



## Effect of introduction of integrated out of hours care in England: observational study

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# Primary care

## Effect of introduction of integrated out of hours care in England: observational study

Val Lattimer, Joanne Turnbull, Abigail Burgess, Heidi Surridge, Karen Gerard, Judith Lathlean, Helen Smith, Steve George

### Abstract

**Objectives** To quantify service integration achieved in the national exemplar programme for single call access to out of hours care through NHS Direct, and its effect on the wider health system.

**Design** Observational before and after study of demand, activity, and trends in the use of other health services.

**Participants** 34 general practice cooperatives with NHS Direct partners (exemplars): four were case exemplars; 10 control cooperatives.

**Setting** England.

**Main outcome measures** Extent of integration; changes in demand, activity, and trends in emergency ambulance transports; attendances at emergency departments, minor injuries units, and NHS walk-in centres; and emergency admissions to hospital in the first year.

**Results** Of 31 distinct exemplars, 21 (68%) integrated all out of hours call management. Nine (29%) achieved single call access for all patients. In the only case exemplar where direct comparison was possible, a higher proportion of telephone calls were handled by cooperative nurses before integration than by NHS Direct afterwards (2622/6687 (39%) *v* 2092/7086 (30%);  $P < 0.0001$ ). Other case exemplars did not achieve 30%. A small but significant downturn in overall demand for care seen in two case exemplars was also seen in the control cooperatives. The number of emergency ambulance transports increased in three of the four case exemplars after integration, reaching statistical significance in two (5%,  $-0.02\%$  to  $10\%$ ,  $P = 0.06$ ; 6%,  $1\%$  to  $12\%$ ,  $P = 0.02$ ; 7%,  $3\%$  to  $12\%$ ,  $P = 0.001$ ). This was always accompanied by a significant reduction in the number of calls to the integrated service.

**Conclusion** Most exemplars achieved integration of call management but not single call access for patients. Most patients made at least two telephone calls to contact NHS Direct, and then waited for a nurse to call back. Evidence for transfer of demand from case exemplars to 999 ambulance services may be amenable to change, but NHS Direct may not have sufficient capacity to support national implementation of the programme.

### Introduction

The 2000 review of out of hours care in England recommended that patients calling their general practitioner out of hours should be automatically diverted to NHS Direct for initial assessment by telephone (figure).<sup>1</sup> One telephone call would lead to effective and timely advice and where necessary a face to face consultation. A national “exemplar programme” was established to enable providers to gain experience of developing integrated services.<sup>2</sup> We measured service integration achieved in the programme and its effect on the wider health system.

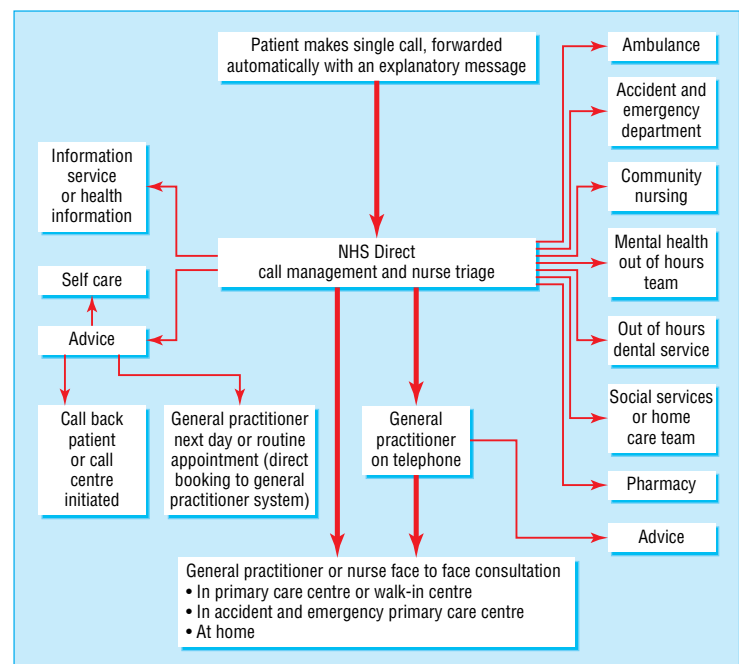
### Methods

We carried out an observational before and after study of demand, activity, and trends in use of other health services in 34 English general practice cooperatives with NHS Direct partners (“exemplars”). Of 34 cooperatives, four functioned as a communications

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Integrated model of out of hours care. Source: Department of Health, 2000

