Evaluation of NHS111 pilot sites

Second Interim Report

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Executive Summary

This is the second interim report for the evaluation of NHS111, a new telephone based service designed to help people access appropriate healthcare for urgent medical problems. The purpose of the evaluation is to assess if a three digit number for access to services for urgent healthcare problems is a useful and cost effective addition to the emergency and urgent care system in England. The evaluation is being carried out in 4 pilot services in England.

In this report we provide the interim results of a number of the evaluation work strands. These are:

- Summary results of the evidence reviews on use of telephone services to direct people to appropriate healthcare
- A summary of the development of a NHS111 minimum dataset and results of early activity using routine data in each pilot site
- Interim analyses using routine data of the impact of NHS111 on activity in the urgent and emergency care system
- Summary results of before and after population surveys to measure the impact of NHS111 on access to and use of the emergency and urgent care system
- Summary results of the first user surveys in each pilot site to assess user views of NHS111

Evidence reviews

We have conducted two evidence reviews using Rapid Evidence Assessment methods. One review explored the evidence on appropriateness and compliance with telephone triage decisions and the other on the impact of telephone triage on other services. The results of the reviews found that the majority of telephone triage decisions are appropriate and most callers comply with decisions. Telephone triage can reduce the use of general practice but little is known about its effect on emergency services.

The evidence base on telephone triage is mainly focused on doctor and nurse triage. NHS111 uses trained lay operators to triage calls and therefore the evidence base is not directly relevant to this new service. We found little evidence on the impact of lay operator triage. The ongoing evaluation of NHS111 measures the impact of the new service on healthcare use and will offer a new contribution to the evidence base about telephone triage.

Minimum Dataset and activity

A formal minimum dataset (MDS) has been designed to routinely collect and publish information on the efficiency and effectiveness of the different NHS111 models. The purpose is to help maximise the benefits of NHS111 by understanding which models are most effective and provide information to Clinical Commissioning Groups to aid decision making. The MDS includes monthly data on the coverage or population size of each scheme, the

volume of calls received and answered and staffing information. This data is released on a monthly basis.
We have looked at a range of reported routine activity measures spanning the period from the introduction of NHS111 in each pilot site (August-December 2010) to July 2011. The main findings are:-

- Activity has steadily increased across all sites but total call volume varies depending on service design (for example configuration of diversion of out of hours GP calls) and service provider. Annualised percentage of population rates calling NHS111 vary from 32% to 18%.
- There is a difference between providers in transfer rate (the proportion of answered calls that go through to a clinician), with NHS Direct provided pilots having a transfer rate between 30-35% and the ambulance service provided pilot having a transfer rate of around 22%.
- All sites have similar referral rates to primary care based services of between 45% and 55%, where primary care services include speak to or contact (face to face) a primary care practitioner, or contact a dental practitioner or pharmacist. Lincolnshire, Nottingham City and Luton have similar rates of referral to Emergency Departments (ED) of between 4% and 8%. County Durham and Darlington refer around 12% to ED but a significant proportion of these are directed to Urgent Care Centres. Refer to ambulance rates vary from 8% to 15%.
- All sites have met the National Quality Requirements since launch.

Whole System Impact

We have conducted some early analysis to start investigating the impact of NHS111 on the emergency and urgent care system. The analysis presented here cover a baseline period prior to the introduction of NHS111 and then a change period up to March 2011 for both the pilot sites and their controls. The methods used comprise basic time series analysis. Analysis has shown that it is mostly too early to see a significant impact for the pilot sites with only 4 months activity data post go-live. However there are some areas where changes have been detected relative to the control site and compared to the same period of the previous year. These are:

Lincolnshire

- Total attendances at type 1 & 2 EDs: estimated step change of 900 ± 440 attendances and an observed net change of -1% relative to the control site
- Category C ambulance calls: estimated step change of 300 ± 140 calls and an observed net change of -10% relative to the control site
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Luton

- Total attendances at type 1 & 2 EDs: estimated step change of 290 ± 250 attendances and an observed net change of -4% relative to the control site

- Category C ambulance calls: estimated step change of 170 ± 50 calls and an observed net change of -19% relative to the control site, but numbers involved are small
- Category C ambulance incidents: estimated step change of 230 ± 50 incidents and an observed net change of -25% relative to the control site, but numbers involved are small

County Durham and Darlington

- Total attendances at type 1 & 2 EDs: estimated step change of 1510 ± 370 attendances and an observed net change of -9% relative to the control site
- Total ambulance calls: estimated step change of 1210 ± 210 calls and an observed net change of -14% relative to the control site
- Total ambulance incidents: estimated step change associated with the introduction of the Single Point of Access of 330 ± 150 incidents and no significant additional impact of the introduction of NHS111
- Calls to the NHS Direct 084 service: estimated step change of 770 ±230 and an observed net change of -29% relative to the control site

Impact on emergency and urgent care system users

An important task when introducing a new service such as NHS111 is to assess the impact it has on users of the whole emergency and urgent care *system*. If NHS111 is to achieve the intended objective of improving system users' experiences it should improve system users' views of access to urgent care, progress through the urgent care system and the extent to which the system offers patient convenience. We have conducted a controlled before and after population survey in each pilot site and a matched control prior to the launch of NHS 111 and again 12 months later. We have reported the results of the before and after population surveys for the first pilot site to go live;- County Durham & Darlington PCO and its control site. The main findings are that in this first site around one in ten urgent care episodes had NHS 111 as the first point of contact. Overall use of the urgent care system remained constant when NHS 111 was in operation. There was evidence of a shift in the types of services used in the NHS 111 site but the survey has limitations when measuring use of different types of service because people's knowledge of service type can be inaccurate. There was no evidence that the new service improved satisfaction with the urgent care system or the NHS overall in this pilot site.

NHS 111 user survey

One objective of the evaluation is to understand users' experiences and views of the new service. Two user surveys will occur in each pilot site within the evaluation. Here we report the findings of the first survey, known as the 'early phase user survey'. This was planned to take place approximately 3 months after each service was implemented but delays in research governance approvals meant the surveys were undertaken at 6 months in the first site and four months in the other 3 sites. A cross sectional postal survey was undertaken in each site sampling 1200 recent calls made to NHS 111.

The questionnaire covered how people accessed the service, the usefulness of the advice received, whether users felt they got to the right service first time, compliance with that advice, good and poor aspects of their contact with the service, overall satisfaction with the service, the value of the service, the pathway followed, time to symptom resolution, whether the problem was resolved to their satisfaction at 7 days after the call, and if they had to re-contact a service about the same condition within 48 hours. A total of 2098 questionnaires were returned with a mean response rate across the 4 sites of 44%. The main findings of the first surveys were that

- 73% of users were very satisfied with the way NHS 111 handled the whole process and 93% were very or quite satisfied.
- 84% strongly agreed or agreed that NHS 111 helped them to contact the right service.
- There were some differences by site which may reflect service delivery or may be due to population differences.
- 14% of users were not clear about when to use this new service.

Next Steps

The evaluation is due to finish in February 2012. A number of tasks will be completed during the next 6 months and reported in the final report. These are:

- Further analysis of routine data on activity and whole system impact using a full years' post implementation data. This will provide a more comprehensive assessment of any changes in demand for services and the extent to which demand is shifted around the whole emergency and urgent care system.
- Completion of analysis of the before and after population surveys to provide an assessment of any changes in behaviour and the way people access urgent care services.
- Conduct and analysis of the second user survey to establish users views of the service after it has had time to develop and mature.
- Completion and analysis of stakeholder interviews to explore how NHS 111 fits with local health economies.
- An assessment of the ability of NHS111 to deliver definitive clinical assessment.
- An economic evaluation to assess the cost consequences of introducing the NHS 111 system and the implications for local health economies.

1. Introduction

1.1 Background

The Chief Medical Officer's review of developing emergency services in the community in 1997 recommended that telephone access using a simple three digit number should be introduced into the NHS[1]. This was based on focus groups with the general population who reported confusion about which service to attend when they had an urgent health problem. NHS Direct was established to meet this need and became a national service in 2000 but the 2006 consultation around the Direction of Travel for urgent care identified the same problems of confusion about the most appropriate service to contact, and the need for a service with a memorable telephone number to ease access[2]. Uncertainty about which service to contact means patients may access services not best placed to meet their needs. The ambulance service receives 8.08 million 999 calls per year of which 2.73 million (33.8%) are classified as urgent rather than emergency
http://www.ic.nhs.uk/webfiles/publications/Audits%20and%20Performance/Ambulance/Ambulance%20Service%202010_11/Ambulance_Services_England_2010_11.pdf
Similarly 37% of Emergency Department (ED) attendances are classed as "minor" problems. The potential solution of a three digit number service for urgent calls to relieve some of the pressure on emergency care services, reduce duplication and inefficiency in the emergency and urgent care system and improve access for users was discussed in The Next Stage Review in 2008[3]. Following further consultation a new three digit number, 111 was allocated to the DH for UK-wide use.[4] The Department of Health set up a programme board in 2009 to oversee the development and implementation of a new telephone based service using the 111 for accessing urgent care. As part of this process NHS services were invited to become pilot sites for this new service and 4 pilot areas were identified. At the same time the Medical Care Research Unit at the University of Sheffield, in collaboration with the Department of Health (DH) Commissioning and Intelligence Team, were commissioned to carry out an independent evaluation of the costs and benefits of this new service to inform future policy decision making.
Following then change in Government in 2010 a decision was taken to roll out the NHS111 service across the country http://www.dh.gov.uk/en/MediaCentre/Pressreleases/DH_118861
However the planned evaluation is continuing to provide information and evidence to support future service development.

1.2 Objectives of the evaluation

The primary research question for the evaluation is: ***is a three digit number for access to services for urgent healthcare problems a useful and cost effective addition to the emergency and urgent care system in England?*** The objectives are:

i) To synthesise the qualitative and quantitative literature on telephone services directing people to appropriate healthcare.

ii) To assess the processes within each pilot site to describe who uses urgent care services, 111 call activity and processes including timings and referral patterns, and practical lessons around implementation.

iii) To evaluate the impact of the introduction of the NHS111 service on care pathways, public confidence and patient experiences, equity of access and changes in demand for related services across the emergency and urgent care system.

iv) To explore the feasibility of using routine call data to assess the appropriateness of triage decisions in a 111 service.

v) To assess the costs and cost consequences of the NHS111 service.

vi) To compare and contrast different models of service provision and explore the impact on local health economies to identify lessons on the best ways of developing the service and rolling it out across the country.

1.3 Summary description of pilot services

The underlying principle of the NHS111 service is that patients who request urgent medical care should be assessed and directed to the "right service first time". The main features of the service are that:

- The number is free to use
- Calls are assessed using an approved clinical assessment system to determine the most appropriate course of action for the patient. In each of the current pilot sites the system used is NHS Pathways operated by non clinical call advisors but with clinical supervision available
- Calls assessed as requiring an emergency ambulance response can be immediately directed to ambulance dispatch without the need for re-assessment or repeat requests for information from the patient. The call advisor can provide advice about what to do while waiting for the ambulance and can stay on the line until the ambulance response arrives if necessary.
- Other calls can be given health information, self care advice or directed to the most appropriate service available at the time of the call using an up to date skills based Directory of Services (DoS) for the patient's local area
- Where possible the 111 service should develop real time links with urgent care providers so that appointments can be made for callers at the time of their call to NHS111.

Four pilot sites, overseen by the national programme board and Strategic Health Authorities, were identified to take these plans forward:

- North East England. An ambulance led service in Durham and Darlington Primary care organisation (PCO) which became operational from August 2010;
- East Midlands. An NHS Direct led service in Nottingham City which became operational from November 2010;
- East Midlands. An NHS Direct led service in Lincolnshire PCT which became operational from November 2010;
- East of England. An NHS Direct led service in Luton PCT which became operational from December 2010.

A more detailed description of the operating model for each site is given in Appendix 1.

1.4 Status of this report

The first interim report of the evaluation was published in May 2011 and included: a summary description of the processes leading to the pilot sites becoming live services; results of population surveys of urgent care use before service implementation; early analysis of activity in the first NHS111 site to go live and the results of a series of focus groups to identify the practical lessons learned so far by NHS111 pilot sites.

This is the second interim report from the evaluation and we are reporting:

- Summary results of the evidence reviews on use of telephone services to direct people to appropriate healthcare
- A summary of the development of a NHS111minimum dataset and results of early activity using routine data in each pilot site
- Interim analyses using routine date of the impact of NHS111 on activity in the urgent and emergency care system
- Summary results of before and after population surveys to measure the impact of NHS111 on access to and use of the emergency and urgent care system
- Summary results of the first user surveys in each pilot site to assess patient and user views of NHS111
- A summary of the remaining evaluation tasks
- Timetable for the next stages of the evaluation.

2. Evidence base for NHS111

2.1 Background

We stated in the research proposal that "MEDLINE and other relevant databases will be searched for research evidence about telephone services directing people to appropriate healthcare. International literature will be relevant, with attention paid to the context in which any service operated e.g. attention to the health systems operating in different countries and their relevance to NHS111 within the English NHS."
We undertook three systematic reviews on:

- Appropriateness of triage recommendations
- Compliance with telephone triage recommendations
- Impact of telephone triage on use of other services

2.2 Methods and findings

2.2.1 Reviews design

We adhered to the principles of rapid evidence assessment (REA) which provides a "balanced assessment of what is already known about a policy or practice issue, by using systematic review methods to search and critically appraise existing research" (http://www.gsr.gov.uk/professional_guidance/rea_toolkit/). REA is suitable for reviews of evidence which are required to link to policy recommendations within a tight timescale.

2.2.2 Appropriateness and compliance

We completed the reviews about appropriateness and compliance first and put them both within a single paper for publication. This has been sent to the Department of Health and then submitted to a journal. The summary of this paper is reported here:

> **Aim:** Synthesis of evidence on the appropriateness of, and compliance with, telephone triage decisions.
>
> **Background:** Telephone triage services play an important role in managing demand for healthcare. Important questions are whether triage decisions are appropriate and patients comply with them.
>
> **Data sources:** Six databases were searched between 1980 and June 2010.
>
> **Review methods**: The principles of rapid evidence assessment were followed.
>
> **Results:** We identified 28 papers measuring appropriateness and 28 measuring compliance with telephone triage decisions. Nurses triaged calls in most of the studies. Triage decisions rated as appropriate varied between 44% and 98% (median 75%); compliance ranged from 56% to 98% (median 77%). Variation could not be explained by type of service or method of assessing appropriateness. Triage decisions to contact primary care (median 66%, range 25%-91%) may have lower

compliance than decisions to contact emergency services (median 75%, range 29%-100%) or self care (median 77%, range 26%-100%). Ten of the 15 studies which reported compliance with a primary care level decision reported compliance as lower than that for emergency and/or home care. There were no consistent findings by types of triageur and types of triage but study numbers were small.

Conclusion: The majority of telephone triage decisions are appropriate and most callers complied with decisions. The association between the appropriateness of a decision and subsequent compliance requires further investigation. There was considerable variation in definitions and methods of assessment of appropriateness and compliance which limited the ability to compare the different contexts in which telephone triage was offered.

2.2.3 Impact on use of other health care services

We then completed a review of impact of telephone triage on other health care services. We have written a paper which we will send to the Department of Health and then submit to a journal. The summary is reported here:

Aim: To conduct a review of the effect of telephone triage on use of primary care and other healthcare services.

Background: Telephone triage is becoming increasingly important for managing demand for healthcare. However, little is known about its impact on use of other healthcare services.

Design of study: A rapid evidence assessment (REA) was conducted which is suitable for reviews linking evidence and policy within a tight timescale.

Methods: Six electronic databases were searched using terms related to telephone triage and outcome measures associated with service use.

Results: We identified 20 papers, 15 of which assessed nurse-led telephone triage and 5 which assessed triage by general practitioners. Twelve studies measured actual service use before and after the introduction of triage. Studies measuring the effect on general practice in or out of hours showed reduction in use, regardless of whether the triage was undertaken by doctors or nurses, or based in general practice or elsewhere. There was little evidence available measuring the impact on emergency services. The other studies used weaker designs based on actual and intended use; callers tended to report that telephone triage changed their intentions.

Conclusion: Telephone triage can reduce the use of general practice but little is known about its effect on emergency services. Evidence on lay operator triage, relevant to the new service NHS111, was not identified.

2.3 Conclusions and relevance to NHS111

In the published literature the majority of telephone triage decisions were found to be appropriate and most callers complied with decisions; only two papers included lay operators as triageurs. Telephone triage can reduce the use of general practice but little is known about its effect on emergency services; we found no evidence on the impact of lay operator triage.

The evidence base on telephone triage is mainly focused on doctor and nurse triage. NHS111 uses trained lay operators to triage calls and therefore the evidence base is not directly relevant to this new service. The ongoing evaluation of NHS111 measures the impact of the new service on healthcare use and will offer a new contribution to the evidence base about telephone triage. The evidence base presented here can place our future findings in the context of different approaches to telephone triage.

3. Using routine data to describe NHS111 processes of care

3.1 Development of the NHS111 Minimum dataset (MDS)

Background

The Secretary of State asked for a formal minimum data set to be collected and published on the efficiency and effectiveness of the different NHS111 models. This is to help maximise the benefits of NHS111, by understanding which models are most effective and giving information to Clinical Commissioning Groups deciding which NHS111 model to implement. An expert group (including DH officials, 111 service providers and the Information Centre) has helped to draft the dataset. The aim was to get the information necessary for commissioners, while minimising the burden on the NHS of providing this.

What does the MDS include?

The MDS includes monthly data on the coverage or population size of each scheme, the volume of calls received and answered and staffing information. This data is released on a monthly basis with a 1 month lag, so for example, the MDS released at the end of September will contain data up to and including August. Data on system impact is also reported monthly and looks at which services patients are referred to and if this is impacting on actual attendance figures of these services. System data cannot be published until it has been validated and locked down. This creates a 4 month lag in data release for all system impact data. Data on the patient experience including patient satisfaction and the services patients use is required every six months, reporting on this will begin in November 2011. The MDS also presents a series of indicators using the data listed above to allow for comparisons to be made between different service models.

Data Quality

The NHS111 team is working with all providers involved in this return to further improve data quality. Any amendments to these figures due to new or more accurate data becoming available will be announced when released.

Where can it be found

The minimum data set can be found at the following link:
http://www.dh.gov.uk/en/Publicationsandstatistics/Statistics/Performancedataandstatistics/NHS111MinimumDataSet/index.htm

A summary of the routine data from the MDS for each of the NHS111 pilot is given below.

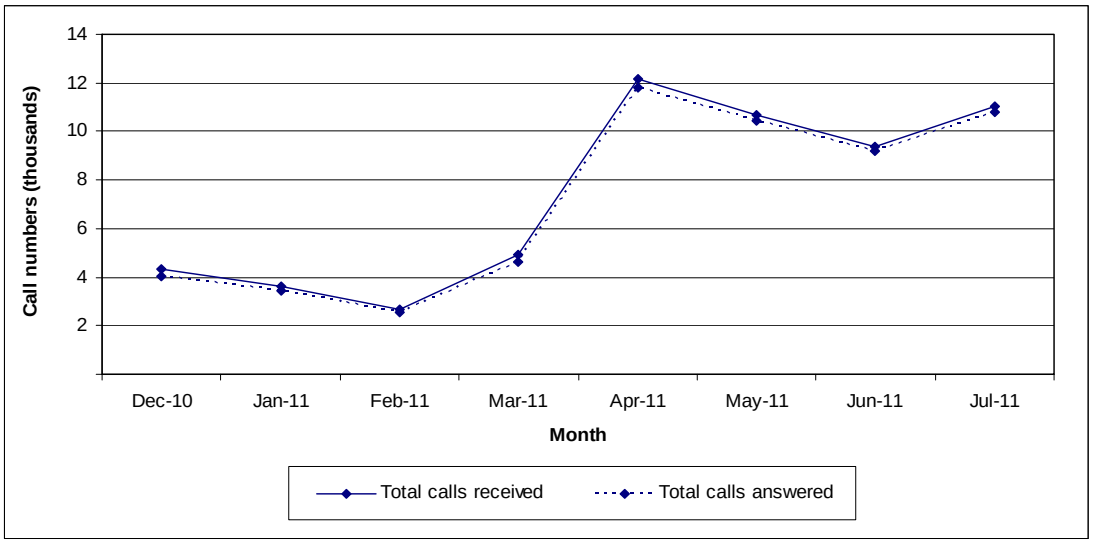
3.2 Summary results of NHS111 pilot site activity

3.2.1 Lincolnshire

Call volumes:

Total calls received decreased over the first 3 months of the pilot but increased from around 2,500 calls in February 2011 to around 12,000 calls in April 2011. Call volumes have remained relatively high since (Figure 1). The large increase in calls received between February and April 2011 was largely due to OOH calls being switched to NHS111 in the area. Calls answered have remained consistently high (>93 per cent) throughout the pilot. Over the last 3 months 98 per cent of calls have been answered. Unanswered calls are due to callers hanging up before the service has had a chance to answer the call.

Figure 3.1 - The number of calls received and answered for the Lincolnshire NHS111 pilot



National Quality Requirements:

National Quality Requirements (NQR) for out of hours care apply to NHS 111.
http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_4137271

We have included data on compliance with NQR number 8 in this analysis.

NQR 8 - Initial Telephone Call:

Engaged and abandoned calls:

- No more than 0.1% of calls engaged
- No more than 5% calls abandoned.

Time taken for the call to be answered by a person:

- All calls must be answered within 60 seconds of the end of the introductory message which should normally be no more than 30 seconds long.
- Where there is no introductory message, all calls must be answered within 30 seconds.

The Lincolnshire pilot has met NQR 8 for every month except for the percentage of calls answered within 60 seconds of the end of the message in the first month of the pilot (Table 3.1).

Table 3.1 - Performance data for the Lincolnshire NHS111 pilot

Date	Percentage calls answered within 60s of end of message (>95%)	Percentage calls abandoned 30s after the end of the message (<5%)	Number of calls rung back by a clinician[1]
Dec-10	91%	4%	155
Jan-11	98%	1%	67
Feb-11	99%	0%	56
Mar-11	98%	1%	73
Apr-11	97%	1%	196
May-11	98%	1%	180
Jun-11	98%	0%	164
Jul-11	98%	1%	221

Note:

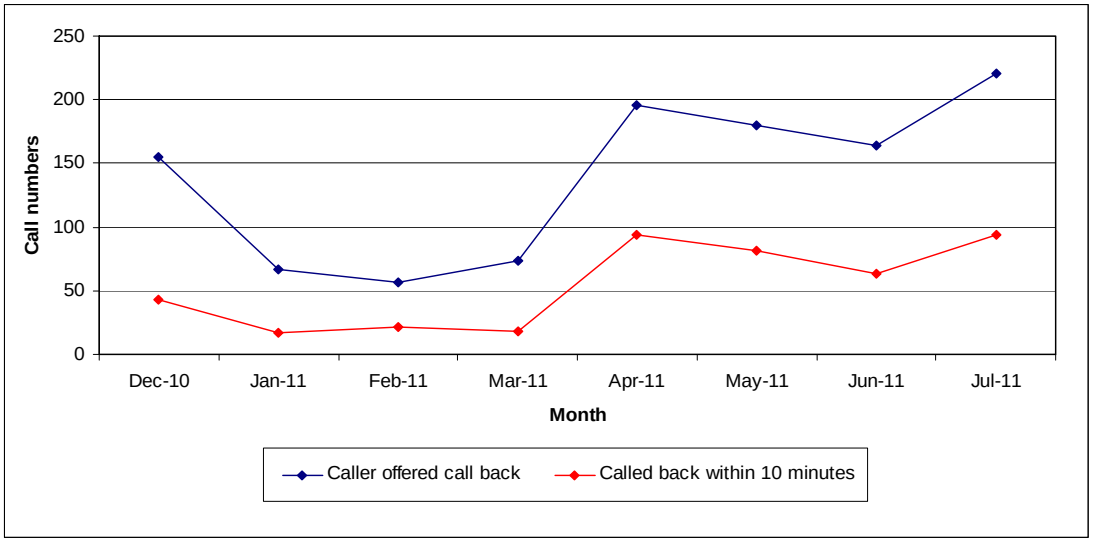
1: There is no NQR for call backs but this is part of the service specification for NHS111

There is no NQR for call backs but this is part of the service specification for NHS111. The NHS111 service design specifies that NHS111 should be delivered without call backs except in very exceptional circumstances, in which case the call should be queued and a call back made within 10 minutes.

