the conclusions of this review.

The notifications of deaths provided by National Statistics were a reliable source of information about the numbers of deaths certified by Dr Barton and the comparison general practitioners. Therefore, conclusions based on this information can be regarded as safe. It should be noted, however, that notifications would not have included information about cases certified by coroners. The data provided by National Statistics corroborate the numbers of deaths identified from the counterfoils of MCCDS that had been stored at Gosport hospital. Consequently, the findings from

the analysis of the counterfoils can also be regarded as reliable, although the lack of information about cases investigated by the coroner must be noted again.

The data contained in the controlled drugs registers are likely to have been reasonably accurate and complete, although it is not possible to verify this through comparison with another source. The administration of controlled drug registers must be recorded in registers, and the registers at Gosport did appear to have been maintained correctly. Ward admission books are not required to be maintained to such a standard, and the policy on admission books varied in different wards. Only Dryad ward's book was found to be a satisfactory source of information. The admission books are therefore the source of information about which there should be most caution. Nevertheless, significant weaknesses in the information in the books were not detected during the review, and they probably do represent a reasonable record of the admissions of patients to the ward.

Summary of findings

The investigation of a random sample of records indicated that:

- Patients admitted to Gosport hospital were elderly, had severe clinical problems, and had commonly been transferred from acute hospitals after prolonged in-patient stays. Although some were admitted for rehabilitation, most were believed to be unlikely to improve sufficiently to permit discharge to a nursing home.
- Of the 81 patients in the sample, 76 (94%) had received an opiate before death, of whom 72 (89%) had received diamorphine.
- When administered by syringe driver, diamorphine was invariably accompanied by other medication, most commonly hyoscine and midazolam.

- The mean starting dose of diamorphine was greater than would have been expected if the rule of thumb of giving one third of the total daily dose of morphine had been followed.
- Opiates were used for patients with all types of conditions, including strokes, heart conditions, and end stage dementia.
- There was little evidence of the three analgesia steps recommended in palliative care (non-opiate, then weak opiate, then strong opiate).
- Opiates were commonly prescribed on admission, although not administered until some days or even weeks later.
- Some records failed to indicate that an acute deterioration in a patient's condition had been followed by a careful assessment to determine the cause. Opiates may have been administered prematurely in such cases.
- The records commonly did not report detailed assessments of the cause of the patient's pain.
- The pattern of early use of opiate medication was evident from 1988.
- The records did not contain full details of care. Only 48 (59.3%) contained sufficient information to enable a judgement to be made about the appropriateness of care. In 16 of these, I had some concerns about the indications for starting opiates, the investigation of pain, or in the choice of analgesic.
- Dr Barton did not report recent fractures, including fractured hips, on MCCDs. These cases were commonly reported as having died from bronchopneumonia.

The counterfoils of MCCDs stored at Gosport hospital indicated that:

- Dr Barton had issued 854 certificates from 1987.

- The number of certificates was between 30 and 40 per year between 1988 and 1992, when Dr Barton was responsible for patients in Redclyffe Annexe and some in the male and female wards. The numbers increased to between 80 and 107 per year between 1993 and 1999 when Dr Barton became responsible for patients in Daedalus and Dryad wards.
- Dr Barton issued between nil and six MCCDs per week. There were no clear clusters of deaths.
- Dr Barton was more likely than other doctors to give bronchopneumonia with other conditions or bronchopneumonia only as the cause of death.

The investigation of Dryad ward's admissions books indicated that:

- Of the 684 patients admitted between 1993 and 2001, 405 (59.2%) died in the ward.
- The mean age of the people admitted was 82.7, and around three quarters had been transferred from an acute hospital.
- There was a change in the patients admitted to the ward from around 1997. After that year, there was an increase in the proportion of patients who had been admitted for respite care, and by 1999, the proportion of patients who died had decreased.
- The proportions of patients who died in each hour of the day were as would normally be expected.

The investigation of controlled drugs registers indicated that:

- Patients in whom the MCCDs had been issued by Dr Barton were more likely to have received an opiate before death.

- The greater use of opiates was found in relation to all causes of death except cancer, although when this analysis was confined to patients in Redclyffe Annexe, there were no significant differences between Dr Barton and other doctors.
- Dr Barton did not prescribe opiates to individual patients for longer periods of time than other doctors.

