Deputising services in Denmark—some implications for Great Britain

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SUMMARY. In Denmark charges for home visits were abolished in April 1973. This paper analyses how this change affected the number of consultations undertaken by the deputising service in one Danish town and how the increase in consultations was distributed in time and place in a sample of individual families. It also describes how, in comparison with the deputising services sponsored by the British Medical Association in Great Britain, the more widely-used Danish deputising services operate.

Introduction

The increasing use of deputising services by general practitioners (and therefore patients) in this country, and some of the effects of this trend, have recently been documented by Williams and his colleagues (1973, 1974). During the same period, the future of these services has been the subject of fierce debate, not only in the medical press (Howe, 1973; *Journal of the Royal College of General Practitioners*, 1973; Coffman, 1974; Fry, 1974; Irvine *et al.*, 1974; White 1974), but also by official committees (Department of Health and Social Security, 1974; House of Commons, 1974).

However, it is not often realised that deputising services in other Western European countries, notably Denmark (Backer, 1968; Hornum and Poulsen, 1971; Department of Health and Social Security, 1974) and Sweden (Fry, 1974) are much more widely used than those in this country. In Denmark this extensive use was given a further impetus on 1 April 1973, when the national system of health insurance was replaced by a National Health Service. Although this change did not affect the organisation of primary medical care, including deputising services, it did cause the immediate abolition of all charges, including that of six kroner (equivalent to about 45 pence) payable by the patient to the health insurance scheme for every home visit.

At the time one of us (N.B.) was employed as a junior hospital doctor in Denmark and also worked one or two nights a month as a deputising doctor. We have since analysed data from the deputising service logbook on all consultations in the three months immediately preceding the abolition of charges and in the corresponding three months of 1974.

Medical care and deputising services in Denmark

Before 1 April 1973, 99 per cent of the Danish population were insured with the national health insurance scheme. In principle the fifth of the population with the highest taxable

incomes were compelled to pay all costs of medical care in full, and then to have between 80 per cent and 90 per cent, depending on the type of care, refunded by the insurance scheme.

The remaining four-fifths were only required to pay the insurance scheme six kroner for all home consultations and three kroner for all surgery consultations, whether the consultation was undertaken by a general practitioner or by a deputising doctor. On 1 April 1973, the national system of health insurance was replaced by a National Health Service paid for by taxation and these consultation charges were abolished.

Deputising services in Denmark started in Copenhagen in the 1930s and by 1970 had spread to most towns with a population of 30,000 or more (Hornum and Poulsen, 1971). In most of these towns, including the one described in this paper, all the general practitioners transfer all out-of-hours calls, excluding those between 1600 and 1800 hours on weekdays and those at times of epidemic or other crisis, to a rota staffed principally by young hospital doctors.

Unlike their British counterparts, the Danish deputies accept clinical responsibility for the patients they treat. Consequently they are entitled to the whole of the fee which would otherwise have been paid to the patient's doctor.

Unfortunately quoting these fees is unhelpful since recent international financial trends have rendered the official exchange rate useless as a measure of the relative costs of living of Denmark and Great Britain. Hence we can provide no better comparison of the relative earnings of deputies in Denmark and Great Britain than by means of an example. The junior hospital doctor in a large Danish town who, once a month, undertakes a deputising session between 1800 hours and midnight, during the course of which he performs 20 home visits, will increase his monthly salary by about 12 per cent after deducting his expenses. The analogous British doctor who works for a BMA-sponsored service, will improve his income by only five per cent. The Danish system of paying deputies will be described in more detail elsewhere (Russell and Bentzen, 1976). The economics of the British system of remunerating general practitioners have been discussed by Glass (1974).

Method

In Denmark, unlike Great Britain, all the deputising services throughout the country share a telephone number which is widely publicised. Consequently most patients seeking care between 1800 hours and 0700 hours next morning ring the deputising service direct. Telephone calls to general practitioners between these hours are redirected to the deputising service, in much the same way as in this country.

In the town studied, all calls to the deputising service are received at the ambulance station, where they are carefully registered by the control officer, who is in radio contact with the deputising doctor on duty. In the case of patients asking for a telephone consultation, only the time and their telephone number are recorded; for patients who request a home visit, just the time and their surname and address are recorded.