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**Table 1** Effect of integration within case exemplars on use of other services

Site	Regression coefficient (B) (SE)	Test statistics		% difference (95% CI) between observed and predicted activity after integration	Durbin-Watson statistic
		t test	P value		
<b>Exemplar 02</b>					
999 transports	-0.026 (0.014)	-1.8	0.08	-6 (-12 to 1)	2.3 (NS)
Attendances:					
Emergency department	-0.011 (0.008)	-1.3	0.21	-3 (-6 to 2)	2.8 (S)
Minor injuries unit	NA	—	—	—	—
Cooperative calls	0.026 (0.028)	0.95	0.36	6 (-7 to 22)	2.1 (NS)
Total contacts	-0.004 (0.01)	-0.37	0.72	-1 (-6 to 4)	2.2 (NS)
Emergency admissions	-0.017 (0.008)	-2.2	0.04	-4 (-8 to -0.05)	1.5 (I)
<b>Exemplar 07</b>					
999 transports	0.021 (0.011)	2.0	0.06	5 (-0.02 to 10)	1.5 (NS)
Attendances:					
Emergency department	-0.023 (0.014)	-1.6	0.11	-5 (-11 to 1)	1.8 (NS)
Minor injuries unit	-0.013 (0.024)	-0.5	0.60	-3 (-14 to 9)	2.4 (NS)
Cooperative calls	-0.057 (0.021)	-2.7	0.014	-12 (-21 to -3)	2.4 (NS)
Total contacts	-0.28 (0.013)	-2.37	0.03	-6 (-12 to -0.05)	2.3 (NS)
Emergency admissions	0.025 (0.022)	1.1	0.28	6 (-5 to 18)	1.6 (NS)
<b>Exemplar 29</b>					
999 transports	0.027 (0.011)	2.5	0.02	6 (1 to 12)	1.9 (NS)
Attendances:					
Emergency department	-0.014 (0.016)	-0.87	0.39	-3 (-10 to 5)	0.6 (S)
Minor injuries unit	0.052 (0.046)	-1.12	0.28	13 (-10 to 36)	2.0 (NS)
Cooperative calls	-0.064 (0.025)	-2.6	0.018	-14 (-24 to -3)	1.4 (I)
Total contacts	-0.028 (0.013)	-2.20	0.04	-6 (-12 to -0.03)	2.1 (NS)
Emergency admissions	-0.013 (0.009)	-1.5	0.16	-3 (-7 to 1)	1.4 (I)
<b>Exemplar 30</b>					
999 transports	0.031 (0.008)	3.8	0.001	7 (3 to 12)	1.4 (I)
Attendances:					
Emergency department	-0.002 (0.011)	-1.5	0.14	-0.05 (-5 to 5)	1.8 (NS)
Minor injuries unit	0.006 (0.012)	0.5	0.62	1 (-4 to 7)	1.6 (NS)
Cooperative calls*	-0.085 (0.038)	-2.24	0.04	-18 (-32 to -1)	2.4 (NS)
Total contacts†	-0.024 (0.015)	-1.61	0.13	-5 (-12 to 2)	2.2 (NS)
Emergency admissions	-0.014 (0.009)	-1.5	0.14	-3 (-7 to 1)	2.1 (NS)

NA=not applicable; NS=not significant; I=inconclusive; S=significant.  
 \*Estimated using adjusted data on denominators available for only 30 months.  
 †Includes estimated cooperative calls available for only 30 months.

“hub,” making 31 distinct sites. We selected newly integrating exemplars for in-depth study rather than those with existing arrangements with NHS Direct. Further selection was made on the basis of a patient population of 200 000 or more, availability of computerised records of calls, and readiness to proceed. Eight exemplars met these criteria, from which we selected four “case exemplars” to obtain variety in the approach to integration and geographical location.

We defined integration as NHS Direct handling calls and giving advice to a proportion of people, redirecting others as appropriate. We defined single call access as automatic diversion of a call to NHS Direct from the practice or cooperative number. Nineteen cooperatives with more than 100 000 patients were invited to take part as controls. Eleven (58%) agreed and 10 provided data. All had out of hours contact rates within the range described in a previous study of representative English cooperatives.<sup>3</sup> We requested data on the extent of integration and single call access from all exemplars. Within the area covered by each case exemplar and control cooperative we collected data for a year before and after integration on out of hours calls to NHS Direct and cooperatives; new attendances at emergency departments, minor injuries units, and NHS walk-in centres; and 999 ambulance transports to hospital. Patterns of data collection in

participating NHS organisations meant that data could not be restricted to out of hours periods for all sources.