The Lincolnshire service has largely been operating with between 50-200 call backs per month (Table 3.1). In the first month of the pilot this equates to 4 per cent of calls answered and 15 per cent of calls transferred to a clinician. For the rest of the pilot the proportion of call backs decreased to 2 per cent of calls answered and between 5-7 per cent of calls transferred to a clinician.

Figure 3.2 shows the number of call backs and the number of calls which have been called back within 10 minutes. For the first 4 months the proportion of call backs made within 10 minutes was between 25 and 38 per cent. In the last four months this proportion had increased to between 38 and 48 per cent.

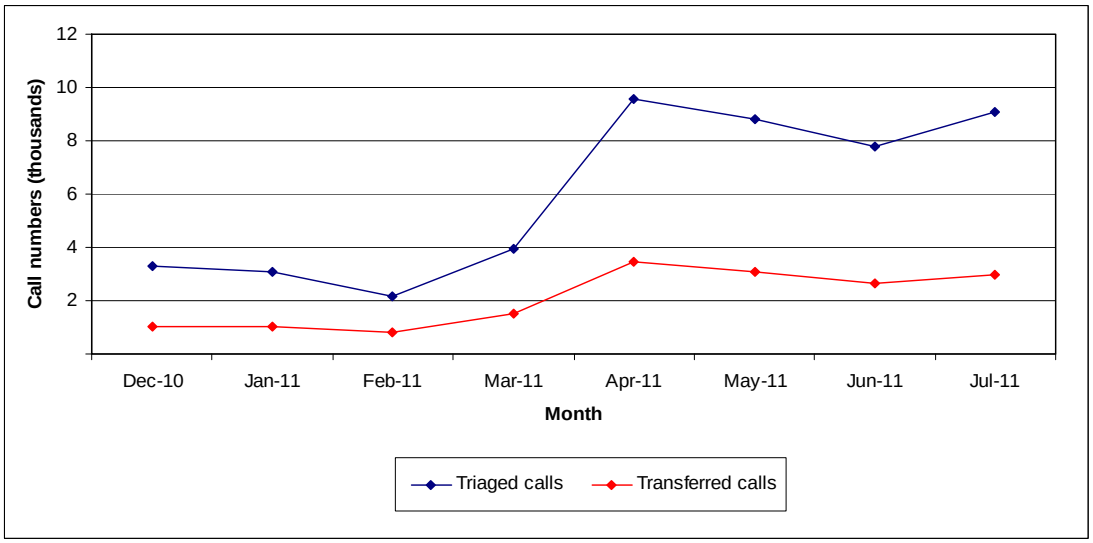
Figure 3.2 - The number of calls where a call back has been offered and calls where they have been called back within 10 minutes



Triage and transfer rates**:**

The number of calls triaged follows a similar pattern to that found for received calls (Figure 3.3). Triaged calls were relatively low and decreasing over the beginning of the pilot and then increased sharply, before levelling off over the latest 4 months of the pilot. The percentage of answered calls that have been triaged ranged between 81 and 90 per cent during the pilot, over the last 3 months of the pilot this has stabilised at around 85 per cent. The number of triaged calls transferred to a clinician also followed a similar pattern to the other call volume figures. The percentage of triaged calls transferred to a clinician increased from 31 per cent in December 2010 to 38 per cent in March 2011. Since then it has decreased to 33 per cent in July 2011 (Figure 3.3)

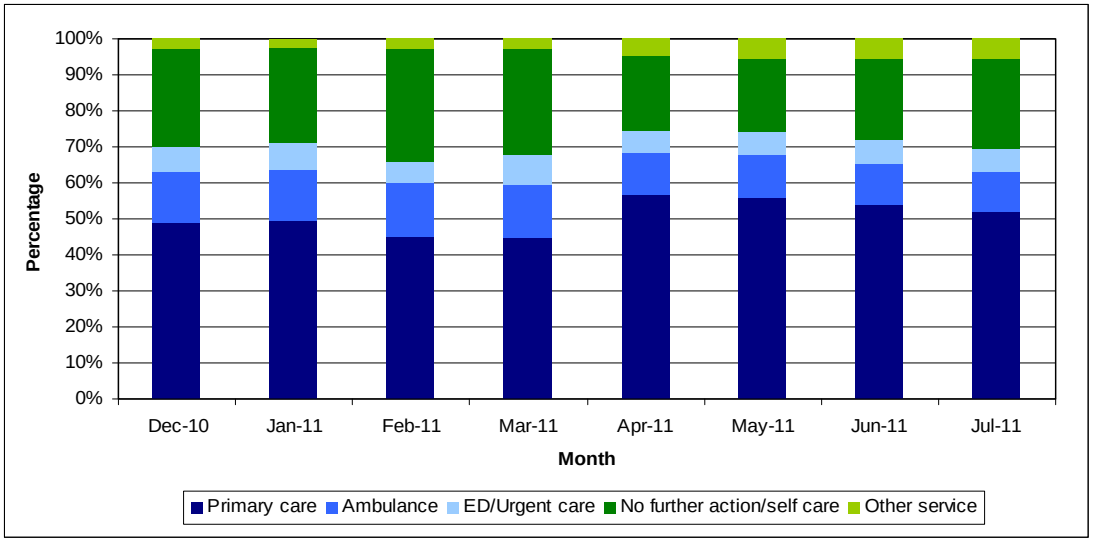
Figure 3.3 - The number of triaged calls and calls transferred to a clinician for the Lincolnshire NHS111 pilot



Dispositions

Figure 3.4 shows the spread of dispositions for triaged calls over each month of the pilot. The majority of calls were advised to contact (face to face) or speak to primary care, where primary care providers include: GPs, nurses, pharmacists and dentists. During the pilot the percentage of triaged calls referred to primary care ranged from 45 to 57 per cent. The percentage of triaged calls where an ambulance was called ranged between 14-15 per cent over the first 4 months of the pilot, but dropped to 12 per cent for the last 4 months. Triaged calls referred to ED/Urgent care remained between 6-8 per cent throughout the pilot. Triaged calls given self care advice or where no further action was required were between 27-31 per cent over the first 4 months of the pilot, rates in the last 4 months fell to between 20-25 per cent. Calls referred to other services have increased through the pilot from 3 per cent in December 2010 to 6 per cent in July 2011.

Figure 3.4 - Dispositions as a percentage of triaged calls for the Lincolnshire NHS111 pilot

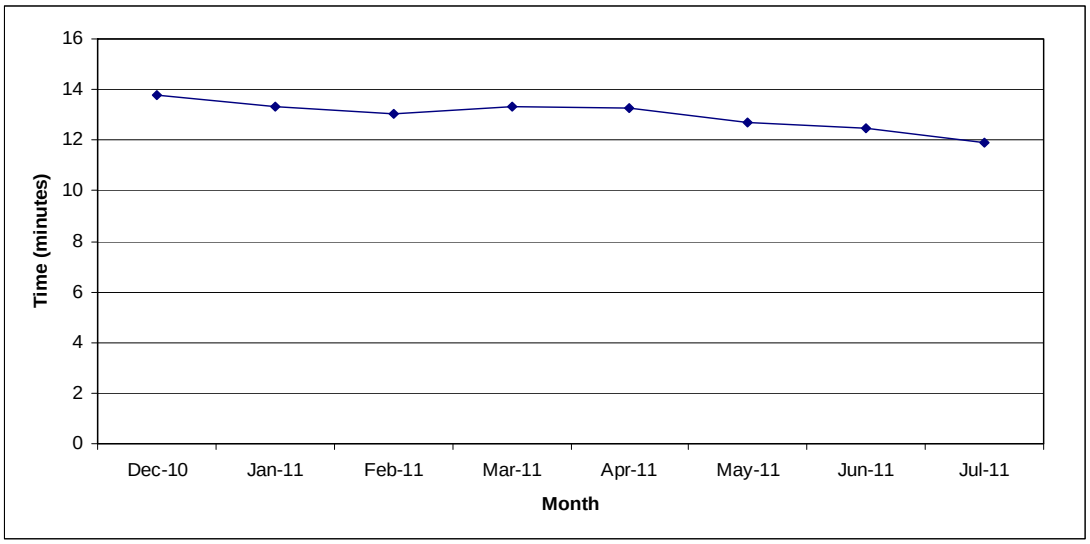


Episode length

Episode length is the average time of the total length of the user episode. This is from the moment the call is offered until the end of the episode when either the user hangs up following the initial call or, if there is a call back, when the call back is complete.

Figure 3.5 shows that average episode length has steadily declined in the Lincolnshire pilot, from 13 minutes 47 seconds in December 2010 to 11 minutes 53 seconds in July 2011.

Figure 3.5 - Average episode length for the Lincolnshire NHS111 pilot



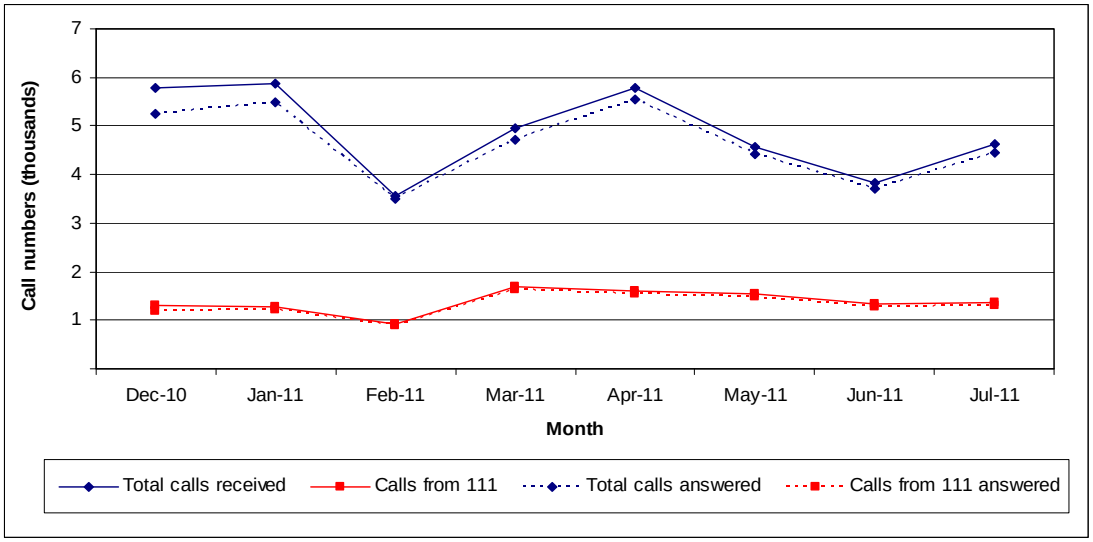
3.2.2 Nottingham

Call volumes:

Total calls received decreased between January and February 2011, before increasing in March and April 2011 following a NHS111 marketing campaign. There was also the Easter break and an extra bank holiday during April, which contributed to higher call volumes. Total calls received averaged around 4,500 over the last 4 months of the pilot. Calls answered have remained consistently high throughout the pilot. Except for the first 2 months (91-93 per cent), 95 per cent or higher of all received calls were answered. Unanswered calls are due to callers hanging up before the service has had a chance to answer the call.

The number of direct dialled calls, that is those using the NHS111 phone number rather than being switched through, has followed the same pattern as received calls. Total calls from 111 averaged around 1,500 calls over the last 4 months of the pilot. Answered calls from 111 have remained consistently high throughout the pilot. Except for the first 2 months (91-94 per cent), 96 per cent or higher of all 111 calls were answered.

Figure 3.6 - The number of calls received, calls from 111 and answered calls for the Nottingham NHS111 pilot



National Quality Requirements:

The Nottingham pilot has met NQR 8 for every month except the first (Table 3.2).

Table 3.2 - Performance data for the Nottingham NHS111 pilot

Date	Percentage calls answered within 60s of end of message (>95%)	Percentage calls abandoned 30s after the end of the message (<5%)	Number of calls rung back by a clinician[1]
Dec-10	87%	6%	208
Jan-11	96%	3%	77
Feb-11	100%	0%	54
Mar-11	98%	1%	85
Apr-11	97%	2%	89
May-11	97%	1%	68
Jun-11	98%	1%	62
Jul-11	98%	1%	102

Note:

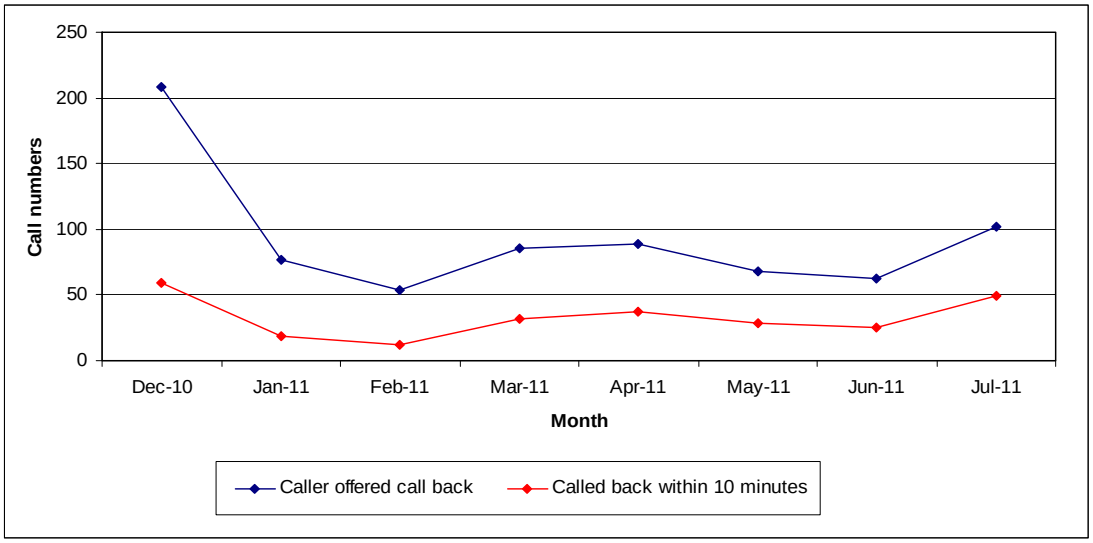
1: There is no NQR for call backs but this is part of the service specification for NHS111

There is no NQR for call backs but this is part of the service specification for NHS111. The NHS111 service design specifies that NHS111 should be delivered without call backs except in very exceptional circumstances, in which case the call should be queued and a call back made within 10 minutes.

The Nottingham service recorded 208 call backs in the first month of the pilot but for the rest of the pilot call backs have been around 50-100 per month (Table 3.2). In the first month of the pilot this equated to 4 per cent of calls answered and 18 per cent of calls transferred to a clinician. For the rest of the pilot the proportion of call backs decreased to between 1-2 per cent of calls answered and between 6-10 per cent of calls transferred to a clinician.

Figure 3.7 shows the number of call backs and the number of calls which have been called back within 10 minutes. For the first 4 months of the pilot the proportion of call backs made within 10 minutes was between 22-38 per cent. In the last four months this proportion increased to between 40-48 per cent.

Figure 3.7 - The number of calls where a call back has been offered and calls where they have been called back within 10 minutes

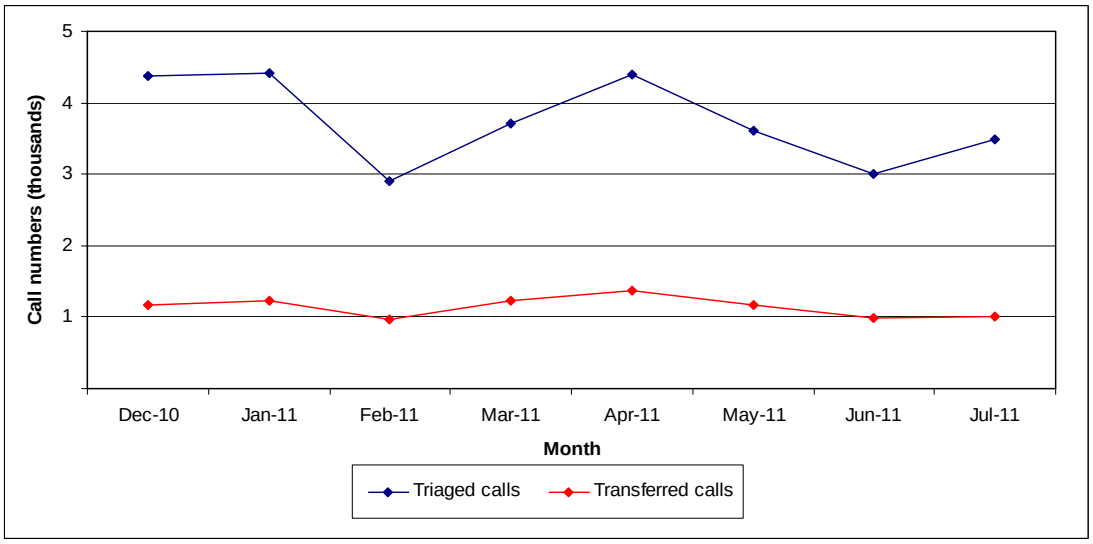


Triage and transfer rates:

The number of calls triaged follows a similar pattern to that found for received calls. Triaged call totals have averaged 3,500 through the pilot although they have decreased slightly. The percentage of answered calls that were triaged ranged between 78 and 83 per cent during the pilot.

The number of triaged calls transferred to a clinician also followed a similar pattern to the other call volume figures. The percentage of triaged calls transferred to a clinician ranged between 27-33 per cent (Figure 3.8)

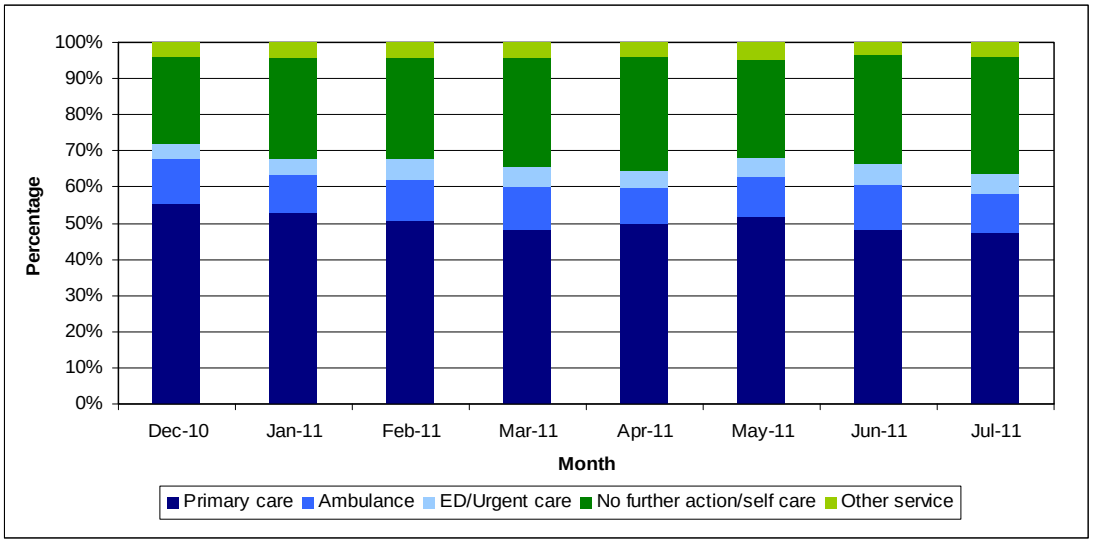
Figure 3.8 - The number of triaged calls and calls transferred to a clinician for the Nottingham NHS111 pilot



Dispositions

Figure 3.9 shows the spread of dispositions for triaged calls over each month of the pilot. The majority of calls were advised to contact (face to face) or speak to primary care, where primary care providers include: GPs, nurses, pharmacists and dentists. During the pilot the percentage of triaged calls referred to primary care decreased from 55 to 48 per cent. The percentage of triaged calls where an ambulance was called was between 10-12 per cent and triaged calls referred to ED/Urgent care remained between 4-6 per cent through the pilot. Triaged calls given self care advice or where no further action was required were between 24-32 per cent while calls referred to another service remained constant at between 3-5 per cent.

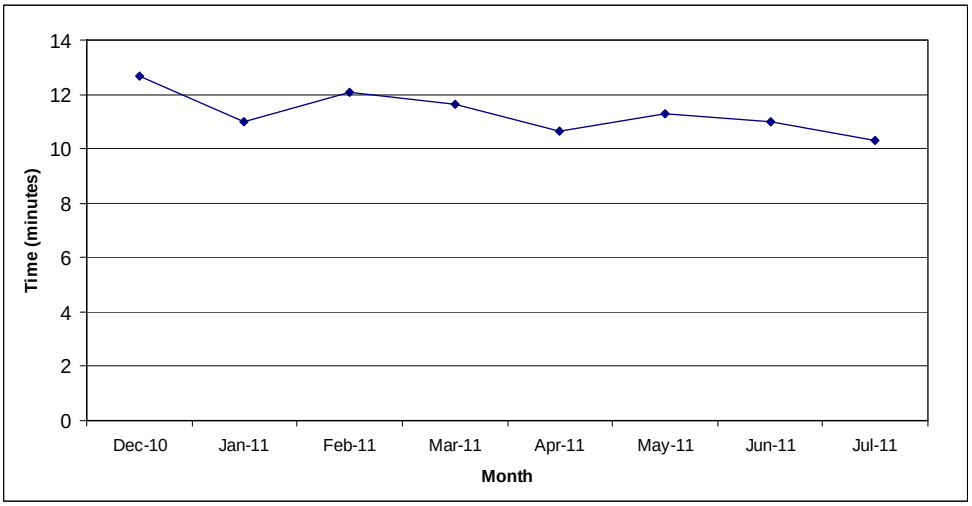
Figure 3.9 - Dispositions as a percentage of triaged calls for the Nottingham NHS111 pilot



Episode length

Episode length is the average time of the total length of the user episode. This is from the moment call is offered until the end of the episode when the user hangs up following the initial call or call back. Figure 3.10 shows that average episode length has steadily declined in the Nottingham pilot, from 12 minutes 40 seconds in December 2010 to 10 minutes 19 seconds in July 2011.