We have analysed these data for the three months immediately preceding the abolition of charges and for the corresponding three months of 1974, thus eliminating seasonal trends and allowing the Danish health care system as long as possible after the change to settle into a new routine. Although these data are necessarily limited we have augmented them only with the monthly notifications of infectious diseases for the town and with the deputy's case-notes on four abnormal users of the deputising service. The clinical content of a series of deputising-service consultations will be reported elsewhere (Bentzen, 1975).

Results

The data presented in this paper come from a Danish town of 45,000 inhabitants and 16 general practitioners. Although two of these doctors work single handed, the remainder practise in six partnerships; the surgeries are located in separate adapted premises in the town-centre. The town has a well-equipped hospital with an accident and emergency department whose work is restricted to genuine emergencies; all other cases are referred back either to the patient's general practitioner or to the deputising doctor on duty, as appropriate.

Although all deputising in the town under study is carried out by doctors working all night (or at weekends, day-long) shifts, we stress that this system is operated only in the smaller towns with an average of 30 calls or less a night. In the larger towns and cities, as with all BMA-sponsored services in Great Britain, sessions of six or seven hours' duration are usual.

TABLE 1

THE OPERATION OF THE DEPUTISING SERVICE IN A DANISH TOWN BEFORE AND AFTER THE ABOLITION OF CHARGES IN APRIL 1973

	1973 (1st quarter)	*1974 (1st quarter)*	*Percentage increase*
Number of deputising doctors (number of general practitioners in brackets)	25 (3)	23 (4)	—
Average number of sessions per doctor (range in brackets)	4·6 (1–9)	5·1 (1–18)	—
Population at risk	44,972	45,283	*0·7*
Number of home visits	3,012	3,750	*24·5*
Incidence (visits/1000 patients/year)	271·6	335·9	—
Number of telephone consultations	129	149	*15·5*

Comparison with Great Britain

Even before the abolition of charges, the total of 3,012 deputising service visits (table 1) was more than four times that of 695 for the same three months reported from the Woodside Health Centre, Glasgow, which has the same sized population at risk for identical periods of the night and weekend, with the sole exception of Saturday morning (Harden, 1973). However, this deputising service is, as far as we can tell, unique in Great Britain insofar as it serves a population which is reasonably well defined and more or less constant. For unlike the typical Danish deputising service, which is used by all the practitioners in its area and therefore serves a well-defined community, the typical British deputising service is at risk for a population which is both unknown and variable, since regular subscribers can, without warning, have their incoming calls transferred to the service at any time while it is operating.

Hourly variation

The figures in table 1 show that, despite an increase in the population at risk of only 0·7 per cent the number of home visits increased by 24 per cent and of telephone consultations by 15 per cent. Before drawing any conclusions about the effect of withdrawing charges however, these figures must be elaborated because for example, the increase varied from ten per cent in January to 43 per cent in March.

This led us to examine the monthly notifications of infectious diseases for the town. These showed that, although the reported incidence of infection in January and February 1974 was comparable with that in the corresponding months of the previous year, the

total number of notifications in March had increased from 1,612 to 3,842. This was attributable to an epidemic of influenza which raised the number of reported cases from 228 in 1973 to 2,411 in 1974. Since there was no significant increase in acute bronchitis and only a relatively small increase in pneumonia the influenza epidemic can, however, reasonably be described as a mild one.

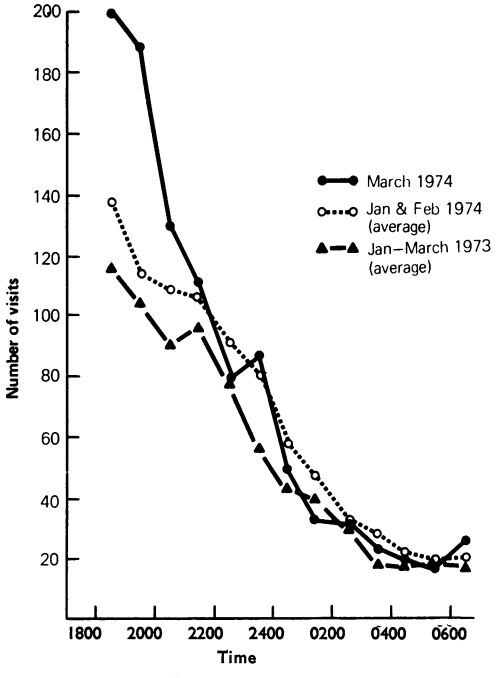

Figure 1
Number of deputising service consultations before and after the abolition of charges in April, 1973 by hour

