

# The impact of NHS Direct on the demand for out-of-hours primary and emergency care

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## ABSTRACT

In order to assess the impact of NHS Direct on out-of-hours primary and emergency care, we sought data on service demand from all GP cooperatives, ambulance services and emergency departments in England, Wales and Scotland. We analysed the impact of NHS Direct on demand, taking advantage of the fact that the service was introduced in waves over a period of 2 years. The results showed that the introduction of NHS Direct was associated with a reduction in calls to GP cooperatives, but with no evident effect on emergency services.

### Keywords

GP cooperative; health services needs and demand; NHS Direct; out-of-hours medical care.

## INTRODUCTION

There is considerable evidence that demand for out-of-hours primary care in the UK has been rising for many years.<sup>1</sup> In the past 15 years this has resulted in a number of major changes to the provision of out-of-hours care, including the development of GP cooperatives and, in 1998, the creation of NHS Direct, the national nurse-led telephone advice service. Since then, there has been a drive to integrate these services so that all requests for out-of-hours primary care are initially handled by NHS Direct.<sup>2</sup>

The originators of NHS Direct anticipated that it might 'help reduce or limit the demand' on other parts of the NHS, such as primary and emergency care,<sup>3</sup> but the limited evidence available to date suggests it has had only a small impact on other services. A study of the effect of NHS Direct on consultations with GPs for respiratory diseases during the winter of 1999–2000 found no evidence of an effect.<sup>4</sup> However, early evaluation of the NHS Direct pilot sites suggested that it had been effective in halting the previous rise in demand for out-of-hours general practice, but had not changed the volume of demand for emergency ambulances or hospital emergency departments.<sup>5</sup>

Since that study NHS Direct has grown markedly, both in terms of geographical coverage and call volumes, and its impact on demand elsewhere may have increased accordingly, irrespective of ongoing attempts to integrate services. We therefore undertook a national study to determine whether NHS Direct helped to control rising demand for out-of-hours primary and emergency care during its first 3 years of operation.

## METHOD

NHS Direct was introduced across England and Wales in a series of waves between March 1998 and November 2000. We sent a postal survey to all GP cooperatives, ambulance services and emergency departments in England, Wales and Scotland, asking each to provide the number of patient contacts (patient calls, 999 ambulance

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journeys or first attendances, respectively) made each month between April 1997 and March 2001. Ambulance data were provided separately for each health authority served. We obtained data on NHS Direct call volumes during this period from published figures.<sup>6</sup>

NHS Direct was introduced in four discrete waves (March 1998, March 1999, December 1999 and November 2000) and we assumed that all NHS Direct sites in each wave started at the same time. We allocated each cooperative, ambulance service and emergency department to a wave, using information from Department of Health press releases and from NHS Direct sites themselves. Services in Scotland, which had no helpline during the period examined, were allocated to 'wave five'.

We examined the effect of NHS Direct on demand by fitting statistical models to the monthly counts of contacts for each service. Since any change might be a sudden 'step' effect, an alteration in trend, or both, we examined both kinds of effect in the models. The models were fitted to the log of the monthly counts. After removing systematic variation by month, the effect of NHS Direct was estimated by fitting a linear time trend, and then adding a term for whether NHS Direct was operating or not and a further linear trend for a period that started when the service's catchment area was first covered by NHS Direct. Since NHS Direct was introduced in four waves, this additional trend could start at one of four different times depending on where the particular service was located. However, the regression coefficient for the NHS Direct effect was constrained to be the same in all four waves so that it estimated the same effect, relative to the underlying trend, for all waves.

## RESULTS

During its first 3 years, NHS Direct handled

## How this fits in

The originators of NHS Direct, the national nurse-led helpline, hoped that it might reduce or limit demand for urgent care elsewhere in the NHS. Although early reports of its impact on demand were disappointing, NHS Direct may have become more effective as it has grown larger and busier. We found that over its first 3 years, the service has been associated with a reversal of the previous trend of rising demand for out-of-hours general practice. Its impact on daytime primary care remains unknown.

5 180 000 calls in England. The results of our analysis of its impact are given in the table. The survey response rates were 63% (188/297) for cooperatives, 100% (35/35) for ambulance services and 84% (200/239) for emergency departments, but some responders were unable to supply complete data. The models estimated that, during its first 3 years of operation, NHS Direct was associated with a reduction in calls to out-of-hours general practice (see Table 1). In the context of an underlying trend of demand rising by about 1% each year, the introduction of NHS Direct was associated with an immediate 3% fall in demand coupled with a reversal of the trend so that demand began to fall by almost 8% per year.

However, NHS Direct was associated with negligible change in overall demand for either 999 ambulance services or emergency departments, and no different effect was found for the four paediatric emergency departments in the dataset.

## DISCUSSION

This analysis of the impact of successive waves of NHS Direct in England and Wales suggests that it

**Table 1. Effect of NHS Direct on activity of other services, 1998–2001.**

	GP cooperatives	Ambulance services (analysed at health authority level)	Emergency departments
Services surveyed ( <i>n</i> )	297	109	239
Services with complete data for analysis ( <i>n</i> )	104	75	170
Total patient contacts in 4-year period ( <i>n</i> )	14 159 752	10 447 032	35 516 281
Mean contacts per service per 24 hours	94	217	146
Underlying trend % per annum	0.84	4.5	0.70
Change in trend (95% CI)	-8.7 (-10.0 to -7.5)	0.26 (-0.49 to 1.0)	0.60 (0.06 to 1.1)
Step effect (95% CI)	-3.1 (-4.5 to -1.5)	-1.4 (-2.3 to -0.44)	0.86 (0.19 to 1.5)

CI = confidence interval.

has reduced calls to out-of-hours general practice, reversing the previous upward trend, but has had a negligible impact on the volume of demand for emergency ambulance services and hospital emergency departments. For the 'average cooperative', the mean effect was equivalent to a reduction of about seven calls per night, over the first year, becoming greater in subsequent years. It should be noted that this effect precedes widespread integration of NHS Direct with GP cooperatives, and is independent of any subsequent benefits NHS Direct may have had through the handling of calls on behalf of cooperatives.

Although non-response and missing data are limitations of our study, it is implausible that these are strongly associated with effect, so response bias is unlikely to have had any important impact on our results. In addition, our results are consistent with the impact observed in the first year of the first wave sites, and with the triage distribution of NHS Direct calls, providing further reassurance for their validity.<sup>7</sup>

The impact of NHS Direct on cooperatives, which was achieved through the handling of approximately 5.1 million calls over the period

studied, was the net result of its impact on two patient flows. First, NHS Direct will have handled calls that previously would have been made to cooperatives; and second, it will have directed to cooperatives some calls that would not previously have reached them, and indeed might not previously have been made at all. On balance, as our results show, the net effect has been to reduce the total number of calls to GP cooperatives.

The impact on overall general practice workload is less clear, however. First, the data we have examined does not allow us to comment on any impact that NHS Direct may have had on in-hours workload. Second, it is, of course, possible that NHS Direct handled mainly those out-of-hours calls that a cooperative would previously have handled by telephone advice alone, rather than by face-to-face contact. Thus, the effect may have been to reduce the number of calls taken by cooperatives, but not necessarily the number of patients who had to be seen face-to-face. The number of patients seen in person may have remained constant, or even increased, but to resolve this question would require more detailed activity data from cooperatives, which was beyond the scope of our study.

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#### Ethics committee

Trent Multicentre Research Ethics Committee (MREC/00/4/063)

#### Conflict of interest

None

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