Figure 3.10 - Average episode length for the Nottingham NHS111 pilot



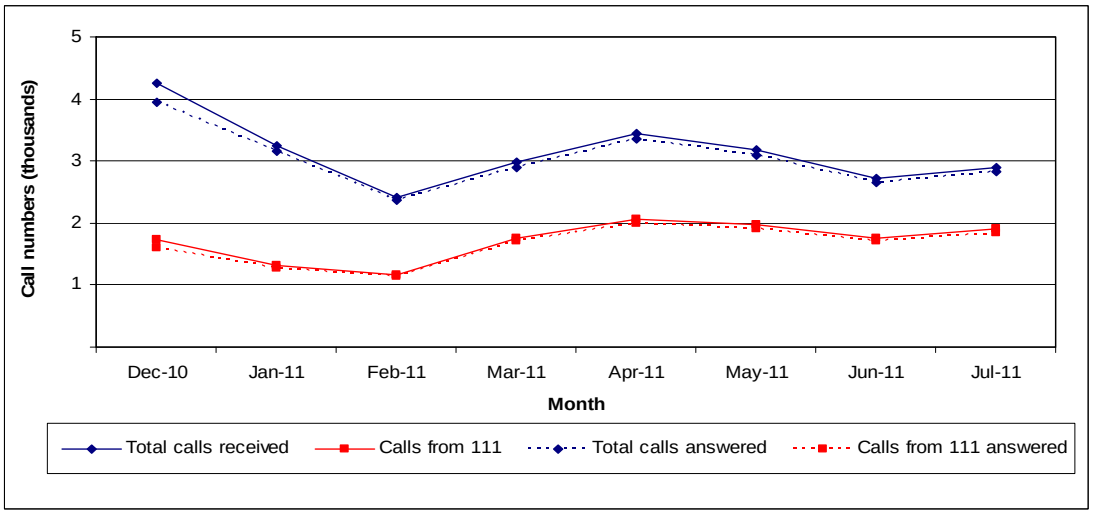
3.2.3. Luton

Call volumes:

Total calls received decreased over the first 3 months of the pilot, before increasing in March and April 2011 following a NHS111 marketing campaign. There was also the Easter break and an extra bank holiday during April, which contributed to higher call volumes. Total calls received averaged around 3,000 over the last 4 months of the pilot. Calls answered have remained consistently high throughout the pilot. Except for the first month (93 per cent), 97 per cent or higher of all received calls were answered. Unanswered calls are due to callers hanging up before the service has had a chance to answer the call.

The number of direct dialled calls, that is those using the NHS111 phone number rather than being switched through, has followed the same pattern as received calls. Total calls from 111 averaged around 2,000 calls over the last 4 months of the pilot. Answered calls from 111 also remained consistently high throughout the pilot. Except for the first month (93 per cent), 96 per cent or higher of all 111 calls were answered.

Figure 3.11 - The number of calls received, calls from 111 and answered calls for the Luton NHS111 pilot



National Quality Requirements:

The Luton pilot has met NQR 8 for every month except for the first month of the pilot (Table 3.3).

Table 3.3: Performance data for the Luton NHS111 pilot

Date	Percentage calls answered within 60s of end of message (>95%)	Percentage calls abandoned 30s after the end of the message (<5%)	Number of calls rung back by a clinician[1]
Dec-10	86%	5%	216
Jan-11	98%	1%	47
Feb-11	99%	0%	61
Mar-11	98%	1%	70
Apr-11	97%	1%	85
May-11	97%	1%	84
Jun-11	97%	1%	53
Jul-11	98%	1%	69

Note:

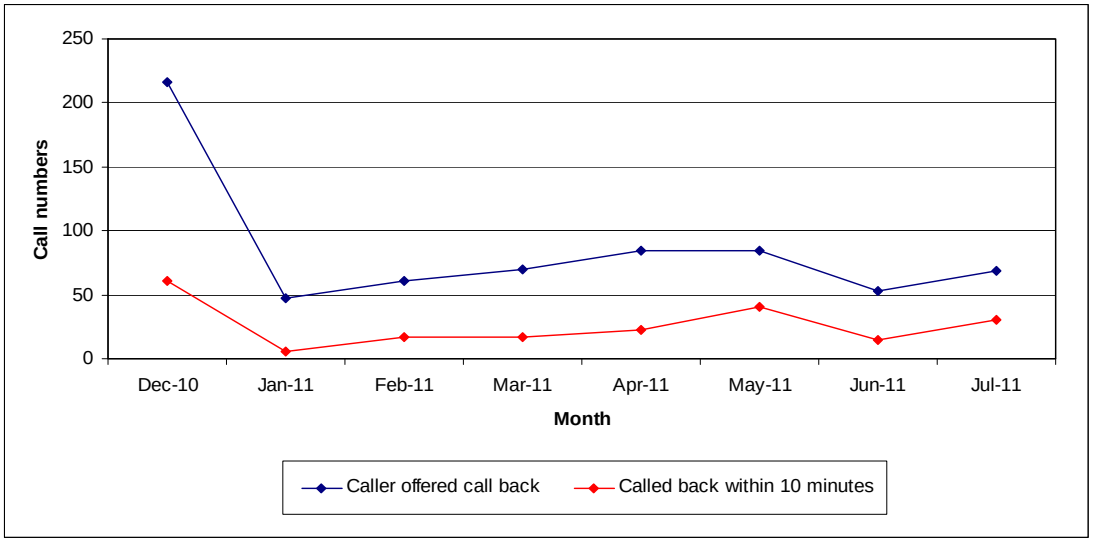
1: There is no NQR for call backs but this is part of the service specification for NHS111

There is no NQR for call backs but this is part of the service specification for NHS111. The NHS111 service design specifies that NHS111 should be delivered without call backs except in very exceptional circumstances, in which case the call should be queued and a call back made within 10 minutes.

The Luton service recorded 216 call backs in the first month of the pilot but during the subsequent 7 months call backs have been 40-90 per month (Table 3.3). In the first month of the pilot this equated to 5 per cent of calls answered and 21 per cent of calls transferred to a clinician. For the rest of the pilot the proportion of call backs decreased to between 1-3 per cent of calls answered and between 5-9 per cent of calls transferred to a clinician.

Figure 3.12 shows the number of call backs and the number of calls which have been called back within 10 minutes. For the first 5 months of the pilot the proportion of call backs made within 10 minutes was between 13 and 28 per cent. In the last four months this proportion increased to between 28 and 49 per cent.

Figure 3.12 - The number of calls where a call back has been offered and calls where they have been called back within 10 minutes

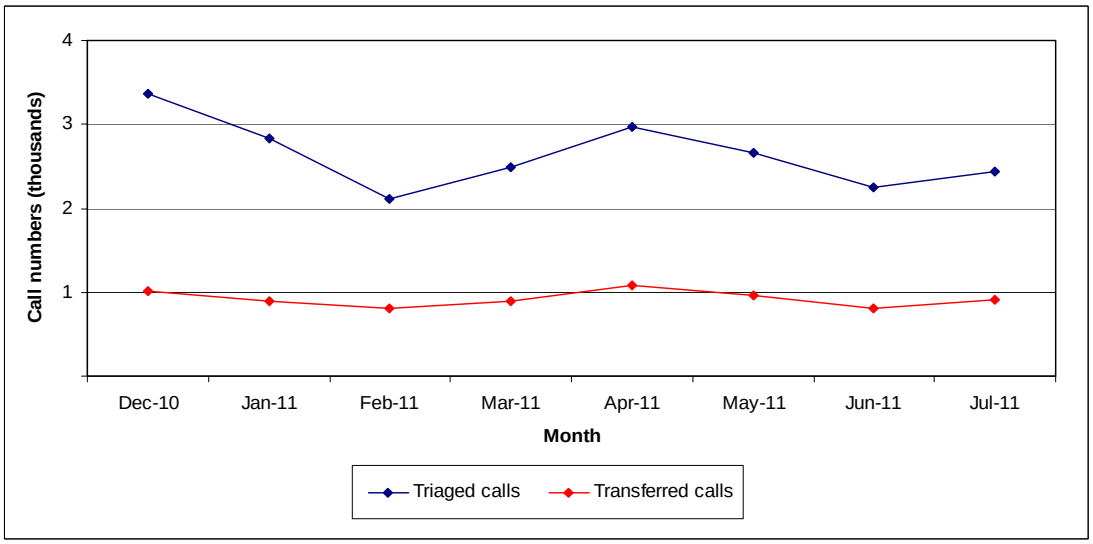


Triage and transfer rates:

The number of calls triaged follows a similar pattern to that found for received calls (Figure 3.13). Triaged calls decreased at the beginning of the pilot and then increased, before levelling off over the latest 4 months of the pilot. The percentage of answered calls that were triaged ranged between 85 and 90 per cent during the pilot, over the last 3 months of the pilot this has stabilised at around 86 per cent.

The number of triaged calls transferred to a clinician also followed a similar pattern to the other call volume figures. The percentage of triaged calls transferred to a clinician increased from the beginning of the pilot from 30 per cent in December 2010 to 37 per cent in July 2011 (Figure 3.13)

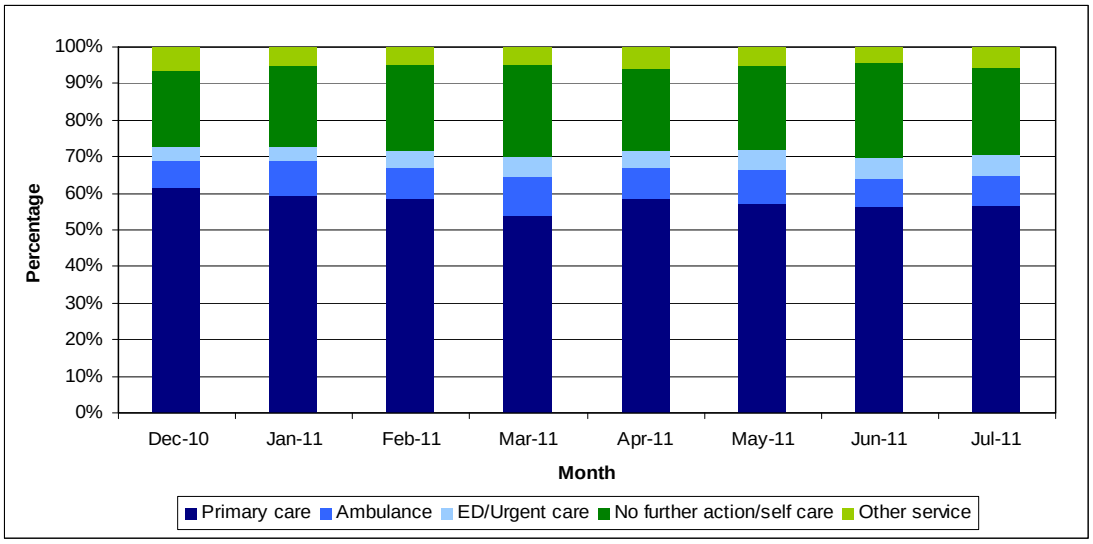
Figure 3.13 - The number of triaged calls and calls transferred to a clinician for the Luton NHS111 pilot



Dispositions

Figure 3.14 shows the spread of dispositions for triaged calls for each month of the pilot. The majority of calls were advised to contact (face to face) or speak to primary care, where primary care providers include: GPs, nurses, pharmacists and dentists. During the pilot the percentage of triaged calls referred to primary care decreased from 61 to 57 per cent. The percentage of triaged calls where an ambulance was called was between 8-10 per cent. Triaged calls referred to ED/Urgent care remained between 4-6 per cent throughout the pilot and triaged calls given self care advice or where no further action was required were between 21-26 per cent. Calls referred to another service remained constant at between 4-6 per cent.

Figure 3.14 - Dispositions as a percentage of triaged calls for the Luton NHS111 pilot

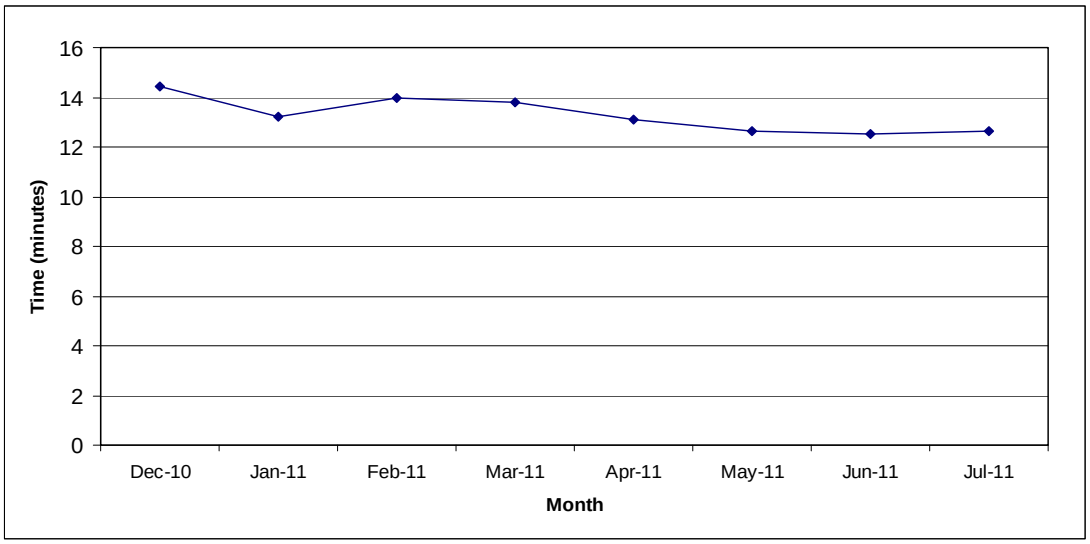


Episode length

Episode length is the average time of the total length of the user episode. This is from the moment call is offered until the end of the episode when the user hangs up following the initial call or call back.

Figure 3.15 shows that average episode length has steadily declined in the Luton pilot, from 14 minutes 26 seconds in December 2010 to 12 minutes 40 seconds in July 2011.

Figure 3.15 - Average episode length for the Luton NHS111 pilot



3.2.4 County Durham and Darlington

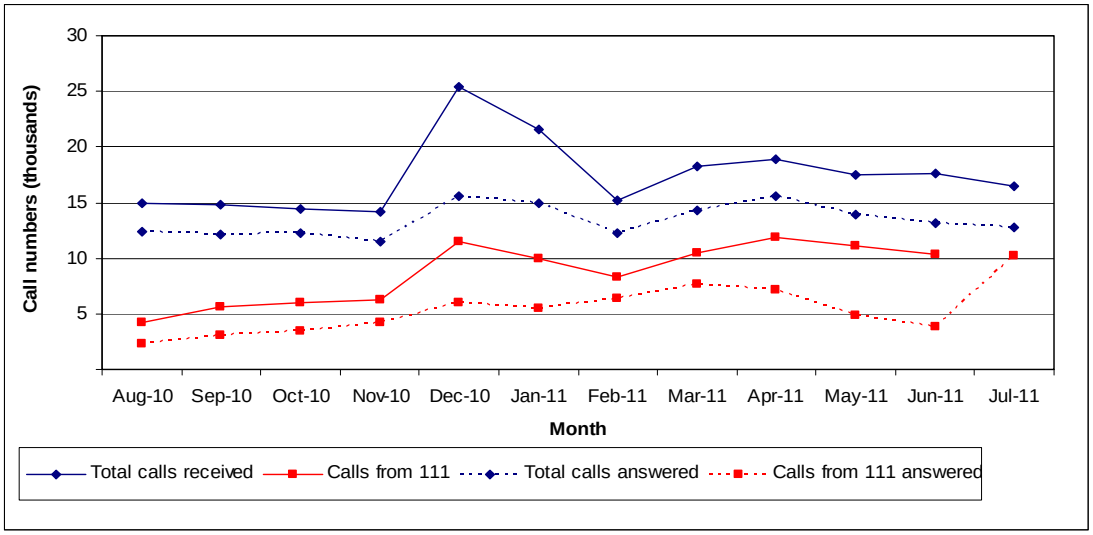
Call volumes:

Total calls received have increased slightly during the 12 months of the pilot from around 15,000 calls per month in August 2010 to around 16,500 calls in July 2011. There was a peak in calls received in December 2010 and January 2011 this was due to increased demand during the winter holiday period (Figure 3.16).

Calls answered have remained fairly constant throughout the pilot period at around 80 per cent of received calls. The only exception to this was during the peak in received calls in December 2010 and January 2011. The difference between total calls received and calls answered can be explained by people being switched from their GP first thing in the morning and at the end of the day and hanging up during the message when they realise that they are not going through to their GP surgery.

The number of direct dialled calls, that is those using the NHS111 phone number rather than being switched through, has increased steadily during the pilot. In the first months of the pilot there were between 4,000 - 6,000 calls per month, this has increased to over 10,000 direct calls from 111 over the last 5 months of the pilot.

Figure 3.16: The calls received, answered and triaged for the County Durham and Darlington NHS111 pilot



National Quality Requirements:

The CDD pilot has met NQR 8 for every month except for the months over the winter holiday period, December and January (Table 3.4).

Table 3.4 - Performance data for the County Durham and Darlington NHS111 pilot

Date	Percentage calls answered within 60s of end of message (>95%)	Percentage calls abandoned 30s after the end of the message (<5%)	Number of calls rung back by a clinician[1]
Aug-10	97%	1%	384
Sep-10	98%	1%	201
Oct-10	98%	1%	261
Nov-10	97%	1%	239
Dec-10	85%	17%	358
Jan-11	94%	5%	327
Feb-11	98%	1%	395
Mar-11	97%	1%	325
Apr-11	98%	0%	1020
May-11	98%	0%	254
Jun-11	98%	1%	47
Jul-11	98%	1%	78

Note:

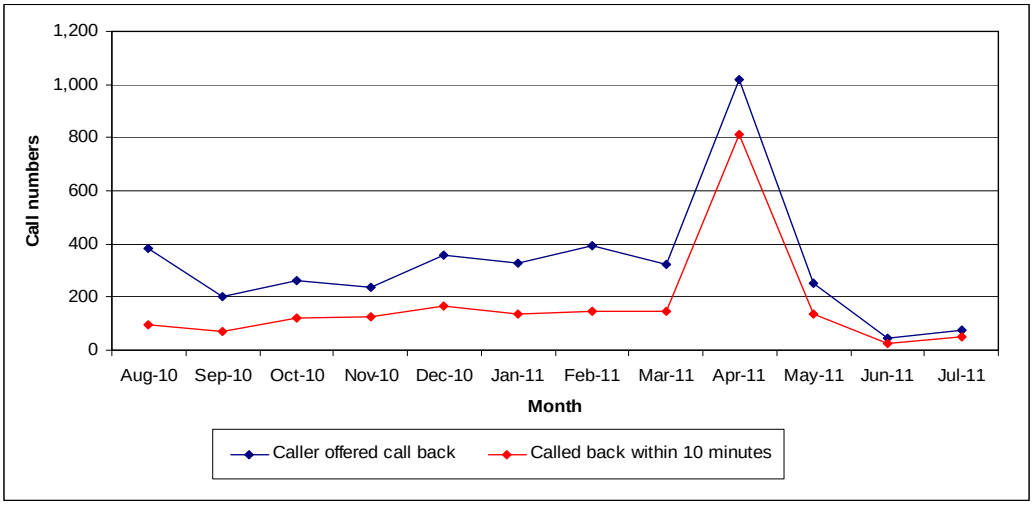
1: There is no NQR for call backs but this is part of the service specification for NHS111

There is no NQR for call backs but this is part of the service specification for NHS111. The NHS111 service design specifies that NHS111 should be delivered without call backs except in very exceptional circumstances, in which case the call should be queued and a call back made within 10 minutes.

The CDD service has been operating with between 200-400 call backs per month. This is equivalent to only 2-3 per cent of calls answered but 15-30 per cent of calls transferred for clinical advice. An exception to this occurred in April 2011 when there was over 1000 call backs, this was due to a telephony issue. In June and July 2011 the number of call backs

decreased to below 100, or less than 1 per cent of calls answered and 4 per cent of calls transferred for clinical advice (Table 3.4). Figure 3.17 also shows the closing gap between offered call backs and those called back within 10 minutes.

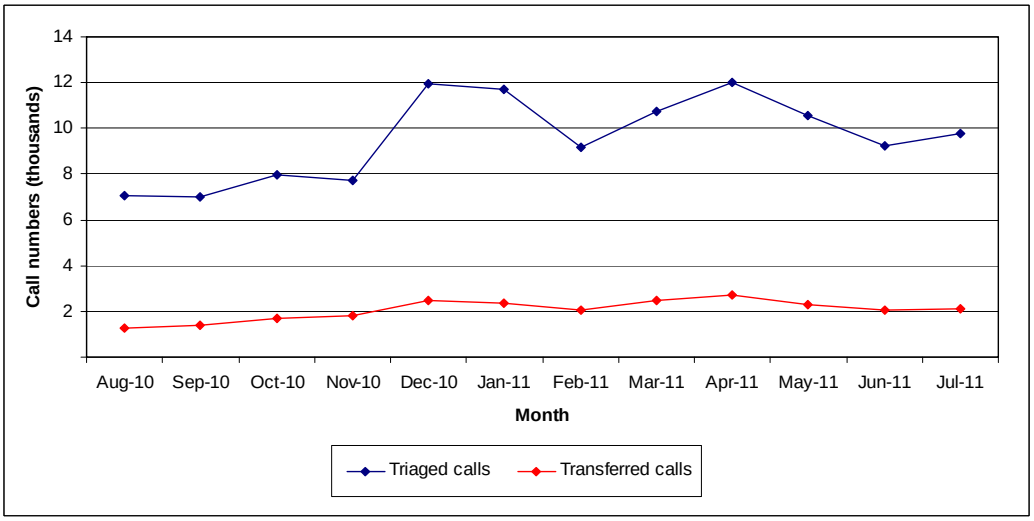
Figure 3.17 - The number of calls where a call back has been offered and calls where they have been called back within 10 minutes



Triage and transfer rates:

The number of calls triaged grew slightly during the early stages of the pilot but remained below 8,000 calls. In December 2010 and January 2011 the number of triaged calls increased to almost 12,000 and since then has remained between 9,000 - 12,000 calls. The number of calls transferred to a clinician increased over the first 4 months of the pilot and in December 2010 increased to over 2,000 calls. Calls transferred to a clinician varied between 18-24 per cent of the total calls triaged over the first 6 months and over the last 6 months the percentage of triaged calls transferred to a clinician has steadied at around 22 per cent. The transfer rate of calls from call handler to clinician appears to be lower in the CDD pilot than the other three sites. The reasons behind this will be explored more fully in the final report.

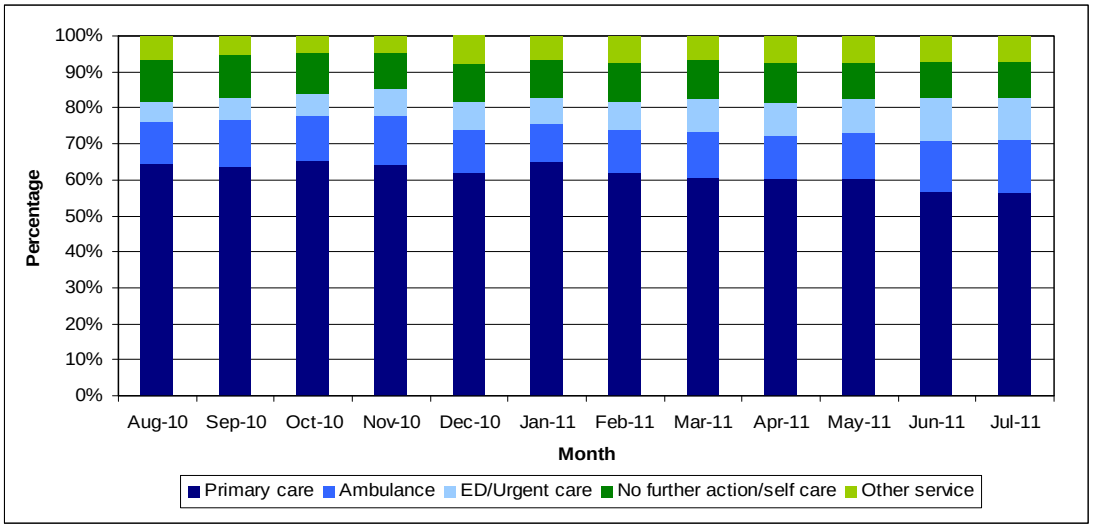
Figure 3.18: The number of triaged calls and calls transferred to a clinician



Dispositions

Figure 3.19 shows the spread of dispositions for triaged calls over each month of the pilot. The majority of calls were advised to contact (face to face) or speak to primary care, where primary care providers include: GPs, nurses, pharmacists and dentists. During the pilot the percentage of triaged calls referred to primary care have decreased from 64 to 56 per cent. The percentage of triaged calls where an ambulance is called remained between 10-15 per cent throughout the pilot, whilst those referred to ED/Urgent care increased from 5 to 12 percent. Triaged calls given self care advice or where no further action was required remained constant at around 10-12 per cent and those referred to another service also remained constant at between 5-8 per cent.