As there were no significant differences in the number or temporal distribution of noctural deputising service consultations within the whole of the first quarter of 1973 or between January and February 1974, figure 1 compares the average numbers of consultations for each of these periods with the unadulterated figures for March 1974. By making the usual allowances for random fluctuations, our statistical analysis of this figure established that, compared with the first quarter of 1973, the incidence of calls in January and February 1974 showed a consistent increase of 17·1 per cent throughout the night. In March, 1974, by contrast, the number of calls between 1800 and 2000 hours increased by 75·9 per cent, and between 2000 and 2100 by 43·5 per cent; for the remainder of the night however, there was a consistent increase of 14·1 per cent.

Unfortunately consultations at the weekend showed no such pattern of consistent increases; not only did relative use vary considerably from month to month, but also from Saturday to Sunday and even from hour to hour. Nevertheless we have estimated the true effect of abolishing the home visit charge by averaging the total increase in consultations over the two months which were free from epidemic. This yields a gross increase of 16·4 per cent, or a net increase of 15·7 per cent after allowing for the population increase of 0·7 per cent.

Abnormal users

In order to assess the geographical distribution of the increase in deputising service consultations we plotted them all on two maps of the town, one for the first quarter

of 1973 and the other for the first quarter of 1974. Four small areas of the town which stood out as showing a much higher use in one of the quarters than in the other, were found to include the addresses of four abnormally high users who were well known to the deputies. Of the three who had greatly increased their demand, two were patients in their sixties with coronary artery disease, whose consumption of narcotics was steadily rising; the third was suffering from a personality disorder with an associated psychogenic headache and demanded increasing care and medication to cope with his family problems. The fourth patient, whose use of the deputising service had decreased, was thought, in 1973, to be in the terminal stage of pancreatic cancer. However, his survival for more than 12 months led to the reasssessment of his diagnosis as chronic pancreatitis.

These four patients together accounted for 154 visits in the first quarter of 1973 and 181 in the first quarter of 1974, an increase of 17·5 per cent. As this is very close to our estimate of the true total increase, there can be no suggestion that these abnormal users have biased our findings. No other patient was found to have used the service more than 15 times in either quarter.

TABLE 2

INCREASE IN DEPUTISING SERVICE VISITS AFTER THE ABOLITION OF CHARGES IN APRIL, 1973 BY LOCALITY

Locality	*Type of accommodation*	*Population 1973–1974*	*Number of visits*		
			1973 1st quarter)	*1974 (1st quarter)*	*Percentage increase*
D*	New flats	Some immigration	193	237	*22·8*
E	New flats	Considerable immigration	67	111	*65·7*
F	Flats	Stable	142	155	*9·2*
G	Flats	Stable	121	141	*16·5*
H	New small semi-detached	Some immigration	112	135	*20·5*
J	New larger detached houses	Some immigration	56	57	*1·8*
K	Old flats (low quality)	Some emigration	573	757	*32·1*

*Note**—Excluding one patient who was visited 32 times in the first quarter of 1973 and 78 times in the first quarter of 1974.

Socioeconomic variation

In an attempt to determine whether the abolition of charges affects some social groups more than others, table 2 now identifies seven localities within each of which the accommodation is more or less homogenous. We first observe that, as expected, the upper-middle-class area J, most of whose inhabitants were required to pay up to 20 per cent of the cost of treatment both before and after 1 April 1973 shows no significant increase at all despite inward migration. In the five lower-middle class areas (D, E, F, G and H) and after allowing for considerable variations in migration the increase in deputising service use appears to be less than the total increase of 24·1 per cent appropriate since table 2 is concerned with the entire period under study.

By contrast, area K, which may be described as lower class by virtue of having both a smaller average income and higher proportion of old people, produced an increase of 32·1 per cent despite some depopulation. Hence, although the abolition of fees did not appear to act differentially through the night except at the time of an epidemic, there can be little doubt that it favoured the poor compared with those a little better off.

Unfortunately it would require data far more elaborate than those available to us to quantify this effect precisely.