We examined the effects of introduction of case exemplars on use of other services by fitting linear regression models to data reporting the number of contacts per month with each immediate care service. These methods were adapted from those used in the evaluation of the first three NHS Direct pilot sites.<sup>4</sup> Integration was achieved at different times for each of the four case exemplars, necessitating separate analysis for each. We used the Durbin-Watson test to detect first order autocorrelation in the residuals of the regression models. Systematic monthly variation in service use was removed by fitting “month” as a fixed effect within each model, with “log monthly count of service contacts” treated as an independent effect. We tested the effect of integration of each case exemplar site by fitting it as a step function (before = 0; after = 1).

Results are reported as regression coefficients with standard errors and P values, and the percentage difference between observed activity after the integration of the exemplar site and predicted activity based on data before integration (with 95% confidence intervals) for the use of each service. We created a value for total calls by summing 999 ambulance calls, new attendances at emergency departments, calls to general practice cooperatives and, where appropriate,

**Table 2** Regression analyses for different out of hours providers using pooled control site data and four different index dates

Index date	Regression coefficient (B) (SE)	Test statistics		% difference (95% CI) between observed and predicted activity after integration	Durbin-Watson statistic
		t test	P value		
Calls to control cooperatives:					
Exemplar 02	-0.039 (0.049)	-0.8	0.44	-9 (-28 to 16)	1.0 (S)
Exemplar 07	-0.084 (0.046)	-1.8	0.08	-18 (-34 to 2)	1.0 (S)
Exemplar 29	0.037 (0.047)	0.8	0.44	8 (-13 to 36)	1.0 (S)
Exemplar 30	-0.019 (0.049)	-0.4	0.71	-4 (-24 to 21)	1.0 (S)
999 patient transports:					
Exemplar 02	-0.005 (0.009)	-0.6	0.58	-1 (-5 to 3)	1.4 (I)
Exemplar 07	-0.008 (0.008)	-1.0	0.36	-2 (-6 to 2)	1.4 (I)
Exemplar 29	-0.002 (0.008)	-0.3	0.78	-1 (-5 to 4)	1.4 (I)
Exemplar 30	0.004 (0.009)	0.5	0.66	1 (-3 to 5)	1.4 (I)
<b>Attendances</b>					
Emergency department:					
Exemplar 02	-0.009 (0.015)	-0.6	0.56	-2 (-9 to 5)	1.6 (I)
Exemplar 07	0.000 (0.015)	-0.004	1.0	0 (-7 to 7)	1.6 (I)
Exemplar 29	-0.024 (0.013)	-1.8	0.09	-5 (-11 to 1)	1.75 (I)
Exemplar 30	-0.011 (0.015)	-0.7	0.48	-3 (-9 to 5)	1.6 (I)
Minor injuries unit and walk-in centre:					
Exemplar 02	0.032 (0.033)	1.0	0.34	7 (-8 to 26)	1.5 (I)
Exemplar 07	0.038 (0.033)	1.2	0.26	9 (-7 to 28)	1.7 (I)
Exemplar 29	-0.049 (0.031)	-1.6	0.12	-11 (-23 to 3)	1.5 (I)
Exemplar 30	0.015 (0.034)	0.4	0.67	4 (-12 to 22)	1.5 (I)
Total contacts:					
Exemplar 02	-0.023 (0.019)	-1.2	0.24	5 (-13 to 3)	1.3 (S)
Exemplar 07	-0.04 (0.017)	-2.3	0.03	-9 (-16 to -1)	1.2 (S)
Exemplar 29	0.005 (0.019)	0.3	0.80	1 (-8 to 11)	1.1 (S)
Exemplar 30	-0.014 (0.019)	-0.7	0.48	-3 (-12 to 6)	1.2 (S)
Emergency hospital admissions:					
Exemplar 02	-0.007 (0.013)	-0.6	0.6	-2 (-8 to 4)	1.8 (NS)
Exemplar 07	0.003 (0.013)	0.2	0.9	0 (-6 to 7)	1.8 (NS)
Exemplar 29	-0.021 (0.012)	-1.8	0.1	-5 (-10 to 1)	2.2 (NS)
Exemplar 30	-0.020 (0.012)	-1.6	0.12	-5 (-10 to 1)	2.1 (NS)

NS=not significant; I=inconclusive; S=significant.

attendances at minor injuries units (but not emergency hospital admissions) and tested for a change in the linear trend in total calls. We analysed pooled control data for each of the case exemplar integration dates to determine whether any estimated changes associated with integration of an exemplar occurred in the control sites. Although none of our case exemplar sites contained an NHS walk-in centre, several of the control sites did; for analysis we combined these data with those for the minor injuries units. All analyses were carried out in SPSS 12.5.