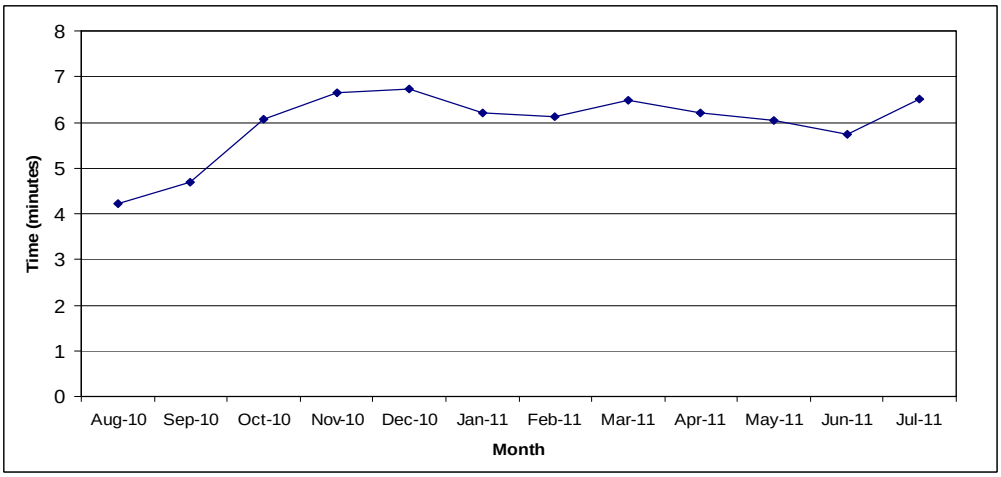
Figure 3.19 - Dispositions as a percentage of triaged calls



Episode length

Episode length is the average time of the total length of the user episode. This is from the moment a call is offered until the end of the episode when the user hangs up following the initial call or call back. Figure 3.20 shows that average episode length increased over the first 5 months of the pilot before beginning to level off at between 6 to 7 minutes.

Figure 3.20 - Average episode length



3.3 Factors influencing NHS 111 cost per call

There will be a full economic evaluation of the cost consequences of providing NHS 111 included in the final report. Here we provide a brief summary of the main issues that need to be considered in relation to the early analysis of NHS 111 call activity.

Four major factors impact on cost per call, including: call demand profile, staff costs and overheads, the number of providers and the number of calls.

The demand profile of a call centre greatly affects its efficiency. If the demand is smooth and predictable then staff shifts can be aligned with demand and resource waste minimised. However, NHS 111 has peaks in demand that last for 2-4 hours. These are typically on Monday, Saturday and Sunday mornings with shorter peaks on weekday evenings. To provide enough staff to deliver a good service during these peaks there is a loss of utility either side of the peak. The size and nature of these peaks and how staffing is managed, will therefore affect cost per call.

The Personal Social Services Research Unit (PSSRU) gives the basic cost of a 6-8 minute phone call as £9 for a nurse and £17 for a GP and we have estimated the call handler cost at £4. Set up costs and ongoing overheads may include but not be limited to estates, management, IT, telephony and training. While some of these costs might proportionately decrease with higher call volumes (e.g. IT, management and telephony) others will remain proportional to the number of staff employed (e.g. estates and training). Considering both of these factors the range for the cost per call used in the impact assessment was £8-12.

The number of providers will impact upon the economies of scale and the effectiveness of the service in responding to periods of low/high demand and staffing. As a result, the number of providers and the call volumes they receive will also have an effect on cost per call.

A more detailed cost analysis will be included in the final report.

3.4 Summary of findings

Differences in demography and local health service usage make comparisons between the different pilot site models difficult, but we have attempted to draw out key similarities and differences in design and the impact on call volume, transfer rate and disposition reached on triaged calls.

Design and call volume

One of the factors that influences call volume is the level of automatic diversion of calls through to the service. In County Durham and Darlington the previous Single Point of Access number, which replaced GP OOH triage and provided a similar 24/7 service to NHS111 is switched through to NHS111. In addition, some GP practices switch their phones through out of hours and the delay between patients starting to call their GPs and GPs un-switching their phones leads to a peak demand profile and a higher short call rate than the other sites. Both Luton and Nottingham City have their GP OOH triage routed through the service,

where as Lincolnshire only had direct dials to NHS111 until April 2011 when a message was added to GP OOH and GP phones asking the caller to hang up and ring NHS111.
In the initial stages of the pilots there has been a direct link between design and call volume with County Durham and Darlington having an annualised percentage of population calling of 32%, Nottingham City of 18% and Luton of 18% in by July 2011. In Lincolnshire this rate has increased from 8% in March to 19% in July.

Transfer Rate

There is a marked difference between the two providers in transfer rate (the proportion of answered calls that go through to a clinician), with NHS Direct provided pilots having a transfer rate between 30-35% and NEAS, who provide the CD&D pilot, having a transfer rate of around 22%. Operational work is beginning to understand whether this is a reflection of the difference in demography or other factors such as familiarity with the NHS Pathways system or organisational culture. NHS Direct provided sites have higher self-care rates and work will be done for the final report as to possible linkages between the two factors

Dispositions

Dispositions discussed here are the NHS Pathways disposition and not the service recommended to be accessed. The local directory of service may well be able to allocate patients to a less acute service that meets the clinical needs of the patient. For example, in CD&D Urgent Care Centres (UCC) handle a significant proportion of emergency department (ED) referrals. All sites have similar referral rates to primary care based services of between 45% and 55%. Lincolnshire, Nottingham City and Luton have similar rates of referral to ED of between 4% and 8%. County Durham and Darlington refer around 12% to ED but a significant proportion of these are directed to UCCs. Refer to ambulance rates vary from 8% to 15%, with Luton being lowest and Lincolnshire the highest.

Episode Length

Due to differences in the time stamps supplied by the providers it is not currently possible to compare episode lengths between pilot sites. We are working closely with services to improve the proximity of time stamps used in these calculations and future publications of the MDS will reflect this.

4. Analysing Whole System Impact

4.1 Introduction

The purpose of this section is to begin the investigation of the whole system impact observable following the introduction of the NHS111 service. The data discussed cover a baseline period and then a change period up to March 2011 for both the pilot sites and their controls. Details of control sites are given in the first interim report. The change period has been limited to March 2011 in order to align with the publication of the minimum dataset and to take account of the time lag in supply of finalised data. The remainder of this section outlines the methodology used, describes the results for each pilot in detail and then draws some general conclusions.

4.2 Methods

The methodology employed to analyse the impact of the introduction of NHS111 on the wider urgent care system is that of basic time series analysis. We describe primary analysis, where we investigate the impact taking the baseline data in its raw form, and secondary analysis, where we make some allowance for known changes in the baseline period in addition to the introduction of NHS111.

Primary Analysis

The first stage in the primary analysis was that of indexing the data that is, dividing each observation in a timeseries by its first value and multiplying by 100. This has the effect of mapping both the pilot site's activity and the control site's activity onto the same scale and so making comparisons between the two sites visually easier.

The second step was to adjust for seasonality that is, allowing for there to be differences in activity across a year. In order to make the adjustment we grouped months in to six groups effectively controlling for winter pressures, number of days and the number of bank holidays. Table 4.1 shows the months' allocated to each group.

Table 4.1 - Months grouped for seasonality

Month	Group
January February	1
March April	2
May June	3
July August	4
September October	5
November December	6

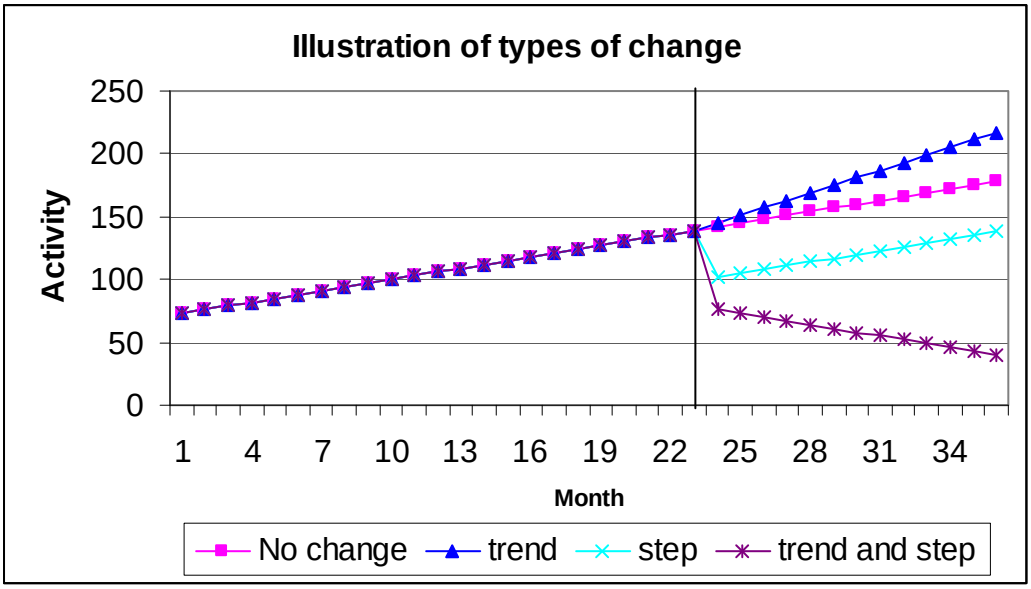
The next step was to build a model using multiple linear regression, assuming no difference in trend or effect for introducing NHS111 between pilot and control, with the raw activity figures as the dependant variable and variables {pilot/control, seasonality, trend, NHS111 trend, NHS111 step change, constant} as predictors. Such a model assumes a linear fit with the data, which may not be the best fit.

There are three basic tests of the model:

1) whether the individual parameters are significant, which in turn indicates the importance of the variables in the model
2) whether it has a good correlation with the data, which is denoted by the R^2 value and varies between 0 and 1, with 1 being the best
3) whether it has significantly less error in its predictions than would be expected, the F test

In order to test for the impact of the introduction of NHS111 three further models were built: a model allowing a change in trend in the pilot or control site after the introduction of NHS111, a model allowing a step change in the pilot or control site after the introduction of NHS111 and a combined model which allows both a step change and a change in trend. A step change is an abrupt rather than linear change in the mean level of the time series following the introduction of NHS111.
Figure 4.1 illustrates the three different change models relative to the no change model.

Figure 4.1 - An illustration of a change in trend, a step change and a combined change alongside the no change scenario



The models investigating whether the impact of the introduction of NHS111 was to cause a step change or change in trend in activity were tested relative to the basic model, which assumed there was no difference between the pilot and control sites. There were four tests:

1) Is there a visual difference on inspection of indexed data and does this make sense with the calculated difference of before and after comparisons
2) Is the model more highly correlated with the data (increased R^2) than the model built assuming no impact
3) Is the change variable significant in itself and what direction is it in ($p<0.05$, positive or negative). Does it imply growth or decline?
4) Does the model have less error (a significant F statistic)?

The same tests were applied to the combined model but it was compared to the models of individual change rather than the no change model.

Secondary Analysis

Where there are known changes during the baseline, secondary analysis has been conducted to control for these effects, principally to model whether these known changes are a better explanation of the observed change than the impact of NHS111. There are two scenarios investigated using this analysis: that the running of a *Choose Well* campaign caused a change in trend in the Urgent and Emergency Care system from April 2010 in Nottingham City; that the introduction of the *Single Point of Access* caused a temporary step change in ambulance activity in County Durham and Darlington between October 2009 and February 2010.

4.3 Results

4.3.1 Lincolnshire

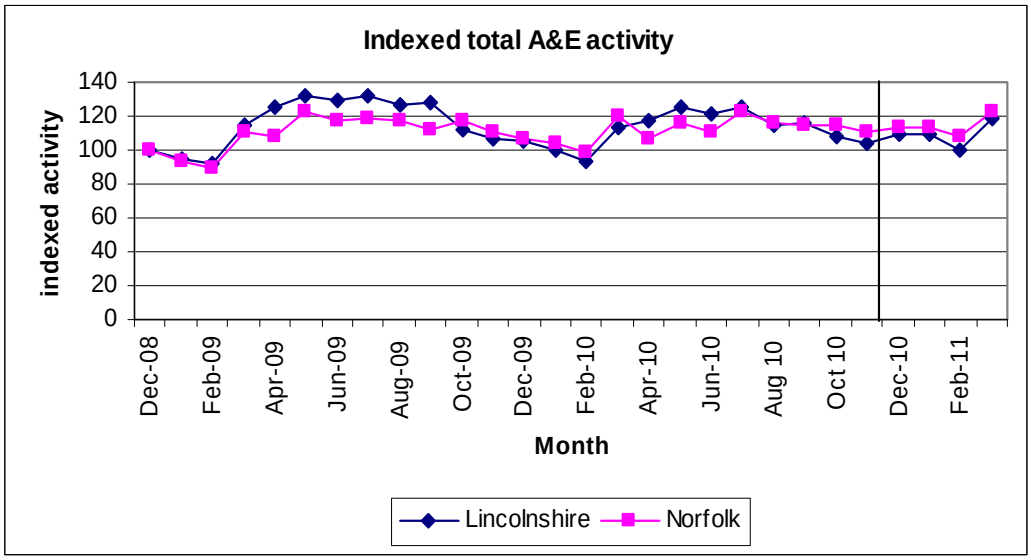
The following whole system data are available for both Lincolnshire and its control site (Norfolk PCT): total ED activity (Type 1 &2)[1]; total calls to the ambulance service; Category C calls to the ambulance service; total ambulance incidents; Category C ambulance incidents and calls to NHS Direct 084 service.
The following data have not been considered, either due to data availability or quality issues: ED activity minor attendances (Type 1&2); ED activity Type 3; emergency admissions and GP OOH.
The timeseries analyses contain only 4 months data post change and so the results reported must be treated with caution, as there may be insufficient data to model the effects of introducing NHS111 effectively.

[1] Type 1 ED is a consultant led 24 hour service with full resuscitation facilities and designated accommodation for the reception of accident and emergency patients.

Type 2 ED is a consultant led single specialty accident and emergency service (e.g. ophthalmology, dental) with designated accommodation for the reception of patients

Figure 4.2 shows indexed total attendances at type 1 and 2 EDs for patients registered at GP practices in Lincolnshire and Norfolk.

Figure 4.2 - Indexed total attendances at Type 1 and 2 ED for Lincolnshire and Norfolk.



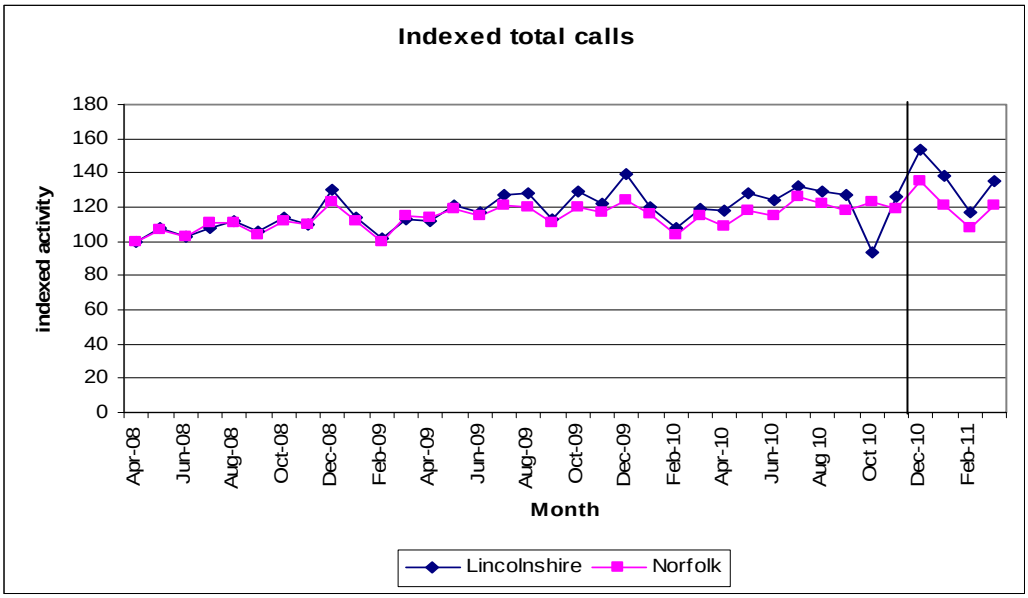
There has been a net drop of 1% in attendances (6% growth relative to 7% growth in control site). Table 4.2 gives the modelling results for total attendances at type 1 and 2 EDs. This shows that the most likely explanation of this change is a step change in attendance relative to the control site. The modelling process estimates this at 900 ± 440 attendances.

Table 4.2 - Modelling results for total attendances at Type 1 and 2 ED for Lincolnshire and Norfolk

Model	R^2	Variable significant	F Test significant	Model rejected
Null	0.92			Yes
Trend	0.92	No	No	Yes
Step	0.93	Yes	Yes	No
Trend and step	0.93	No	No	Yes

Figure 4.3 shows indexed total calls to the ambulance service for incidents occurring in Lincolnshire and Norfolk.

Figure 4.3 - Indexed total calls to the ambulance service for incidents occurring in Lincolnshire and Norfolk



There has been a net rise of 6% in calls (12% growth relative to 6% growth in control site). Table 4.3 shows the modelling results for this service and it can be seen that there is no significant difference from the null hypothesis.

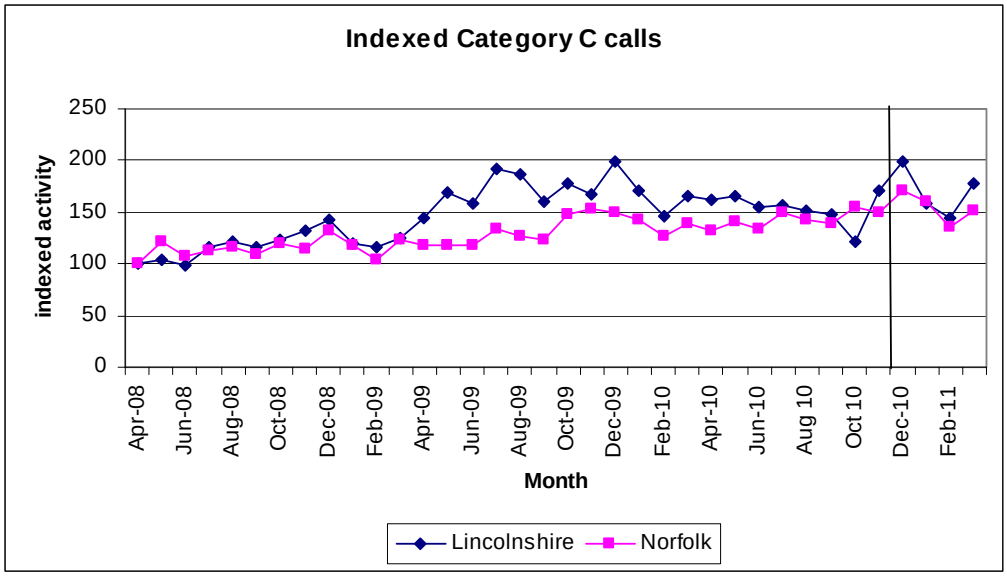
Table 4.3 - Modelling results for total calls to the ambulance service for incidents occurring in Lincolnshire and Norfolk

Model	R^2	Variable significant	F Test significant	Model rejected
Null	0.82			No
Trend	0.83	No	No	Yes
Step	0.83	No	No	Yes
Trend and step	0.83	No	No	Yes

There is insufficient evidence to attribute the observed change to the introduction of NHS111. The observed net change may be due to the change in trend observable in Figure 4.3 (from July 2009) that predates the introduction of NHS111, however there is no cause known at this time so secondary analysis has not been completed.

Figure 4.4 shows indexed category C calls to the ambulance service for incidents occurring in Lincolnshire and Norfolk.

Figure 4.4 - Indexed Category C calls to the ambulance service for incidents occurring in Lincolnshire and Norfolk



There has been a net drop of 10% in category C calls (1% drop relative to 9% growth in control site). Table 4.4 shows the results from the modelling process.

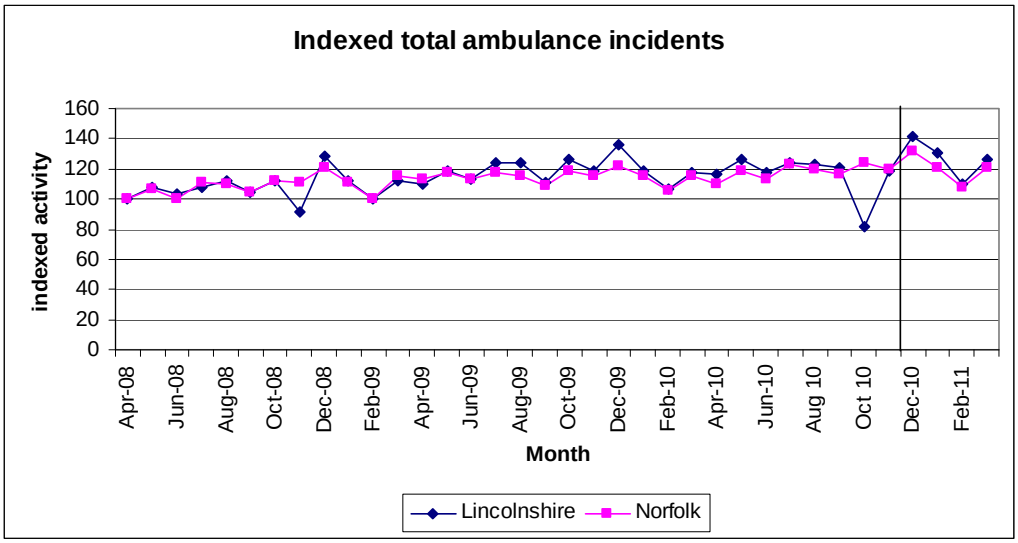
Table 4.4 - Modelling results for Category C calls to the ambulance service for incidents occurring in Lincolnshire and Norfolk

Model	R^2	Variable significant	F Test significant	Model rejected
Null	0.94			Yes
Trend	0.94	No	Yes	Yes
Step	0.94	Yes	Yes	No
Trend and step	0.94	No	Yes	Yes

The modelling indicates that there has been a fall in Category C calls attributable to the introduction of NHS111, which is estimated as a step change of 300 ± 140 calls. The observed net change may be due to a period of increased activity observable in Figure 24 (April 09 – June 10) that predates the introduction of NHS111, however there is no cause known which may explain the change at this time so secondary analysis has not been completed.

Figure 4.5 shows indexed total ambulance incidents occurring in Lincolnshire and Norfolk.

Figure 4.5 - Indexed total ambulance incidents occurring in Lincolnshire and Norfolk



There has been a net rise of 1% in incidents (6% growth relative to 5% growth in control site). Table 4.5 shows the modelling results and it can be seen that there is no significant impact discernable at this time.