Variation among families

So far we have examined the influence of the ending of charges on the distribution of calls in time and place. Although we have already described four abnormally high users, we now want to consider individual patients with more typical patterns of use. Unfortunately, as we have already pointed out, the logbook records only the surname and address for each home visit; consequently we have been restricted to an analysis of the use by individual ' families ', by which we mean a group of people sharing the same surname and address. Rather than tackle all 6,762 visits in the two quarters, we concentrated on a representative sample of 493 families, each of which was visited at home at least once in 1973 or 1974. Furthermore, in order to avoid any bias due to the influenza epidemic, we restricted attention to the months January and February.

TABLE 3

NUMBER OF DEPUTISING SERVICE VISITS TO A REPRESENTATIVE SAMPLE OF FAMILIES BEFORE AND AFTER THE ABOLITION OF CHARGES IN APRIL, 1973

	1973 (First quarter)	*1974 (First quarter)*	*Percentage increase*
Total number of visits	347	426	*22·8*
Number of families visited	255	299	*17·3*
Average number of visits	1·36	1·42	*4·7*

Table 3 shows that the total number of visits to this sample increased by 22·8 per cent, that is by somewhat more than our estimate of the true total increase. However, the number of families receiving visits increased by as much as 17·3 per cent while the average number of visits per family rose by only 4·7 per cent. Thus the increase in the number of families making use of the service accounted for about four times as much of the total increase as did the number of additional visits to those families who used the service in both quarters. Or, to put it rather less prosaically, the ' have nots ' have again benefited relative to the ' haves '.

Discussion

In this small Danish town, the nationwide abolition of fees for home visits out of hours was followed by an increase of 24 per cent in the number of consultations undertaken by the deputising service. As the comparison was carried out over the same three months of consecutive years, none of the increase can be attributed to seasonal trends; furthermore those few national data to which we have access (Sygekassevaesnet, 1973) show no evidence of any secular trend in deputising service visits. Our investigations also suggest that the increase is not related to any great change either in the population at risk or in the activities of the small group of chronic patients who use the deputising service regularly.

However an examination of local notifications of a wide range of infectious diseases established that, in one of the months under review, there had been a widespread epidemic of relatively mild influenza. By restricting attention to the remaining two months of the survey period therefore, we reduced our estimate of the increase in demand due to the withdrawal of charges to a less biased 16 per cent.

Our analysis of these two epidemic-free months has shown that the percentage increase in consultations was, subject only to chance variation, constant throughout the night. This suggests to us that the abolition of fees has brought to light morbidity which, although previously untreated, is on average no less serious than morbidity already

under treatment by the deputising service. For if it had encouraged patients suffering from trivial complaints to seek care, one would have expected more of the increase in demand to have been concentrated in the early part of the evening.

Indeed we suggest that the absence of charges may have uncovered an unmet ' comparative need ' (Bradshaw, 1972) which is given further weight by patients' behaviour during the influenza epidemic. In this month there was a 76 per cent increase in use in the two hours before 2000 and a 43 per cent increase in the hour after that. However, for the remainder of the night the increase was only 14 per cent, which is not significantly different from the constant nocturnal increase in the period which was free from influenza. While we have no intention of labelling mild influenza as a trivial condition unworthy of the attention of a doctor, it does seem reasonable to suggest that it is among the less serious conditions presenting in primary medical care. Since the increased incidence of this condition led to an increased demand wholly concentrated in the early evening, we find it difficult to accept that the increased demand which was constant throughout the night should have arisen from any expansion in the relative proportion of trivial complaints.

The other findings of our survey are somewhat easier to interpret. The abolition of fees seems to have produced a greater increase in deputising service visits in lower class areas than in lower-middle-class areas and in those not in the habit of using the service than in those acquainted with it. Or, to put it another way, the charges appear to have acted as a greater deterrent to the underprivileged, whether measured in social or in medical terms, than the privileged.

So much for the effects of the abolition of charges on the incidence of deputising service visits in Denmark. However the Danish deputising services also have important implications for the organisation of out-of-hours care in Great Britain. Our data show that since the abolition of fees the incidence of deputising service calls in Denmark is more than five times as high as in the only British service known to us where it is possible to define the population at risk (Harden, 1973).