The investigation of MCCDs indicated that:

- The counterfoils stored at Gosport hospital were an accurate record of the deaths in the hospital.
 - There was no evidence that more than the expected number of deaths had been certified by Dr Barton. In fact, the number was less than expected if Dr Barton had undertaken an equal share of the workload in general practice.
 - A greater proportion of MCCDs issued by Dr Barton were for female patients, and were more likely to have been certified as dying from heart conditions.
- These findings are probably incidental and are not reason for concern.

Conclusions

Patients admitted to Gosport were elderly and with severe clinical problems. Most had been transferred from acute hospital settings after a period of intensive management, at the end of which it had been concluded that further intensive management would have little or no benefit. Patients were transferred to Gosport either for rehabilitation or for continuing care (defined by CHI as 'a long period of treatment for patients whose recovery will be limited').

In this group of very ill and dependent patients, a practice of liberal use of opiate medication can be discerned from the findings of the review. Patients who

experienced pain, and in whom death was judged to be a likely outcome in the short term, were given opiates. Alternative management with other analgesics or detailed assessment of the cause of pain or distress was generally ruled out. This practice may be described as the almost routine use of opiates before death. The practice was followed irrespective of the principal clinical condition. Patients whose main problems were dementia, strokes, bronchopneumonia or neurological problems all received opiates. A potential explanation is that care was as in advance of care elsewhere in the NHS at the time. General concerns have been raised about the end stage care of people with dementia and other problems, in particular the finding that many such patients have not received adequate analgesia, although they have received antibiotics or other treatments intended to be curative.

However, the proportion of patients at Gosport who did receive opiates before death is remarkably high, and it is difficult to accept that the practice of almost routine use of opiates before death, dating from 1988 or earlier, merely represents clinical practice in advance of practice elsewhere. The practice may be summed up in the words found in many clinical records – ‘please make comfortable’. This phrase also points to a prevailing attitude or culture of limited hope and expectations towards the potential recovery of patients in Gosport. But in some patients, a different attitude that might be phrased ‘determined rehabilitation’ could well have led to a different outcome.

The review of records has raised concerns about the degree of assessment of patients whose condition deteriorated, and the level of consideration given to decisions to commence opiates. Consequently, it is difficult not to conclude that some patients were given opiates should have received other treatment. Only a detailed investigation of individual cases, in which the accounts of witnesses as well

as documentary evidence are considered, can conclude whether lives were shortened by the almost routine use of opiates before death, but I would expect such case by case investigations to conclude that in some cases, the early resort to opiates will be found to have shortened life. I would also expect that in a smaller number of cases, the practice will be found to have shortened the lives of people who would have had a good chance of surviving to be discharged from hospital.

From the evidence considered in this review, it is not possible to determine how the practice of almost routine use of opiates at Gosport originated. Whilst much of the review has focused on the work of Dr Barton, this is because she issued the MCCDs and made most of the entries in the clinical records. However, this should not be taken as meaning that she was the origin of the practice, she may merely have been implementing it. Indeed, the practice may have been introduced before Dr Barton began work in Gosport as a clinical assistant in 1988.

Recommendations

1. Investigations should continue into the deaths of individual patients. The findings of this review reinforce concerns about what may have occurred in these cases.
2. In the continuing investigation into deaths in Gosport hospital, information about the rota followed by Dr Barton and her partners should be obtained and used to explore patterns of deaths.
3. Hospital teams who care for patients at the end of life should have explicit policies on the use of opiate medication. These policies should include guidance on the assessment of patients who deteriorate, and the indications for commencing opiates. The development of national guidelines would assist the development of local policies.

4. The findings reported in this review should not be used to restrict the use of opiate medication to those patients who need it. Indeed, there are reasons to suspect that some patients at the end of life do not receive adequate analgesia.
5. In this review, evidence has been retrospectively pieced together from a variety of sources. Continued monitoring of outcomes at a local level might have prompted questions about care at Gosport hospital before they were raised by relatives, but continued monitoring is difficult with current data systems. Hospital episode statistics are an important resource, but continued prospective monitoring of the outcomes achieved by clinical teams requires a more detailed set of codes.