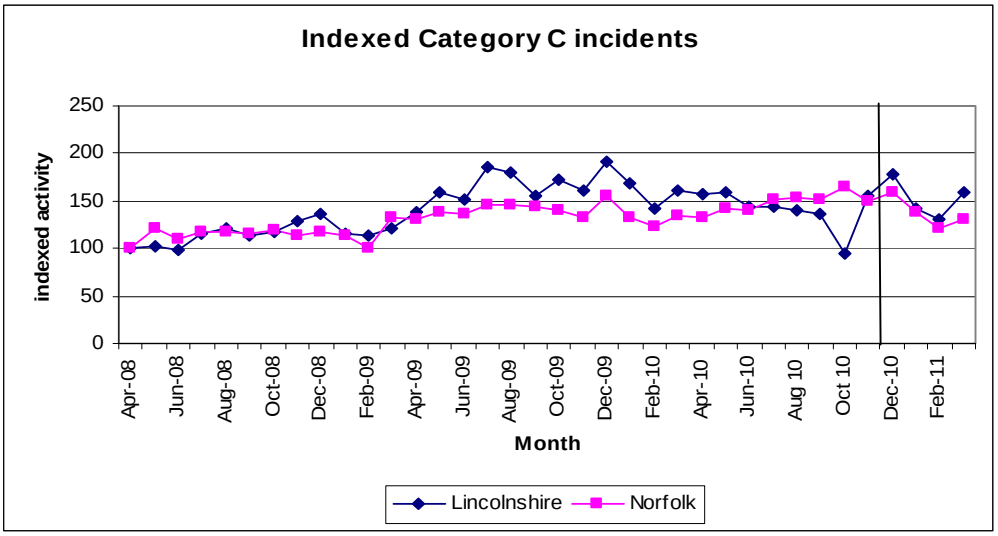
Table 4.5 - Modelling results for total ambulance incidents occurring in Lincolnshire and Norfolk

Model	R^2	Variable significant	F Test significant	Model rejected
Null	0.55			No
Trend	0.56	No	No	Yes
Step	0.56	No	No	Yes
Trend and step	0.56	No	No	Yes

The modelling indicates that there is insufficient evidence to attribute the observed change to the introduction of NHS111.

Figure 4.6 shows indexed Category C ambulance incidents occurring in Lincolnshire and Norfolk.

Figure 4.6 - Indexed Category C ambulance incidents occurring in Lincolnshire and Norfolk



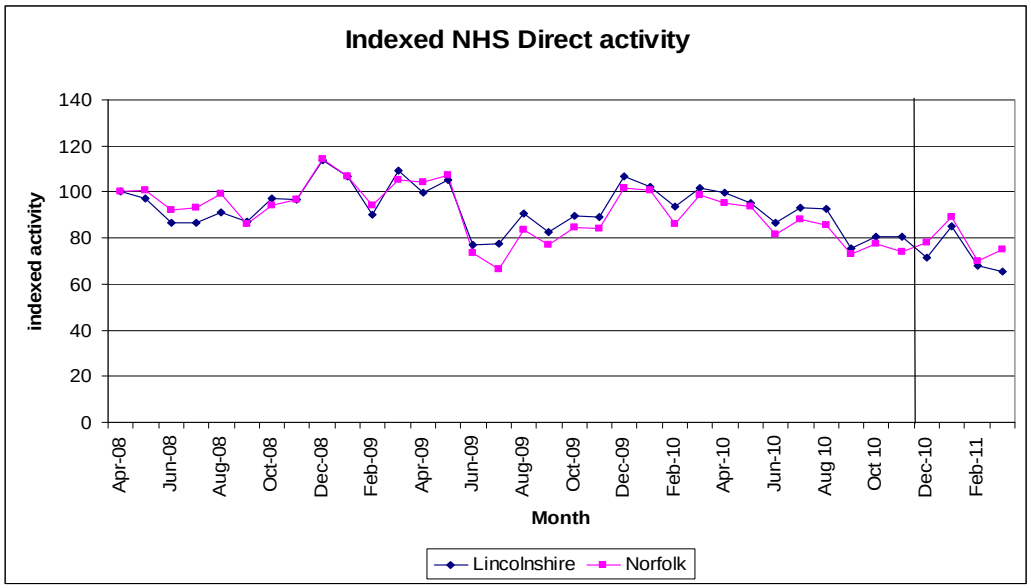
There has been a net drop of 9% in incidents (1% drop relative to 8% growth in control site). Table 4.6 shows the modelling results and it can be seen that there is insufficient evidence to attribute the observed change to the introduction of NHS111.

Table 4.6- Modelling results for Category C ambulance incidents occurring in Lincolnshire and Norfolk

Model	R^2	Variable significant	F Test significant	Model rejected
Null	0.55			No
Trend	0.56	No	No	Yes
Step	0.56	No	No	Yes
Trend and step	0.56	No	No	Yes

Figure 4.7 shows indexed calls to the NHS Direct 084 service for Lincolnshire and Norfolk.

Figure 4.7 - Indexed NHS Direct calls to 084 service for Lincolnshire and Norfolk



Between December 10 and March 11, calls to NHS Direct in Lincolnshire have dropped by 28% compared to 19% in the control site giving a net change of -9% compared to the same period in the previous year. Table 4.7 shows the modelling results and shows that the modelling indicates that there is insufficient evidence to attribute the observed change to the introduction of NHS111.

Table 4.7 - Modelling results for 084 calls occurring in Lincolnshire and Norfolk

Model	R^2	Variable significant	F Test significant	Model rejected
Null	0.77			No
Trend	0.77	No	No	Yes
Step	0.77	No	No	Yes
Trend and step	0.77	No	No	Yes

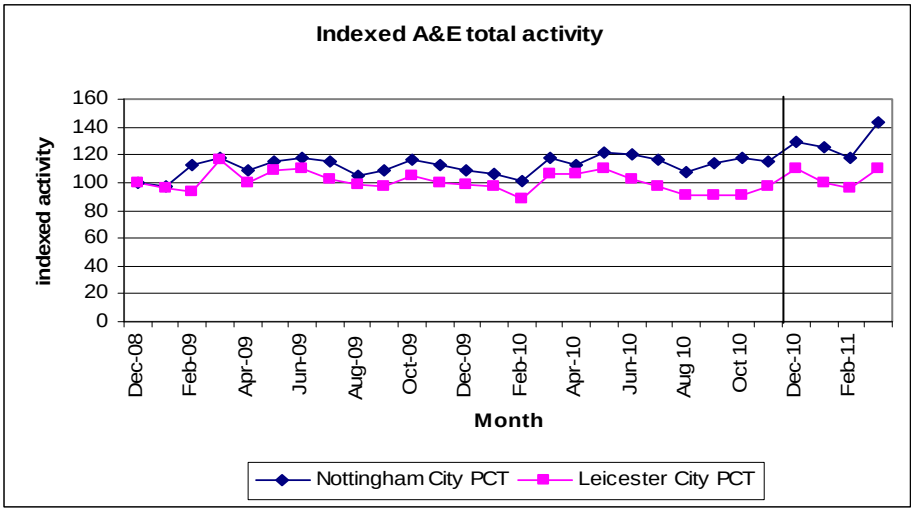
4.3.2. Nottingham City

The following whole system data are available for both Nottingham City and its control site (Leicester City): total ED attendances (Type 1 &2); minor attendances at ED (Type 1 & 2); total calls to the ambulance service; Category C calls to the ambulance service; total ambulance incidents; Category C ambulance incidents; calls to NHS Direct 084 service and ED type 3 activity.

The following data have not been considered, due to either data availability or quality issues: emergency admissions and GP OOH.

The timeseries analyses contain only 4 months data post change and so the results reported must be treated with caution, as there may be insufficient data to model the effects of introducing NHS111 effectively.
Figure 4.8 shows indexed total attendances at ED (Type 1 and 2) for patients registered in Nottingham City and Leicester City PCTs.

Figure 4.8 - Indexed total attendances at ED (Type 1 and 2) for patients registered in Nottingham City and Leicester City



Between December 10 and March 11 attendances in Nottingham City have risen by 19% compared to 7% in the control site giving a net change of 12% compared to the same period in the previous year. Table 4.8 shows the results for the modelling and despite an improvement in fit and the step and trend variables indicating growth and being significant, the F-tests for the models were not significant and therefore there is insufficient evidence to link the observed change to the introduction of NHS111 at this time.

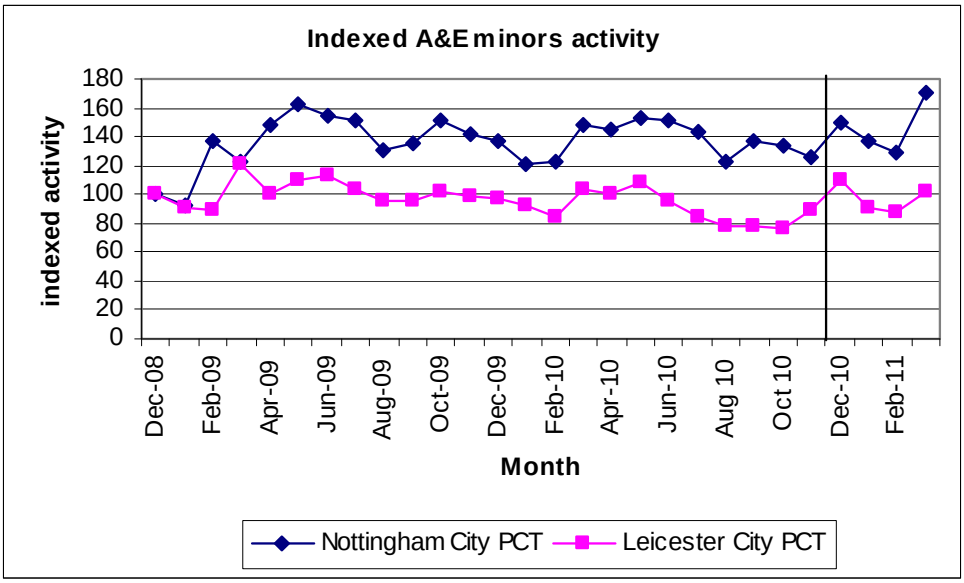
Table 4.8 - Modelling results for indexed total attendances at ED (Type 1 and 2) for patients registered in Nottingham City and Leicester City PCTs

Model	R^2	Variable significant	F Test significant	Model rejected
Null	0.70			No
Trend	0.75	Yes	No	Yes
Step	0.76	Yes	No	Yes
Trend and step	0.77	Yes	No	Yes

Secondary analysis investigating a possible impact of a *Choose Well* campaign run in April 2010 showed that the model incorporating a difference in trend from this date had the best fit (R^2=0.81) and the variable added was significant ($p<0.01$). However, the F test for the model vs. the null hypothesis was not significant.

Given the modelling results, the most likely explanation for the observed change is a difference in trend from April 2010 and not the introduction of NHS111. However, this will be investigated further when more data is available.
Figure 4.9 shows indexed minor attendances at ED (Type 1 and 2) for patients registered in Nottingham City and Leicester City PCTs.

Figure 4.9 - Indexed minor attendances at ED (Type 1 and 2) for patients registered in Nottingham City and Leicester City



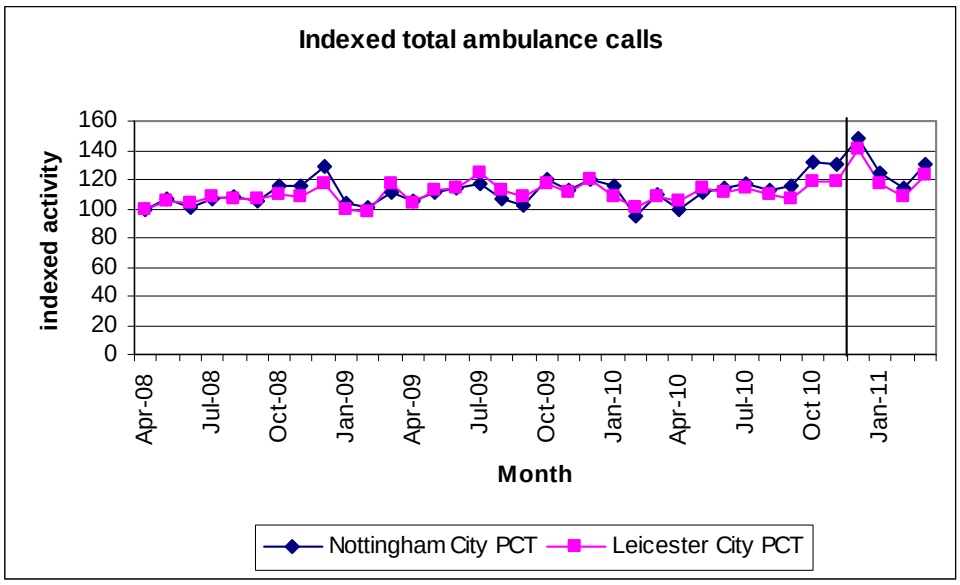
Between December 10 and March 11 attendances in Nottingham City have risen by 11% compared to 4% in the control site giving a net growth of 7% compared to the same period in the previous year. Table 4.9 shows the results of the modelling and demonstrates that there is insufficient evidence to attribute the observed change in activity to the introduction of NHS111.

Table 4.9 - Modelling results for minor attendances at ED (Type 1 and 2) for patients registered in Nottingham City and Leicester City

Model	R^2	Variable (s) significant	F Test significant	Model rejected
Null	0.55			No
Trend	0.56	No	No	Yes
Step	0.56	No	No	Yes
Trend and step	0.57	No	No	Yes

Figure 4.10 shows indexed total calls for ambulance incidents occurring in Nottingham City and Leicester City PCTs.

Figure 4.10 - Indexed total calls for ambulance incidents occurring in Nottingham City and Leicester City



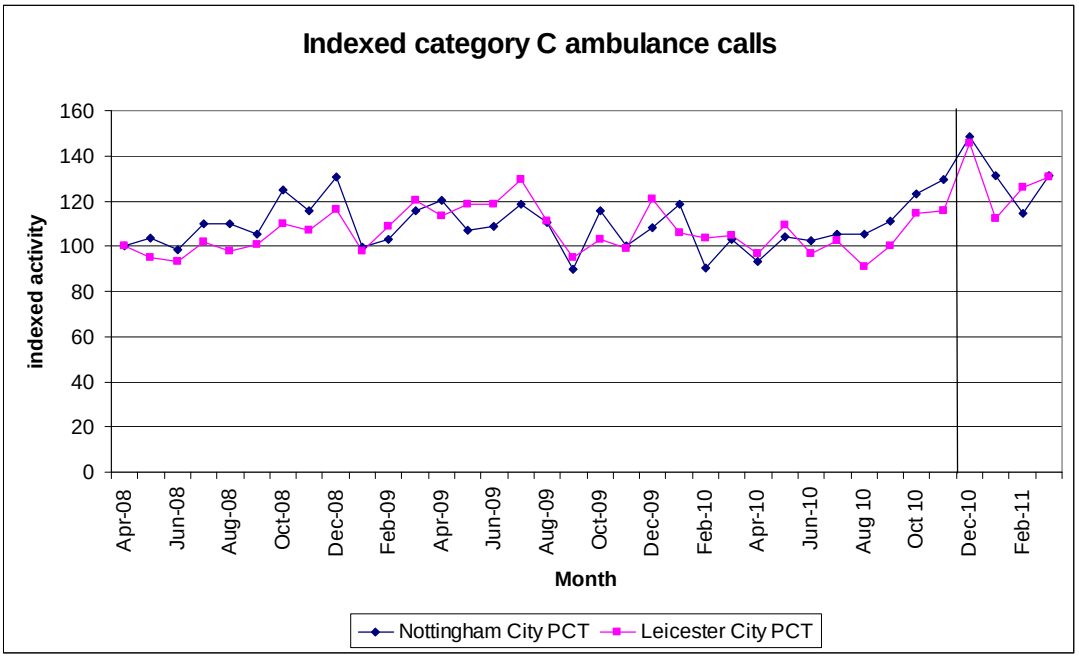
Between December 10 and March 11 total calls in Nottingham City have risen by 18% compared to 12% in the control site giving a net growth of 6% compared to the same period in the previous year. Table 4.10 shows the results of the modelling process and demonstrates that there is insufficient evidence to attribute the observed change in activity to the introduction of NHS111 at this time.

Table 4.10 - Modelling results for total calls for ambulance incidents occurring in Nottingham City and Leicester City

Model	R^2	Variable (s) significant	F Test significant	Model rejected
Null	0.73			No
Trend	0.74	No	No	Yes
Step	0.74	No	No	Yes
Trend and step	0.57	No	Yes	Yes

Figure 4.11 shows indexed Category C calls for ambulance incidents occurring in Nottingham City and Leicester City PCTs.

Figure 4.11 - Indexed Category C calls for ambulance incidents occurring in Nottingham City and Leicester City



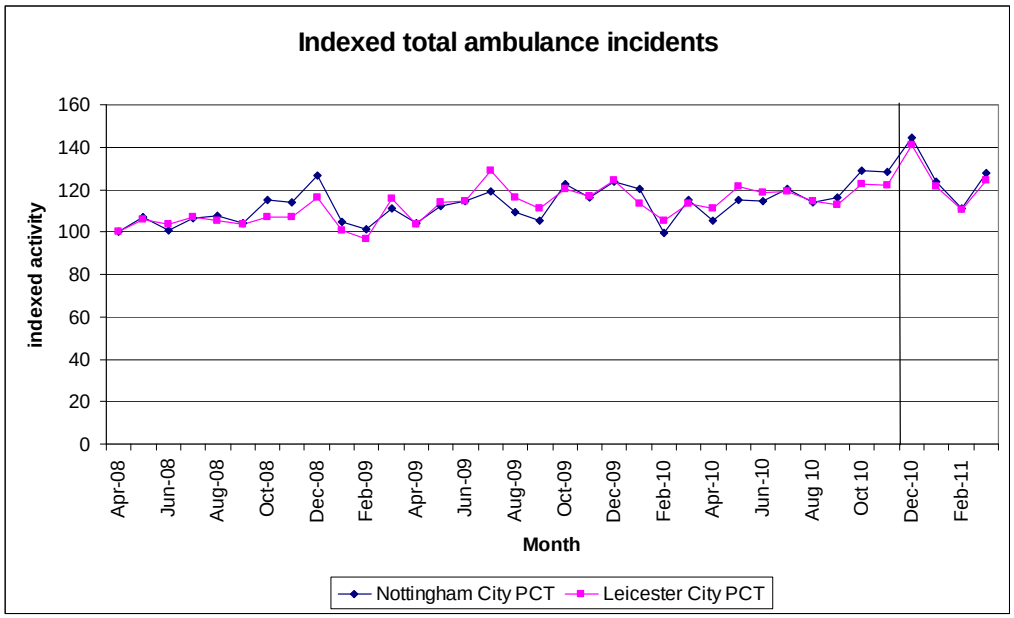
Between December 10 and March 11 category C calls in Nottingham City have risen by 25% compared to 18% in the control site giving a net growth of 7% compared with the same period in the previous year. Table 4.11 shows the modelling results for this area of activity and demonstrates that there is insufficient evidence to link this observed change with the introduction of NHS111.

Table 4.11 - Modelling results Category C calls for ambulance incidents occurring in Nottingham City and Leicester City

Model	R^2	Variable (s) significant	F Test significant	Model rejected
Null	0.55			No
Trend	0.55	No	No	Yes
Step	0.55	No	No	Yes
Trend and step	0.56	No	No	Yes

Secondary analysis investigating a possible impact of a *Choose Well* campaign run in April 2010 showed that the model incorporating a difference in trend from this date was no better fit of the data (R^2=0.56), the variable added was not significant (p>0.05) and the F test for the model vs. the null hypothesis was not significant, so there is also insufficient evidence to attribute the observed change to the the *Choose Well* campaign.
Figure 4.12 shows indexed total ambulance incidents occurring in Nottingham City and Leicester City PCTs.

Figure 4.12 Indexed total ambulance incidents occurring in Nottingham City and Leicester City PCTs



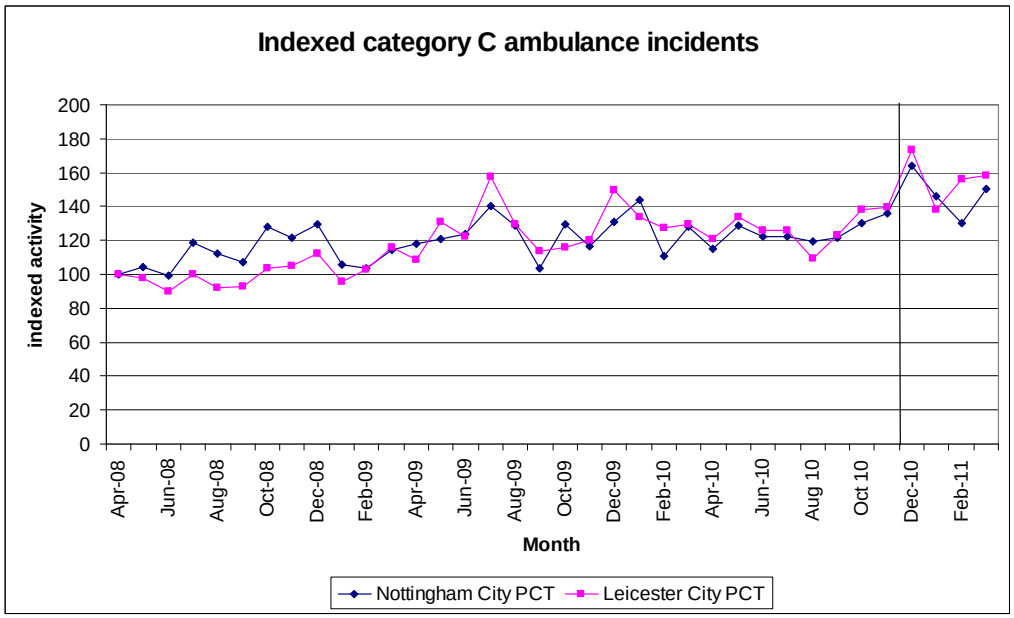
Between December 10 and March 11 total incidents in Nottingham City have risen by 11% compared to 9% in the control site giving a net change of 2% compared with the same period in the previous year. Table 4.12 shows the results of the modelling process and demonstrates that there is insufficient evidence to link the observed change with the introduction of NHS111 at this time.

Table 4.12 - Modelling results for total ambulance incidents occurring in Nottingham City and Leicester City PCTs

Model	R^2	Variable (s) significant	F Test significant	Model rejected
Null	0.76			No
Trend	0.76	No	No	Yes
Step	0.76	No	No	Yes
Trend and step	0.76	No	No	Yes

Figure 4.13 shows indexed Category C ambulance incidents occurring in Nottingham City and Leicester City PCTs.

Figure 4.13 Indexed category C ambulance incidents occurring in Nottingham City and Leicester City PCTs



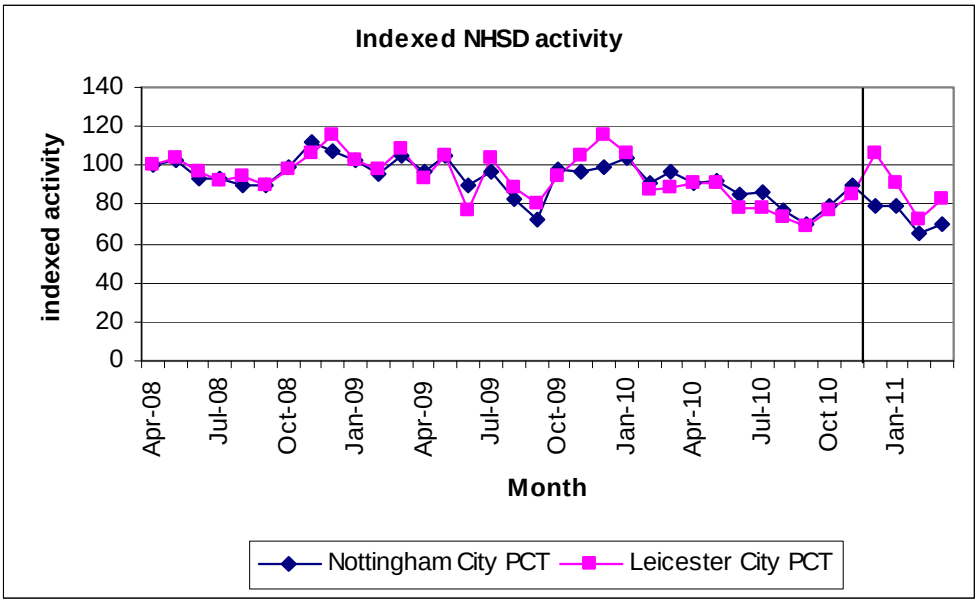
Between December 10 and March 11 category C incidents in Nottingham City have risen by 15% compared to 16% in the control site. This gives a net change of -1% compared with the same period in the previous year. Table 4.13 shows the results of the modelling process and demonstrates that there is insufficient evidence to link the small change observed with the introduction of NHS111 at this time.