In the absence of other comparative data on British deputising services, we have also compared the Danish incidence of out-of-hours calls with those reported in six British studies of general practice (Fry, 1952; Backett *et al.*, 1954; Brotherston and Chave, 1956; Brotherston *et al.*, 1959; Stevenson, 1964; Webster *et al.*, 1965) and found it between three and eight times as high.

While these results suggest that Harden's data are fairly representative of British experience, it is also necessary to establish that our figures are more or less typical of Denmark. Corroboration is to be found in the very similar incidence recorded by Astraup (1972) and Selmer (1973) and in our own anecdotal evidence; not only is the number of deputies on duty in the larger Danish towns of the order of four times as high per patient at risk as that in a typical BMA-sponsored service in Great Britain, but the Danish deputies tend to fulfil more house calls per hour than the BMA national average of 2·4, probably because of their method of payment. We therefore estimate that the level of out-of-hours visiting is currently about five times as high in Denmark as it is in Great Britain.

Some reasons for national differences

Some of the reasons for this gross disparity are beyond the control of the deputising services and those who direct them. First, the majority of British practices hold early evening surgeries most weekdays, whereas their Danish counterparts hold only one per week and even that may be restricted to patients who work. Secondly, British accident and emergency departments are obliged to act, however unwillingly, as a source of primary care, while those in Denmark are entitled to refuse treatment to non-emergencies.

Although it has been estimated that only one in about 400 of British patients with medical conditions present initially to an accident department (Russell and Holohan, 1974), it is fair to assume that the Danish edict will also have some effect in discouraging cases of minor trauma from attending the hospital. Thirdly the prevalence of private telephones in Denmark is 23 per cent higher than in Great Britain (United Nations, 1973) and most of the public ones work!

However, there are three other reasons much more closely associated with the operation of the services. First, the Danish telephone operators are neither expected nor indeed trained to advise patients, but to transfer every call to the deputy. In Great Britain, on the other hand, the BMA deputising services encourage their trained nurse-receptionist to advise the patient as and when he requests it, although no request to visit is ever refused. Over the 12 BMA services, the proportion of ' advice only ' calls ranges from two to ten per cent. However, the proportion of telephone consultations by the Woodside deputising service is much higher still at 26 per cent (Harden, 1973).

Secondly, the Danish patient has an incentive to postpone his call until after 1800 hours so as to be guaranteed a home visit by a deputy with a considerable vested interest in carrying out such a visit. Finally, the fact that the Danish deputising service provides night cover for all general practitioners, the ease with which it can be contacted and public knowledge of the way its deputies are paid have all encouraged the population to regard the service as a nocturnal system of general practice.

Indeed, in Copenhagen, where the deputising service has been extended, since Backer described it in 1968, to operate 24 hours a day, it is our impression and that of the Godber Committee (Department of Health and Social Security, 1974) that the general practitioner is regarded as providing primary medical care in the surgery and the ' deputy ' as providing primary medical care in the home.

We believe that the perception by the Danish public of the deputising service as an alternative system of primary medical care has been the greatest single factor in creating the large disparity in out-of-hours visiting rates between the two countries. Although the Danish deputising services demonstrate, as the Godber Report put it, " some features which British doctors would probably not wish to see introduced to the United Kingdom because they would change the doctor's relationship with his patients," the Danish patients seem to be fairly satisfied. At times when their doctor's surgery is closed, medical care in their own homes is both easily available and free of charge to the consumer. If they have any complaints, it is not so much with the lack of care, but with the lack of personal involvement of the deputy. For his part, the deputy is probably treating the patient for the first and last time and is not encouraged by the ' fee per item of service ' system either to relate to that patient or to persuade him to consult his general practitioner in future.

Although the Danish system of deputising services was established at a time when the demand on general practice was rising steadily, despite the fact that the number of practitioners was static, the trend is changing. The number of medical graduates now exceeds the availability of hospital training posts and more and more young doctors are entering general practice. Although it is probably impractical to revert to a system where general practitioners are responsible for their own night cover, it has been proposed (Schioler, 1974) that deputising services should in future be provided only by general practitioners and vocational trainees and that they should operate from central surgeries to which patients would be encouraged to travel.

Not only would such a scheme realise medical and financial benefits, but it would go some way to reinforcing the almost eroded concept of the general practitioner as the source of " personal and continuing care to individuals and their families " (Royal College of General Practitioners, 1972).

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