## Results

Twenty one of 31 sites (68%) integrated all out of hours call management during the study period, but in only nine (29%), all patients achieved access with a single call. Only one case exemplar (02) carried out nurse telephone triage before integration, thus allowing direct comparison: cooperative nurses managed 2622/6687 calls with telephone advice (39%) before integration compared with 2092/7086 (30%) by NHS Direct during the three months of maximum integration ( $P < 0.0001$ ). None of the other three case exemplars achieved 30%: exemplar 07, 3354/19 555 (17%); exemplar 29, 3582/18 606 (19%); exemplar 30, 2813/12 226 (23%).

A small but significant downturn in overall demand for care was seen in two case exemplars (07 and 29) in

the year after integration (table 1), but this was also seen in pooled data from the control sites (table 2). The number of emergency ambulance transports increased in three case exemplars after integration, reaching statistical significance in two. In each case this was accompanied by a significant reduction in the number of calls to the integrated service.

## Discussion

Observation of the first year of integration of out of hours care in England suggests there are limited efficiencies to be gained from routing all incoming calls through NHS Direct if the workload of general practice providers is insufficiently reduced. This study had a before and after design, with the limitations that imposes, but also included data on 10 control sites to account for secular trends. Most exemplars implemented the integrated model of care and gained valuable experience of building local partnerships. However, most patients still needed to make at least two telephone calls to contact NHS Direct, and then had to wait to be called back by a nurse. NHS Direct completed fewer calls with telephone advice in the case exemplars than expected,<sup>5</sup> reflecting the extent of integration achieved.

Calls to 999 ambulance services increase annually, but we found a further significant upward change in that trend after integration. Decision support software

**What is already known on this topic**

NHS Direct did not reduce demand for immediate care services but seemed to reduce slightly the rise in demand for general practitioner out of hours services

The effects on the wider health system of an integrated model of care with general practice out of hours calls diverted to NHS Direct are less well understood

**What this study adds**

Most general practitioner cooperatives and NHS Direct partners working together in a national "exemplar programme" introduced integrated call management within the first year

Few achieved single telephone call access for all patients

Locally organised nurse telephone consultation before integration managed more calls with telephone advice than did NHS Direct after integration

used by NHS Direct may have influenced triage end points, and this may be amenable to change. Alternatively the increase in demand for 999 ambulances may have been a transfer effect, with

patients contacting the ambulance service rather than waiting for their return telephone call. NHS Direct may not have the capacity to manage all out of hours demand in the way the 2000 review of out of hours care in England envisaged.<sup>1</sup>

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Competing interests: None declared.

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## Should treatment of (sub)acute low back pain be aimed at psychosocial prognostic factors? Cluster randomised clinical trial in general practice

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**Abstract**

**Objective** To compare the effects of a minimal intervention strategy aimed at assessment and modification of psychosocial prognostic factors and usual care for treatment of (sub)acute low back pain in general practice.

**Design** Cluster randomised clinical trial.

**Setting** 60 general practitioners in 41 general practices.

**Participants** 314 patients with non-specific low back pain of less than 12 weeks' duration, recruited by their general practitioner.

**Interventions** In the minimal intervention strategy group the general practitioner explored the presence of psychosocial prognostic factors, discussed these factors, set specific goals for reactivation, and provided an educational booklet. The consultation took about 20 minutes. Usual care was not standardised.

**Main outcome measures** Functional disability (Roland-Morris disability questionnaire), perceived

recovery, and sick leave because of low back pain assessed at baseline and after 6, 13, 26, and 52 weeks.

**Results** The dropout rate was 8% in the minimal intervention strategy group and 9% in the usual care group. Multilevel analyses showed no significant differences between the groups on any outcome measure during 12 months of follow-up in the whole group or in relevant subgroups (patients with high scores on psychosocial measures at baseline or a history of frequent or prolonged low back pain).

**Conclusion** This study provides no evidence that (Dutch) general practitioners should adopt our new treatment strategy aimed at psychosocial prognostic factors in patients with (sub)acute low back pain. Further research should examine why our new strategy was not more effective than usual care.



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