Table 4.13 - Modelling results for category C ambulance incidents occurring in Nottingham City and Leicester City PCTs

Model	R^2	Variable (s) significant	F Test significant	Model rejected
Null	0.72			No
Trend	0.73	No	No	Yes
Step	0.72	No	No	Yes
Trend and step	0.73	No	No	Yes

Figure 4.14 shows indexed calls to the NHS Direct 084 service from patients in Nottingham City and Leicester City PCTs.

Figure 4.14 - Indexed calls to the NHS Direct 084 service in Nottingham City and Leicester City PCTs



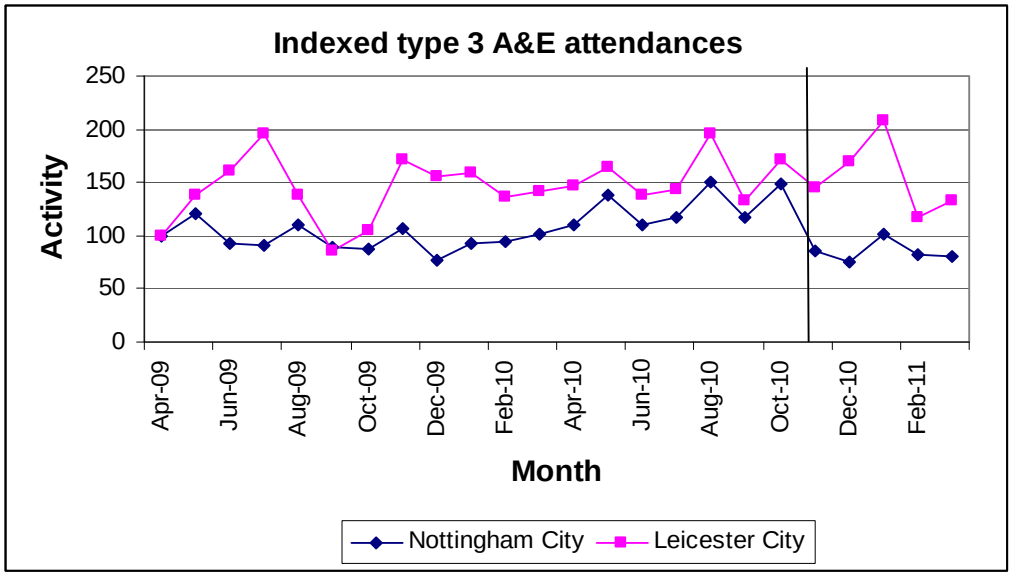
Between December 10 and March 11 calls in Nottingham City have fallen by 24% compared to a fall of 11% in the control site. This gives a net change of -13% compared with the same period in the previous year. Table 4.14 shows the results of the modelling process and demonstrates that the observed change is not attributable to the introduction of NHS111 at this time.

Table 4.14 - Modelling results calls to the NHS Direct 084 service in Nottingham City and Leicester City PCTs

Model	R^2	Variable (s) significant	F Test significant	Model rejected
Null	0.77			No
Trend	0.77	No	No	Yes
Step	0.77	No	No	Yes
Trend and step	0.77	No	No	Yes

Figure 4.15 shows indexed calls attendances at type 3 EDs in Nottingham City and Leicester City PCTs.

Figure 4.15 Indexed attendances at type 3 EDs in Nottingham City and Leicester City PCTs



Between December 10 and March 11 calls in Nottingham City have fallen by 6% compared to a rise of 6% in the control site. This gives a net change of -12% compared with the same period in the previous year. Table 4.15 shows the results of the modelling process and demonstrates that there is insufficient evidence to link the observed change with the introduction of NHS111 at this time.

Table 4.15 - Modelling results for attendances at type 3 EDs in Nottingham City and Leicester City PCTs

Model	R^2	Variable (s) significant	F Test significant	Model rejected
Null	0.84			No
Trend	0.85	No	No	Yes
Step	0.86	No	No	Yes
Trend and step	0.86	No	No	Yes

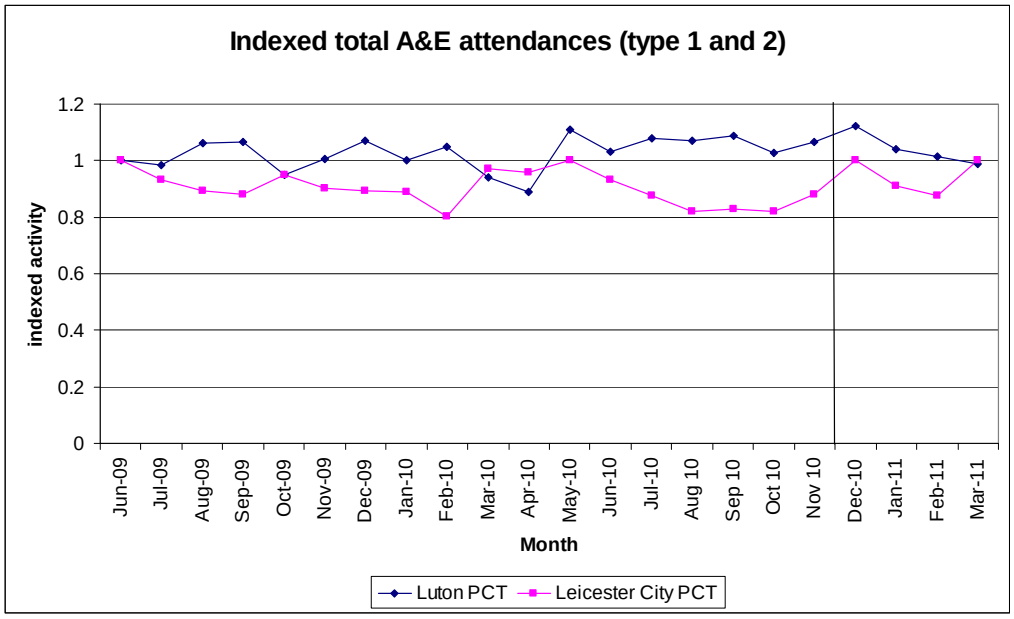
4.3.3 Luton

The following whole system data are available for both Luton PCT and its control site (Leicester City): total ED attendances (Type 1 &2); minor attendances at ED (Type 1 & 2); total calls to the ambulance service; Category C calls to the ambulance service; total ; ambulance incidents; Category C ambulance incidents, calls to NHS Direct 084 service and GPOOH total activity.

The following data have not been considered, due to either data availability or quality issues: minor attendances at type 1 and 2 EDs; emergency admissions and type 3 ED activity.

The timeseries analyses contain only 4 months data post change and so the results reported must be treated with caution, as there may be insufficient data to model the effects of introducing NHS111 effectively.
Figure 4.16 shows indexed total attendances at type 1 & 2 EDs in Luton and Leicester City PCTs.

Figure 4.16 - Indexed attendances at type 1 and 2 EDs in Luton and Leicester City PCTs



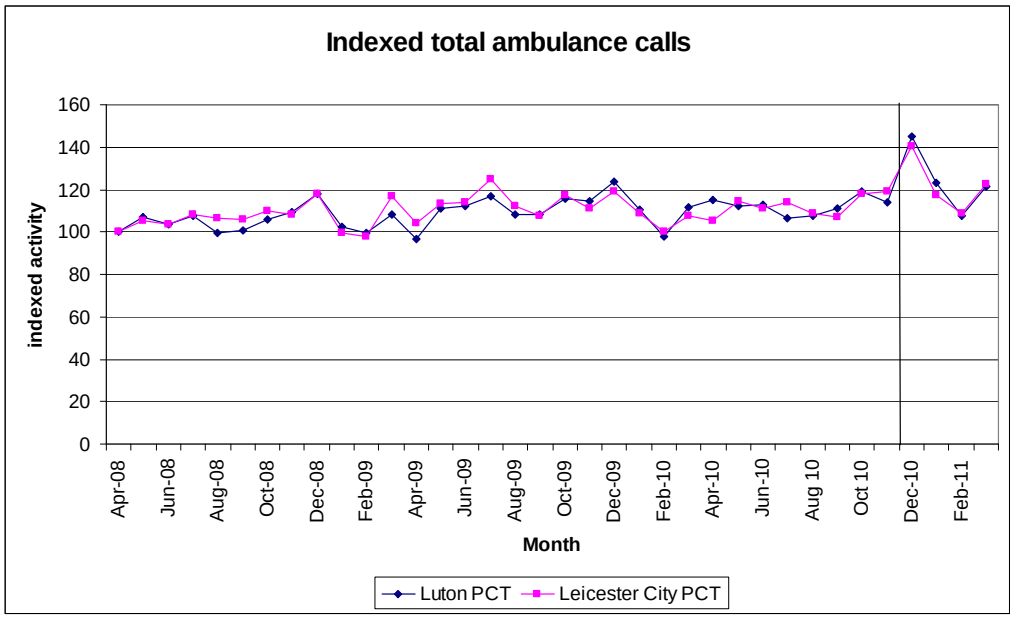
Between December 10 and March attendances in Luton have risen by 3% compared to a rise of 7% in the control site giving a net change of -4% compared with the same period in the previous year. Table 4.16 shows the results of the modelling process and indicates that both the change in trend and step change models are plausible explanations of the observed change.

Table 4.16 - Modelling results for attendances at type 1 and 2 EDs in Luton and Leicester City PCTs

Model	R^2	Variable (s) significant	F Test significant	Model rejected
Null	0.97			Yes
Trend	0.97	Yes	Yes	No
Step	0.97	Yes	Yes	No
Trend and step	0.97	No	No	Yes

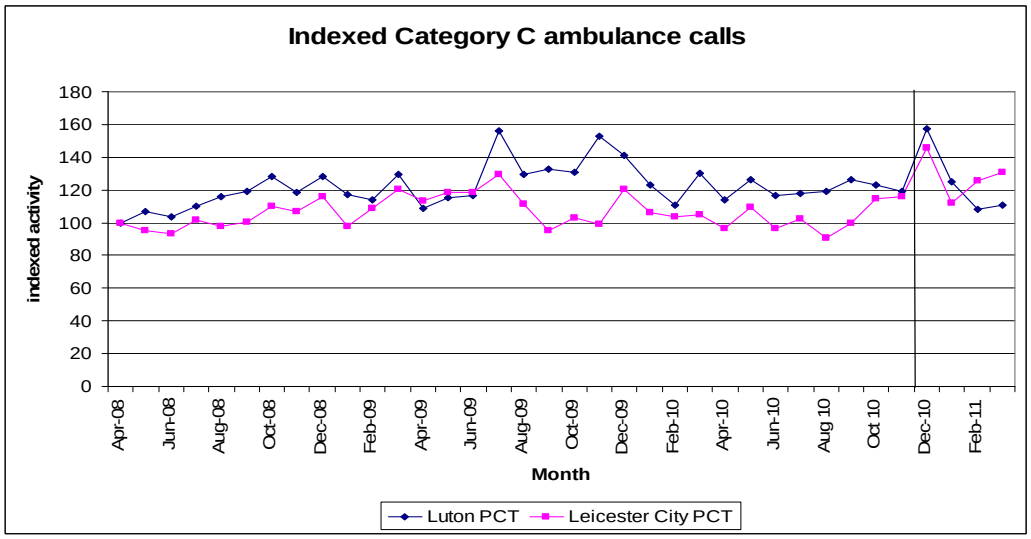
The change in trend model estimates a fall in attendance at ED of 1400 ± 1060 over a 12 month period and the step change model estimates a fall in attendance of 290 ± 250 relative to the control site. Therefore, initial analysis indicates that the introduction of NHS111 is associated with a fall in total attendance at ED in Luton PCT relative to its control site.

Figure 4.17 - Indexed total calls for ambulance incidents occurring in Luton and Leicester City PCTs



Between December 10 and March 11 attendances in Luton have risen by 12% compared to a rise of 12% in the control site giving a net change of 0% compared with the same period in the previous year. There is no impact to model with the data available at this time.
Figure 4.18 shows indexed Category C calls for ambulance incidents occurring in Luton and Leicester City PCTs.

Figure 4.18 - Indexed category C calls for ambulance incidents occurring in Luton and Leicester City PCTs



Between December 10 and March 11 attendances in Luton have fallen by 1% compared to a rise of 18% in the control site giving a net change of -19% compared with the same period in the previous year. The activity figures involved are relatively small so the 18% rise in only a

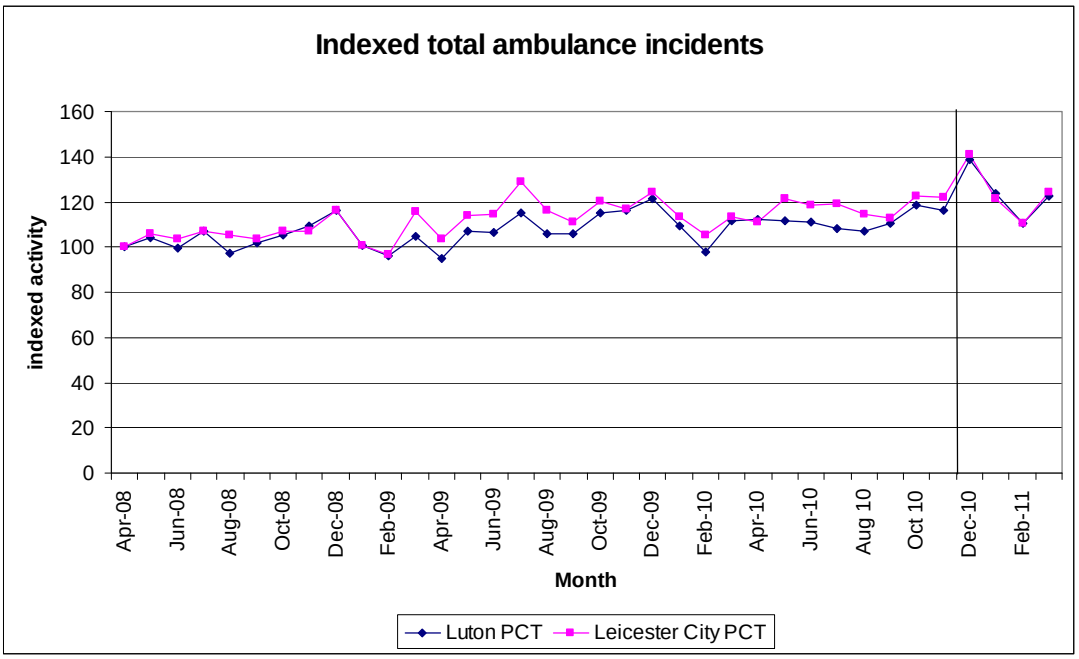
difference 650 cases over the 4 month period. Table 4.17 shows the results of the modelling process and indicates that both the change in trend and step change models are plausible explanations of the change observed.

Table 4.17 - Modelling results category C calls for ambulance incidents occurring in Luton and Leicester City PCTs

Model	R^2	Variable (s) significant	F Test significant	Model rejected
Null	0.91			Yes
Trend	0.93	Yes	Yes	No
Step	0.93	Yes	Yes	No
Trend and step	0.93	No	No	Yes

The change in trend model estimates a fall in category C calls of 760 ± 210 over a 12 month period and the step change model estimates a fall in attendance of 170 ± 50 relative to the control site. The findings of the change in trend model should be treated with caution as they imply negative activity within a year. Initial analysis indicates that the introduction of NHS111 is associated with a fall in category C calls in Luton PCT relative to its control site and in the context that there has been no change in overall call volume.
Figure 4.19 shows indexed total ambulance incidents occurring in Luton and Leicester City PCTs.

Figure 4.19 - Indexed total ambulance incidents occurring in Luton and Leicester City PCTs



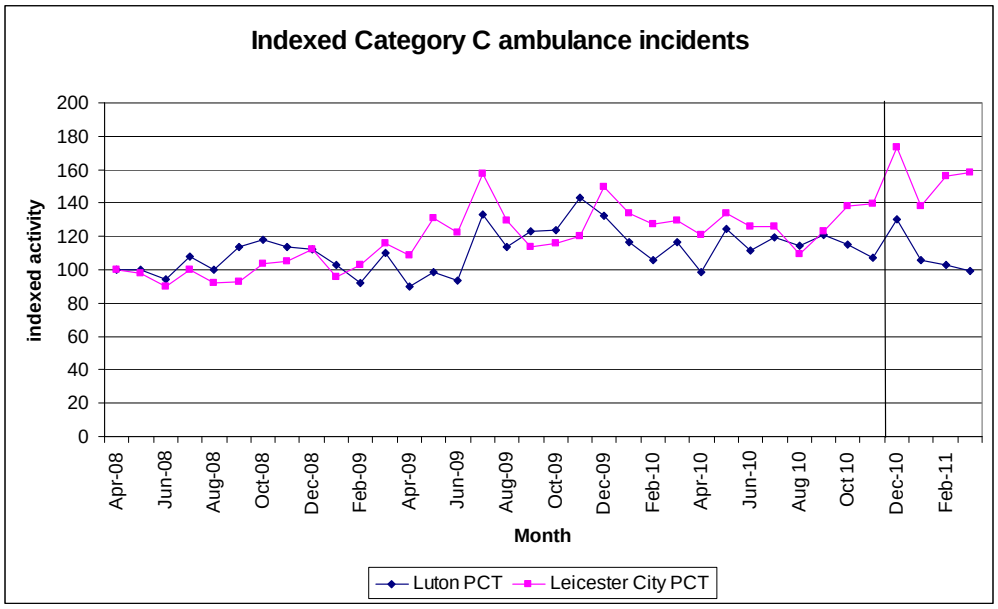
Between December 10 and March 11 attendances in Luton have risen by 13% compared to a rise of 9% in the control site giving a net change of 4% compared with the same period in the previous year. Table 4.18 shows the results of the modelling process and indicates that there is insufficient evidence to link the introduction of NHS 11 with the rise in ambulance incidents observed relative to the control site.

Table 4.18 - Modelling results total ambulance incidents occurring in Luton and Leicester City PCTs

Model	R^2	Variable (s) significant	F Test significant	Model rejected
Null	0.97			No
Trend	0.97	No	No	Yes
Step	0.97	No	No	Yes
Trend and step	0.98	No	No	Yes

Figure 4.20 shows indexed Category C ambulance incidents occurring in Luton and Leicester City PCTs.

Figure 4.20 - Indexed category C ambulance incidents occurring in Luton and Leicester City PCTs



Between December 10 and March 11 attendances in Luton have fallen by 7% compared to a rise of 16% in the control site giving a net change of -25% compared with the same period in the previous year. As with Category C calls the numbers involved are very small and the change in activity is a relatively small number of cases in the urgent care system. Also, within the graph there appears to be a point of divergence between the two series in August 2010, 5 months before the introduction of NHS111 but there is currently no explanation for

this. Table 4.19 shows the results of the modelling process and indicates that both the step change and change in trend models are a plausible explanation of the change observed.

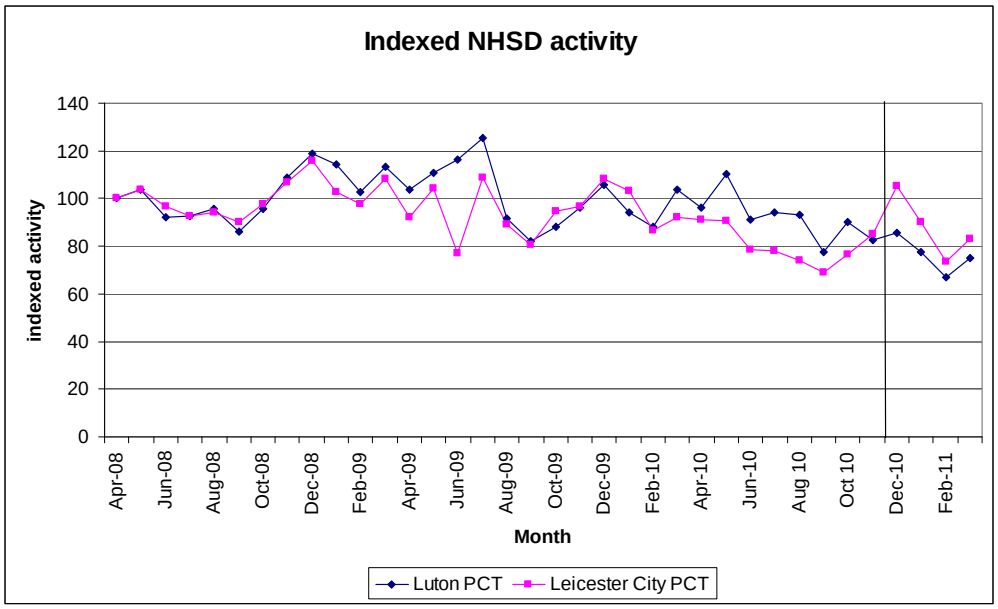
Table 4.19 Modelling results for category C ambulance incidents occurring in Luton and Leicester City PCTs

Model	R^2	Variable (s) significant	F Test significant	Model rejected
Null	0.89			Yes
Trend	0.91	Yes	No	No
Step	0.92	Yes	No	No
Trend and step	0.92	No	No	Yes

The step change model estimates the impact as 230 ± 50 and the change in trend model estimates the impact as 920 ± 200. The models both indicate a fall in activity relative to the control site. However, the results should be treated with caution given the large proportion of activity that they represent and the pre-NHS111 change observed in the data. There appears to be an impact observed and modelled from data but this may not be linked to the introduction of NHS111.

Figure 4.21 shows indexed calls to NHS Direct 084 service in Luton and Leicester City PCTs.

Figure 4.21 Indexed calls to NHS Direct 084 service in Luton and Leicester City PCTs



Between December 10 and March attendances in Luton have fallen by 22% compared to a fall of 10% in the control site giving a net change of -11% compared with the same period in the previous year. Table 4.20 shows the results of the modelling process and indicates that

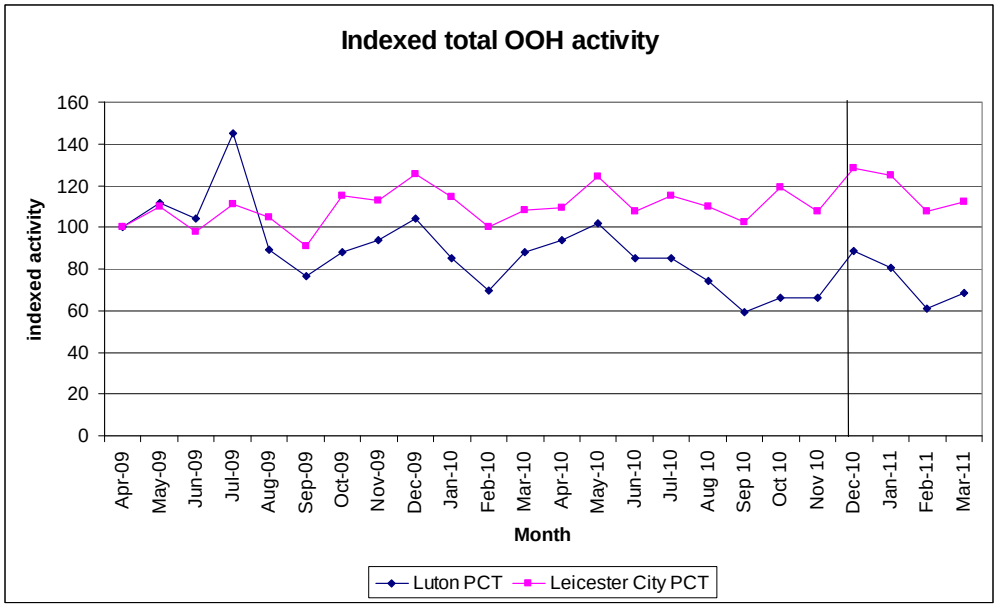
there is insufficient evidence to link the observed change with the introduction of NHS111 at this time.

Table 4.20 - Modelling results for calls to NHS Direct 084 service in Luton and Leicester City PCTs

Model	R^2	Variable (s) significant	F Test significant	Model rejected
Null	0.90			No
Trend	0.90	No	No	Yes
Step	0.90	No	No	Yes
Trend and step	0.90	No	No	Yes

Figure 4.22 shows indexed total GP OOH activity in Luton and Leicester City PCTs.

Figure 4.22 Indexed total GP OOH activity in Luton and Leicester City PCTs



Between December 10 and March 11 attendances in Luton have fallen by 14% compared to a rise of 5% in the control site giving a net change of -19% compared with the same period in the previous year. It is possible that this change is more accurately ascribed to a change in trend in June 2010 rather than the introduction of NHS111 but we currently have no explanation of why this occurred. Table 4.21 shows the modelling results and indicates that there is insufficient evidence to link the observed change with the introduction of NHS111 at this time.

Table 4.21 - Modelling results total GP OOH activity in Luton and Leicester City PCTs

Model	R^2	Variable (s) significant	F Test significant	Model rejected
Null	0.45			No
Trend	0.51	No	No	Yes
Step	0.52	No	No	Yes
Trend and step	0.52	No	No	Yes

4.3.4 County Durham and Darlington

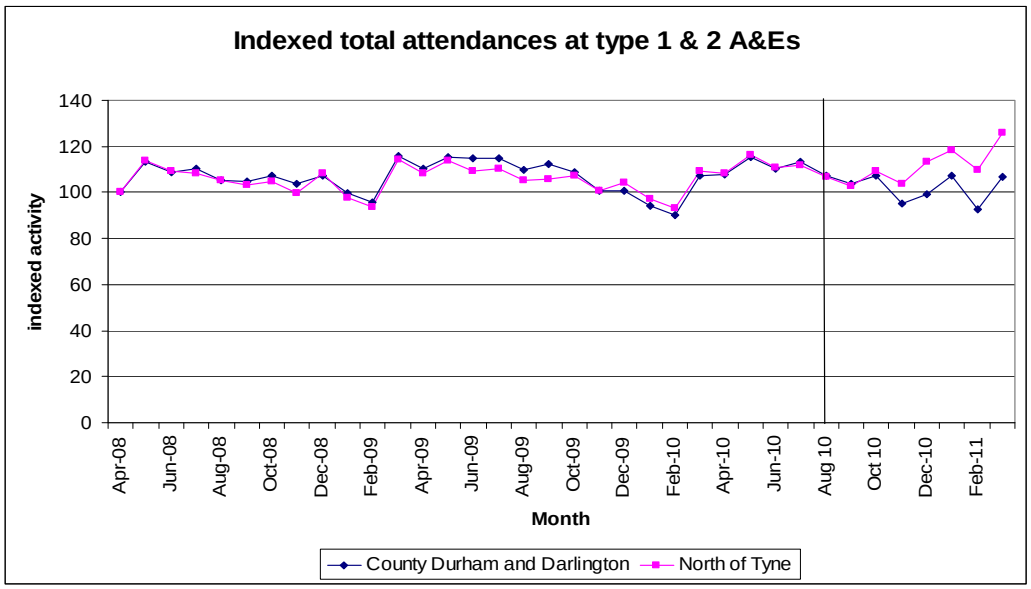
Data included in the analysis of the impact of the introduction of NHS111 on the urgent care system in County Durham and Darlington are ED total attendances; total calls to the ambulance service; total ambulance incidents; total calls to NHS Direct 084 service and total attendances at WiC/OOH/UCC.

Data not included here due to supply or quality issues: ED minor attendances; Category C ambulance calls and incidents and emergency admissions. Due to differences in local service design attendances for the OOH service, Walk in Centres and Urgent Care Centres have been amalgamated to form a single activity stream.

Secondary analysis has been performed on ambulance service data to allow for an effect following the introduction of the Single Point of Access. The effect was believed to be limited to ambulance activity, since the Single Point of Access was staffed using ambulance service personnel who demonstrated a higher tendency to reach ambulance related dispositions. This was addressed through additional training and is believed to have been resolved.

Figure 4.23 shows indexed total attendances at type 1 & 2 EDs in County Durham and Darlington and North of Tyne PCOs.

Figure 4.23 Indexed total attendances at type 1 & 2 EDs in County Durham and Darlington and North of Tyne PCOs



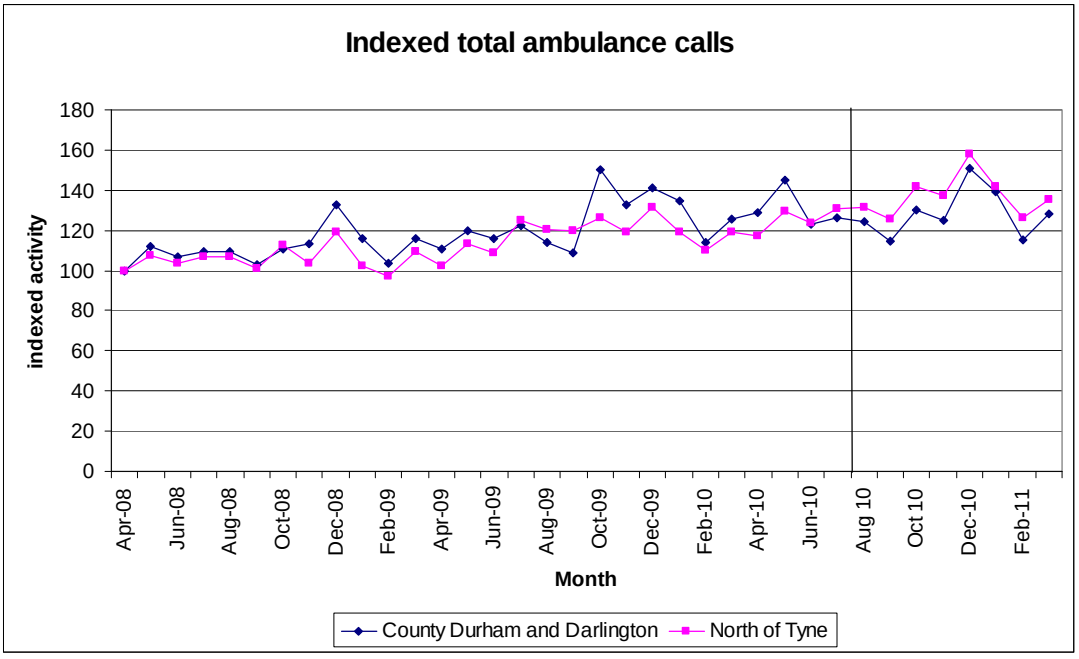
In the period September 10 to March 11, activity has stayed constant in County Durham and Darlington and grown by 9% in North of Tyne, giving a net change of -9% compared to the same period in the previous year. Table 4.22 shows the modelling results for this activity stream and indicates that both the step change and change in trend models are plausible explanations of the observed change.

Table 4.22 - Modelling results for total attendances at type 1 & 2 EDs in County Durham and Darlington and North of Tyne PCOs

Model	R^2	Variable (s) significant	F Test significant	Model rejected
Null	0.95			Yes
Trend	0.97	Yes	Yes	No
Step	0.96	Yes	Yes	No
Trend and step	0.97	No	Yes	Yes

In considering the change of trend model, the estimated impact is a drop in activity of 4550 ± 770 over a one year period. Considering the step change model gives an estimated impact of a drop in activity of 1510 ±370 attendances. In conclusion, the introduction of NHS111 in County Durham and Darlington has been associated with a fall in total attendances at type 1 & 2 EDs relative to the control site.
Figure 4.24 shows indexed total calls to the ambulance service for incidents occurring in County Durham and Darlington and North of Tyne PCOs.

Figure 4.24 Indexed total calls to the ambulance service for incidents occurring in County Durham and Darlington and North of Tyne PCOs



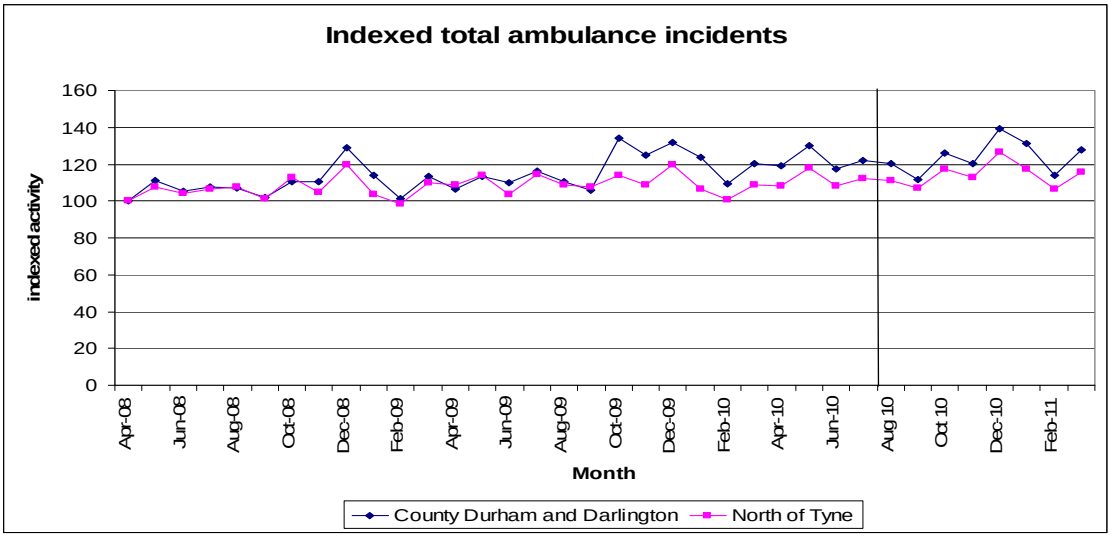
In the period September 10 to March 11, activity has stayed constant in County Durham and Darlington and grown by 14% in North of Tyne, giving a net change of -14% compared to the same period in the previous year. However, this picture is complicated by a period of growth in the baseline period for County Durham and Darlington thought to be linked to the introduction of the Single Point of Access telephone service that preceded NHS111. Table 4.23 shows the results of the modelling process and indicates that both the step change and change in trend models are plausible explanations of the observed change.

Table 4.23 - Modelling results total calls to the ambulance service for incidents occurring in County Durham and Darlington and North of Tyne PCOs

Model	R^2	Variable (s) significant	F Test significant	Model rejected
Null	0.88			Yes
Trend	0.91	Yes	Yes	No
Step	0.92	Yes	Yes	No
Trend and step	0.92	No	Yes	Yes

Considering the change of trend model, the estimated impact is a drop in activity of 2300 ± 540 over a one year period. Considering the step change model gives an estimated impact of a drop in activity of 1210 ±210 calls. Secondary analysis, allowing for an impact of the introduction of the Single Point of Access in October 2009, did not produce more significant modelling results. In conclusion, the introduction of NHS111 in County Durham and Darlington has been associated with a fall in total calls to the ambulance service relative to the control site. Figure 4.25 shows indexed total ambulance incidents occurring in County Durham and Darlington and North of Tyne PCOs.

Figure 4.25 Indexed total ambulance incidents occurring in County Durham and Darlington and North of Tyne PCOs



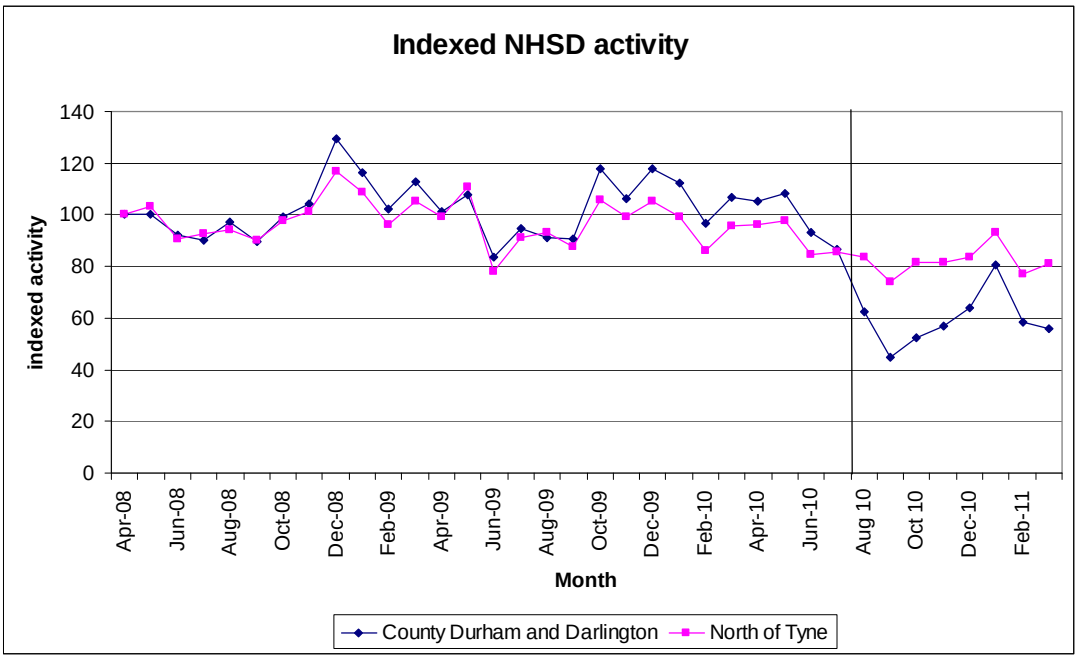
In the period September 10 to March 11, activity has grown by 2% in County Durham and Darlington and grown by 5% in North of Tyne, giving a net change of -2 % compared to the same period in the previous year. Table 4.24 shows the modelling results for this activity and indicates that there is insufficient evidence to link the observed change with the introduction of NHS111 at this time.

Table 4.24 - Modelling results total ambulance incidents occurring in County Durham and Darlington and North of Tyne PCOs

Model	R^2	Variable (s) significant	F Test significant	Model rejected
Null	0.91			No
Trend	0.91	No	Yes	Yes
Step	0.91	No	Yes	Yes
Trend and step	0.91	No	Yes	Yes

Secondary analysis, allowing for an impact of introducing the Single Point of Access, shows that there is a significant step change in incidents associated with this change. This is estimated at 330 ± 150 incidents. Further modelling of a potential additional effect of NHS111 showed that there was no significant additional change.
Figure 4.26 shows indexed activity for calls to the NHS Direct 084 service in County Durham and Darlington and North of Tyne PCOs.

Figure 4.26 Indexed activity for calls to the NHS Direct 084 service



In the period September 10 to March 11, activity dropped by 45% in County Durham and Darlington and 16% in North of Tyne, giving a net change of -29% compared to the same period in the previous year. Table 4.25 shows the results of the modelling of NHS D activity and indicates that both the step change and change in trend models are plausible explanations of the observed change.

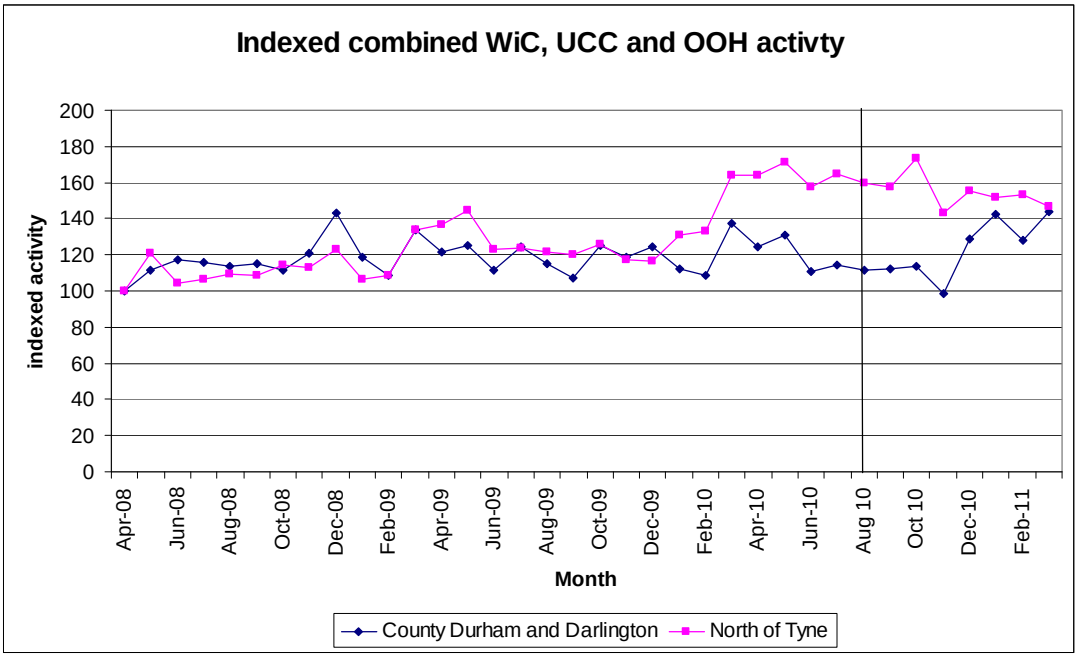
Table 4.25: Modelling results calls to the NHS Direct 084 service

Model	R^2	Variable (s) significant	F Test significant	Model rejected
Null	0.88			Yes
Trend	0.90	Yes	Yes	No
Step	0.90	Yes	Yes	No
Trend and step	0.91	No	Yes	Yes

In considering the change of trend model, the estimated impact is a drop in activity of 1460 ±540 over a one year period. Considering the step change model gives an estimated impact of a drop in activity of 770 ±230 calls. In conclusion, the introduction of NHS 111 in County Durham and Darlington has been associated with a fall in activity of calls to the NHS Direct 084 service relative to the control site.

Figure 4.27 shows combined activity for WiCs, UCCs and GPOOH services in County Durham and Darlington and North of Tyne PCOs.

Figure 4.27 Indexed combined activity for WiCs, UCCs and GP OOH services for County Durham and Darlington and North of Tyne PCOs



In the period September 10 to March 11, activity has risen by 4% in County Durham and Darlington and 19% in North of Tyne, giving a net change of -15% compared to the same period in the previous year. Table 4.26 shows the modelling results for this activity and indicates that the observed change cannot be linked to the introduction of NHS111 at this time.

Table 4.26 - Modelling results for WiCs, UCCs and GP OOH services for County Durham and Darlington and North of Tyne PCOs

Model	R^2	Variable (s) significant	F Test significant	Model rejected
Null	0.66			No
Trend	0.67	No	No	Yes
Step	0.70	Yes	No	Yes
Trend and step	0.74	Yes	No	Yes

4.4 Summary of findings

Analysis has shown that it is mostly too early to see a significant impact for the pilot sites with 4 months activity data post go-live. The exceptions to this are:

Lincolnshire

- Total attendances at type 1 & 2 EDs: estimated step change of 900 ± 440 attendances and an observed net change of -1% relative to the control site
- Category C ambulance calls: estimated step change of 300 ± 140 calls and an observed net change of -10% relative to the control site

Luton

- Total attendances at type 1 & 2 EDs: estimated step change of 290 ± 250 attendances and an observed net change of -4% relative to the control site
- Category C ambulance calls: estimated step change of 170 ± 50 calls and an observed net change of -19% relative to the control site, but numbers involved are small
- Category C ambulance incidents: estimated step change of 230 ± 50 incidents and an observed net change of -25% relative to the control site, but numbers involved are small

County Durham and Darlington

The pilot in County Durham and Darlington has been running for an additional 4 months and so the modelling was applied to a longer time series after the implementation. In summary the significant impacts are:

- Total attendances at type 1 & 2 EDs: estimated step change of 1510 ± 370 attendances and an observed net change of -9% relative to the control site

- Total ambulance calls: estimated step change of 1210 ± 210 calls and an observed net change of -14% relative to the control site
- Total ambulance incidents: estimated step change associated with the introduction of the Single Point of Access of 330 ± 150 incidents and no significant additional impact of the introduction of NHS111
- Calls to the NHS Direct 084 service: estimated step change of 770 ±230 and an observed net change of -29% relative to the control site

Where observed changes are a net % change relative to the control site and compared to the same period of the previous year.

5. Impact on emergency and urgent care system users

Results from the 'before and after' population surveys in Durham and Darlington and its control North of Tyne

5.1 Introduction

When introducing a new service such as NHS 111, it is important to assess the impact it has on users of the whole emergency and urgent care *system*. A service such as NHS 111 is intended to improve system users' experiences by offering them easy access to a single service which then directs them to the right service immediately. Therefore it should improve system users' views of access to urgent care, progress through the urgent care system and the extent to which the system offers patient convenience.

Data collection has been completed for the first NHS 111 site Durham and Darlington and is in progress for the other three sites. We report here the preliminary findings for Durham and Darlington only.

5.2 Methods

Design

We undertook a controlled before and after population survey in each pilot site prior to the launch of NHS 111 and 12 months later. The population survey identified recent users of the emergency and urgent care system and sought their views about their most recent episode of care. We also asked *all* respondents about awareness and use of NHS 111.

Sampling

For each NHS 111 site, a matched control site was identified based on similar demographic and health profiles, and where there was no intention to introduce NHS 111 during the course of our data collection (the control sites are described in the first interim report). We used a survey methodology which we had tested and validated in a pilot study[5]. A market research company was engaged to undertake a telephone survey of the general population in each site. The primary care trust (PCT) boundaries were used to identify the site population. We identified the relevant postal districts within each PCT and the proportion of the population residing within each postal district. This, alongside the age/sex demographic of the population formed the frame for quota sampling. The market research company undertook random digit dialling with one attempt to contact a landline telephone number, aiming to identify 2000 respondents who were representative of the age/sex profile of the PCT population. Standard market research procedures were followed to identify an adult to speak to within a household who was aged 16 and over. An adult or a child in the household was selected as the focus of the interview in line with meeting the quota sample.

NHS ethics approval was not required because we did not recruit participants from the NHS. Ethical approval was obtained from the University of Sheffield. The surveys reported here were undertaken approximately one month prior to the launch of NHS 111 service (June 2010), and exactly twelve months later (June 2011).

Questionnaire

The questionnaire was developed based on qualitative research with recent users of the emergency and urgent care system[6]. The validated Urgent Care System Questionnaire measures how people access the emergency and urgent care system, the length of any pathway, the services used on the pathway and satisfaction with entry, progress and patient convenience[7]. All participants are asked a screening question about whether they had sought help for an urgent health problem in the previous three months, some socio demographic questions, and questions about awareness and use of NHS 111. If they had sought help urgently from health services in the last three months they were asked to complete the remainder of the questionnaire in relation to their most recent urgent health problem. They were asked to describe their care pathway and their satisfaction with different aspects the emergency and urgent care system.

Analysis

For the purpose of this interim report we present preliminary before and after findings from the NHS 111 site Durham and Darlington and the comparator site, North of Tyne. Data were analysed using PASW 18. We compared changes in system users' views before and after the introduction of NHS 111 with changes occurring in the control site. For continuous variables we undertook analysis of covariance. We adjusted for age, sex and ethnicity and then tested the interaction between type of site and time of study. We undertook logistic regression for dichotomised categorical variables.

5.3 Results

5.3.1 Response rates

The response rates were similar for all four surveys (before and after in NHS 111 and control sites). See Table 5.1. These rates were similar to those of previous use of this survey methodology and questionnaire (MCRU, 2011).

Table 5.1: Response rates to population surveys

	Durham and Darlington (NHS 111)	**North of Tyne (Control)**
Before (2010)	28% (2001/7088)	30% (2027/6841)
After (2011)	28% (2003/7111)	28% (2006/7142)

5.3.2 Respondent profiles

The demographic profiles of respondents were similar in 2010 and 2011 in each site. This was expected given the use of quota sampling (Table 5.2).

Table 5.2: Respondent demographic profiles

	Durham & Darlington		North of Tyne	
	2010 % (n)	2011 % (n)	2010 % (n)	2011 % (n)
Age				
0-4	6 (110)	5 (105)	5 (110)	6 (111)
5-19	17 (347)	18 (354)	18 (371)	19 (373)
20-44	32 (639)	33 (669)	29 (590)	29 (587)
45-64	28 (557)	27 (533)	29 (586)	28 (565)
65+	17 (348)	17 (342)	18 (370)	18 (370)
Sex				
Male	48 (960)	49 (978)	47 (955)	48 (967)
Ethnicity				
White	98 (1956)	98 (1962)	96 (1937)	95 (1903)
N=100%	2001	2003	2027	2006

5.3.3 System use

Around one in ten members of the population had sought help for an urgent health problem in the previous three months (Table 5.3). This can vary depending on the time of year in which the survey is undertaken (MCRU, 2011). There was no change in system use over time in the NHS 111 site compared with the control site (p=0.693).

Table 5.3: Proportion of population seeking health care urgently

	Durham & Darlington % (n/N)		North of Tyne % (n/N)	
	2010	2011	2010	2011
Sought health care urgently	11 (226/2001)	10 (205/2003)	11 (223/2027)	9 (188/2006)

We expected the demographic profiles of system users to be similar in each year and indeed they were (Table 5.4). We hoped that the demographics of system users would be similar for the NHS 111 and control sites because of the matching. The system users in the two sites had very similar demographics. Even though there were no differences between years and sites in terms of demographics, we adjusted comparisons for age, sex and ethnicity in case any small differences accounted for changes seen.

The remainder of this section focuses on the experiences and views of recent system users. NHS 111 has the objective of directing people to the right service first time. The length of the pathway should be either one service (NHS 111) or two services (NHS 111 followed by the right service). The new service introduces a step into the system, thereby increasing the pathway length, but should reduce the likelihood of inappropriately long pathways (recognising that some long pathways may be appropriate). System users were asked about the number of contacts that had been made with services during their most recent urgent care health episode. System users reported between 1 and 8 contacts per episode (Table 5.5). There was no significant change in mean pathway length (p=0.314).

Table 5.4: System user demographic profiles

	Durham & Darlington % (n)		North of Tyne % (n)	
	2010	**2011**	**2010**	**2011**
Age				
0-4	8 (19)	11 (22)	7 (16)	12 (23)
5-19	20 (44)	20 (40)	22 (50)	21 (40)
20-44	26 (59)	31 (63)	29 (64)	29 (54)
45-64	27 (62)	28 (57)	29 (64)	26 (49)
65+	19 (42)	11 (23)	13 (29)	12 (22)
Sex				
Male	47 (107)	48 (98)	44 (99)	41 (77)
Ethnicity				
White	99 (224)	98 (200)	97 (215)	95 (178)
N=100%	226	205	223	188

Table 5.5: Length of pathway of recent system users

	Durham & Darlington		North of Tyne	
	2010	**2011**	**2010**	**2011**
Number of services % (n)				
One	56 (127)	56 (115)	56 (125)	63 (118)
Two	34 (78)	34 (69)	33 (74)	30 (56)
Three	8 (18)	5 (10)	8 (17)	5 (10)
Four or more	1 (3)	5 (11)	3 (7)	2 (4)
Mean (Range)	1.56 (1-7)	1.64 (1-8)	1.59 (1-5)	1.49 (1-7)

System users were asked to identify all of the services that they made contact with during their most recent use of the system. For reporting, we have included the main emergency and urgent care services contacted; some additional services with small numbers of contacts are not reported here. The majority of system users made use of a doctor during the daytime (Table 5.6). A shift in service use is visible for the NHS 111 site over time in terms of reduced use of day time GP for urgent care and increased use of emergency departments. However, this data needs to be treated with caution. We know from our previous qualitative research that system users find it difficult to distinguish some services from others (O'Cathain et al, 2008). For example 'urgent care centre' may not be part of the vocabulary of many members of the general population. For this reason, in the questionnaire we deliberately used familiar generic terms in use for many years (with the exception of NHS 111). This limited our ability to differentiate between different types of services such as urgent care centres and emergency departments. The increase in emergency department use seen below will include emergency departments and urgent care centres. It is important that routine data on utilisation of services in the NHS 111 and control sites is viewed as a more robust source of evidence of change in service use over time (see Section 4 of this report).

Table 5.6: Services contacted during most recent use of the system

	Durham & Darlington % (n)		North of Tyne % (n)	
	2010	**2011**	**2010**	**2011**
GP in hours	53 (119)	41 (83)	48 (108)	48 (91)
GP OOH	9 (21)	5 (11)	10 (23)	8 (15)
Emergency Dept	19 (43)	27 (55)	30 (66)	26 (49)
Ambulance	9 (21)	8 (17)	9 (19)	13 (24)
Walk in centre	17 (38)	19 (39)	13 (29)	12 (23)
NHS Direct	5 (12)	6 (13)	9 (20)	7 (13)
NHS 111	1 (3)	13 (27)	0 (1)	1 (1)

System users were asked to identify the first service on their care pathway during their most recent use of the system (Table 5.7). In both sites, the majority of system users reported contacting a doctor during the daytime as the first service contacted. NHS 111 was reported as the first service contacted in around one in ten episodes in the NHS 111 site in 2011. This indicates the 'dose' of NHS 111 in the urgent care system in that it can influence one in ten uses of the system.

There was evidence of reduced use of GP in hours and GP out of hours as the first port of call but an increase in use of an emergency department. This indicates that some of the extra use of emergency departments – which may include urgent care centre use – cannot be caused by referral from NHS 111.

Table 5.7: FIRST service contacted during most recent use of the system

	Durham & Darlington % (n)		North of Tyne % (n)	
	2010	**2011**	**2010**	**2011**
GP in hours	47 (106)	34 (70)	44 (99)	39 (74)
GP OOH	7 (15)	2 (5)	8 (17)	6 (12)
Emergency Dept	12 (26)	19 (39)	16 (36)	18 (33)
Ambulance	5 (12)	5 (10)	5 (12)	9 (16)
Walk in centres	13 (29)	12 (24)	8 (17)	10 (19)
NHS Direct	4 (10)	6 (13)	6 (14)	6 (11)
NHS 111	0 (0)	11 (22)	0 (0)	0 (0)
N=100%	226	205	223	188

5.3.4 System user satisfaction

Previous psychometric testing of the questionnaire identified three discrete domains of system satisfaction: entry into the system, patient convenience of the system, and progress through the system (O'Cathain et al, 2011). Each domain has a maximum score of 5. At

baseline in 2010, the ratings for the three domains were similar for the two sites (Table 5.8). There was no evidence of increased satisfaction in the NHS 111 site compared with the control site for entry (p=0.312), convenience (p=0.781) or progress through the system (p=0.261). Change of around 0.3 in these scores indicates 'clinically significant' change. An interesting finding is that both the NHS 111 and control sites saw increases in patient convenience over this time.

Table 5.8: Domains of satisfaction with system

	Durham & Darlington Mean score		North of Tyne Mean score	
	2010	**2011**	**2010**	**2011**
Entry into the system	4.25	4.28	4.20	4.33
Convenience of the system	3.89	4.16	3.94	4.19
Progress through the system	4.21	4.14	4.09	4.15

System users were asked to rate their overall care for their most recent use of the urgent care system (Table 5.9). There was no evidence that satisfaction levels changed in the NHS 111 site compared with the control. The percentage of system users reporting they had received 'excellent' care overall was not affected (p=0.621).

Table 5.9: Overall satisfaction with last urgent care episode

	Durham & Darlington % (n)		North of Tyne % (n)	
	2010	**2011**	**2010**	**2011**
Excellent	47 (106)	43 (88)	49 (110)	49 (92)
Very good	28 (63)	32 (66)	25 (56)	24 (45)
Good	15 (35)	12 (25)	13 (30)	15 (28)
Fair	6 (13)	7 (14)	7 (15)	5 (9)
Poor or very poor	4 (9)	6 (12)	5 (12)	7 (14)
N=100%	226	205	223	188

5.3.5 Population satisfaction with NHS

An objective of NHS 111 was to improve the population satisfaction with the NHS when seeking urgent care and in general. Satisfaction rates are always lower for general views of satisfaction with the NHS than for views about specific experiences. There was no evidence of a change in population views of urgent care (p=0.422) or the NHS in general (p=0.286).

Table 5.10: Satisfaction with care episode and wider NHS

Respondents reporting 'very satisfied'	Durham & Darlington % (n)		North of Tyne % (n)	
	2010	**2011**	**2010**	**2011**
The way in which the NHS runs when you need to seek help URGENTLY	34 (687)	32 (633)	37 (754)	36 (715)
The way in which the NHS runs in GENERAL nowadays?	33 (666)	28 (552)	37 (747)	34 (678)

Awareness and use of NHS 111

All respondents, regardless of whether they had recently used the emergency and urgent care system, were asked if they had heard of, or used NHS 111 (Table 5.11). Although NHS 111 was not 'live' at the time of the 2010 surveys, there had been national media stories about the new service and there was some awareness of NHS 111 in both the intervention and control sites prior to the service beginning. Awareness in Durham and Darlington increased significantly more than in the control site (p=0.001). Twelve months after the launch of NHS 111, almost three quarters of respondents reported that they had heard of the service. Some increase had occurred in the control area as well. 14% of respondents in the NHS 111 site reported that had ever used NHS 111 approximately one year after its launch and of course this was a statistically significant increase over the control site (p=0.001).

Table 5.11: Awareness and use of NHS 111

	Durham & Darlington % (n)		North of Tyne % (n)	
	2010	**2011**	**2010**	**2011**
Ever heard of NHS 111	14 (271)	73 (1463)	21 (431)	38 (761)
Ever used NHS 111	1 (29)	14 (272)	2 (33)	1 (25)

5.4 Discussion

Summary of findings

In the first site to 'go live' with NHS 111, around one in ten urgent care episodes had NHS 111 as the first point of contact. Overall use of the urgent care system remained constant when NHS 111 was in operation. There was evidence of a shift in the types of services used in the NHS 111 site but the survey has limitations when measuring use of different types of service because people's knowledge of service type can be inaccurate. There was no evidence that the new service improved satisfaction with the urgent care system or the NHS overall in this pilot site.

Strengths and limitations

A key objective of NHS 111 is to improve levels of user satisfaction with the system. Obtaining the experiences and views of urgent care system users is a challenge and a major strength of this part of the evaluation was the use of a validated methodology and questionnaire to address this key objective. Limitations include the large numbers of respondents required to identify recent system users and the relatively small numbers of system users identified. However the lack of change found here was not due to a lack of statistical power but rather to a lack of impact of NHS 111 on satisfaction with the urgent care system. One could argue that the dose of NHS 111 is small in that it affected one in ten urgent care episodes. However, we have evaluated changes to urgent care systems using this approach and found statistically significant changes in system users' views (MCRU, 2011).

Implications

NHS 111 is a key part of the urgent care system in Durham and Darlington, being the first point of contact for one in ten urgent care contacts. There is no evidence that it has improved user satisfaction with the urgent care system overall.

Acknowledgements

Many thanks to 2020 Research who undertook the telephone surveys.

6. NHS 111 user survey

6.1 Introduction

It is important to understand users' experiences and views of new services. Two user surveys will occur in each pilot site within the evaluation. The first survey, known as the 'early phase user survey', was planned to take place approximately 3 months after each service was established to strike a balance between allowing early teething problems for the service to be ironed out and giving policymakers early feedback. Users' experiences and views can change over time as new services get busier and become more embedded in the health care system. The second survey, planned at approximately nine months after the service started in each site, is currently in progress.
We report here the preliminary findings from the early phase user survey.

6.2 Methods

Design
A cross sectional postal survey was undertaken in each site. The first site survey was undertaken six months after the start of the service due to delays in research governance approvals. The next three site surveys were undertaken at approximately four months post NHS 111 launch.

Sampling
Recent calls made to NHS 111 were used as the sampling frame. The intention was to send questionnaires to 1200 users in each site. In three sites the sample of two weeks of users was approximately 1200 and all users in that period were sent a questionnaire. In one site the 1200 calls were randomly sampled from one week's calls. A small number of calls were excluded by NHS 111 staff if a user was 15 years or under and called relating to a sexual health issue, or if a user did not provide their home address details. In order to avoid 'repeat' users receiving more than one questionnaire only the first call received during the sampling period was included in the sample
Personnel at each site sent a covering letter, questionnaire and reply paid envelope to the *patient* within two weeks of the call. In most cases the caller and the patient are the same person. Sometimes parents called on behalf of their children and sometimes adults called on behalf of other adults. We asked in the covering letter that both caller and patient attempt to complete the questionnaire together if relevant and possible. Responses were returned directly to our team and logged. Questionnaires had unique identifiers and sites were informed about which identifiers needed reminders. Up to two reminders were sent to non-responders approximately 3 weeks and 6 weeks after the initial mailing.

The questionnaire

The questionnaire covered how people accessed the service, the usefulness of the advice received, whether users felt they got to the right service first time, compliance with that advice, good and poor aspects of their contact with the service, overall satisfaction with the service, the value of the service, the pathway followed, time to symptom resolution, whether the problem was resolved to their satisfaction at 7 days after the call, and if they had to re-contact a service about the same condition within 48 hours. Some caller demographics were also included. The questionnaire was developed based on our previous evaluations of NHS Direct and Ambulance Service call management [8,9] and sent to NHS 111 users in one site who discussed within a telephone interview the face and content validity of the questionnaire.

We were aware before we embarked on this survey that NHS 111 users may not know that they called the service because some users are switched through from other services. We designed the covering letter and questionnaire to accommodate this but had to make changes to the covering letter used in the second to fourth sites because it was obvious from notes written on the returned questionnaires and calls made to our team that some people felt the survey was not relevant to them because they had not used NHS 111.

Expected response

The expected response rate was 70% with two reminders, giving 840 responses in each site. These numbers would detect a 7 percentage point difference in overall satisfaction within each site between the 3 and 9 month surveys at the 5% level with 80% power.

Analysis

Data were analysed in PASW Statistics version 18. We compared differences between sites using the chi-squared test for proportions and ANOVA for continuous variables. When comparing satisfaction levels we adjusted for age, sex and ethnicity of the caller because these demographics can affect people's satisfaction levels regardless of the quality of service given. In particular, older people are more satisfied with health care than younger people. For adjusted comparisons we dichotomised categorical variables.

6.3 Results

6.3.1 Response rates

The response rate was 44% overall (Table 6.1) and varied between 37% and 54% by site.

Table 6.1: Sampling and response rates by site

	Durham & Darlington	**Nottingham**	**Lincolnshire**	**Luton**	**All**
Service start date	July 2010	November 2010	November 2010	December 2010	
Sampling period	31st January – 6th February	7th-20th March	14th -27th March	21st March – 3rd April	
Sampling method	Random	All calls	All calls	All calls	
Mailed	1146	1405	1184	1036	4771
Completed questionnaires returned	555	518	638	387	2098
Adjusted response rate*	49% (555/1128)	37% (518/1395)	54% (638/1173)	37% (387/1033)	44% (2098/4729)

*removed 'deceased' and 'return to senders'

6.3.2 Respondent demographics

We asked for the *caller* demographics (Table 6.2). These differed between sites for age (p=0.001), sex (p=0.033) and ethnicity (p=0.001). Lincolnshire had a higher proportion of older callers and male callers than the other sites. Both Nottingham and Luton had high proportions of callers from minority ethnic communities. These demographics may reflect the population of the sites, or the population of callers, or there may be some survey non-response bias. We intend to undertake further work to explore the effect of non-response bias.

6.3.3 Satisfaction with different aspects of the service

Respondents were asked to 'strongly agree' through to 'strongly disagree' on a five point Likert scale with a series of positive statements about NHS 111 (Table 6.3). Small percentages of respondents disagreed or strongly disagreed with these statements. 84% strongly agreed or agreed that NHS 111 had helped them to make contact with the right service.

Table 6.2: Survey respondent demographics by site

		Durham & Darlington % (n)	Nottingham % (n)	Lincolnshire % (n)	Luton % (n)
Age	16-44	55 (293)	58 (290)	47 (292)	65 (239)
	45-64	25 (134)	22 (111)	27 (170)	20 (73)
	65+	20 (104)	19 (96)	26 (166)	15 (56)
Sex	Male	26 (142)	29 (146)	34 (214)	32 (121)
Ethnicity	White	97 (521)	76 (375)	97 (607)	60 (222)
N=100%		555	518	638	387

Table 6.3: Satisfaction with different aspects of the NHS 111 service

Statement	Strongly agree % (n)	Agree % (n)	Neither % (n)	Disagree % (n)	Strongly disagree % (n)	N= 100%
The 111 staff were helpful	63 (1291)	31 (641)	3 (67)	2 (39)	1 (13)	2051
The questions asked by the 111 service were relevant	52 (1043)	37 (729)	7 (135)	3 (67)	1 (25)	1999
The 111 service dealt with my problem quickly	59 (1193)	31 (635)	6 (115)	2 (48)	1 (29)	2020
The advice I was given by the 111 service worked well in practice	51 (992)	35 (680)	10 (189)	3 (65)	2 (31)	1957
The 111 service helped me to make contact with the right health service	53 (1027)	31 (604)	11 (215)	3 (62)	2 (31)	1939
Using the 111 service reassured me	55 (1108)	30 (602)	9 (187)	3 (59)	2 (45)	2001
I was completely happy with the 111 service	59 (1186)	30 (596)	7 (134)	3 (61)	2 (43)	2020
The 111 service is a valuable addition to the NHS	66 (1338)	25 (502)	6 (114)	2 (41)	2 (31)	2026

We considered differences between sites in terms of the proportion of respondents strongly agreeing with each statement (Table 6.4). We selected to dichotomise at ‘strongly agree’ versus all other options because research has shown that people who state that they are ‘satisfied’ (equivalent to ‘agree’ with positive statements) can identify some areas for improvement with a service whereas those who state they are ‘very satisfied’ (equivalent to ‘strongly agree’) can see no room for improvement. There were site differences for helpfulness of staff, relevance of questions asked and helpfulness in terms of making

contact with the right health service. There was a pattern of Nottingham and Luton having lower satisfaction rates even after adjustment for differences in the demographics of respondents by site.

Table 6.4: Percentage of respondents 'strongly agreeing' with satisfaction statements by site

Statement	Durham & Darlington % (n)	Nottingham % (n)	Lincolnshire % (n)	Luton % (n)	P value*
The 111 staff were helpful	65 (349)	57 (288)	69 (434)	58 (220)	.009
The questions asked by the 111 service were relevant	50 (263)	49 (238)	59 (358)	50 (184)	.017
The 111 service dealt with my problem quickly	61 (327)	55 (273)	65 (403)	51 (190)	.086
The advice I was given by the 111 service worked well in practice	53 (276)	45 (215)	56 (331)	47 (170)	.113
The 111 service helped me to make contact with the right health service	59 (303)	47 (229)	57 (327)	46 (168)	.017
Using the 111 service reassured me	57 (304)	52 (257)	61 (373)	48 (174)	.057
I was completely happy with the 111 service	61 (327)	54 (269)	64 (397)	52 (193)	.081
The 111 service is a valuable addition to the NHS	68 (363)	64 (320)	70 (433)	60 (223)	.354

*adjusted for age, sex, and ethnicity

6.3.4 Satisfaction overall

Respondents were asked about satisfaction overall with the new service, the NHS when seeking urgent care, and the NHS in general (Table 6.5). 93% were very or quite satisfied with the way NHS 111 handled the whole process. People were also generally satisfied with urgent care, but there was less satisfaction with the NHS in general.

Table 6.5: Satisfaction with NHS 111, urgent care and the NHS

	Very satisfied % (n)	Quite satisfied % (n)	Neither % (n)	Quite dissatisfied % (n)	Very dissatisfied % (n)	N=100%
The way the 111 service handled the whole process?	73 (1497)	20 (404)	4 (72)	2 (48)	2 (39)	2060
The way in which the NHS runs when you need to seek help URGENTLY	50 (1026)	37 (758)	7 (150)	4 (75)	2 (43)	2052
The way in which the NHS runs in GENERAL nowadays?	25 (516)	48 (982)	17 (340)	7 (150)	3 (68)	2056

Considering differences between sites, there were no statistically significant differences for NHS 111 (p=0.513) or urgent care (p=0.073) (Table 6.6). Satisfaction with the NHS in general was lower in Lincolnshire and Luton than the other sites, even after adjusting for age, sex and ethnicity (p=0.006).

Table 6.6: Overall satisfaction with NHS 111, urgent care and the NHS by site

Respondents reporting 'very satisfied'	Durham & Darlington % (n)	Nottingham % (n)	Lincolnshire % (n)	Luton % (n)
Overall, how satisfied or dissatisfied were you with the way the 111 service handled the whole process?	76 (416)	69 (348)	76 (483)	66 (250)
How satisfied are you with the NHS, when you need to seek help urgently?	56 (306)	49 (245)	50 (315)	43 (160)
How satisfied are you with the way the NHS runs in general?	29 (161)	27 (135)	21 (135)	23 (85)

6.3.5 Finding out about NHS 111

Respondents were asked how they had heard about the new service. Most had heard through the media, leaflets and health care providers (Table 6.7). Media and leaflets appeared to be particularly prominent in Lincolnshire.

Table 6.7: How respondents heard about NHS 111

	Durham & Darlington % (n)	Nottingham % (n)	Lincolnshire % (n)	Luton % (n)
Media	19 (107)	18 (93)	34 (215)	19 (74)
Leaflet	25 (137)	27 (138)	50 (315)	22 (85)
Friend/relative	15 (85)	14 (74)	17 (108)	17 (65)
Online	3 (15)	4 (22)	2 (12)	5 (18)
Health service telephone message	17 (93)	16 (83)	2 (11)	17 (65)
Other healthcare provider	31 (173)	26 (135)	8 (52)	28 (107)
Transferred through to 111 or not previously heard of 111**	3 (18)	6 (32)	1 (3)	3 (13)

*respondents were asked to tick all options that applied, therefore % not equal to 100.

**this was not a response option – taken from a free text option.

Respondents were asked if they were clear about when to use the new service instead of another service. 86% were definitely clear about this (Table 6.8). This differed by site, with lower rates of clarity in Nottingham than other sites (adjusted p=0.001). 87% said they would call the service again for a similar problem (Table 6.8) and this did not differ by site (adjusted p=0.54).

6.3.6 Perceptions of intended behaviour

Stakeholders are often interested in what people say they would have done had a new service not been in operation. Their interpretation of this is that any new service has had an impact on other services if it changes reported intentions. A problem with this interpretation is that this is people's perception of intention and may not reflect reality. Bearing this in mind, up to a fifth believed they would have called 999 (Table 6.9). Note the large proportion of people who report that they would have used an urgent care centre in Durham and Darlington.

Table 6.8 Are you clear about when to use the 111 service instead of another service?

	Durham & Darlington % (n)	Nottingham % (n)	Lincolnshire % (n)	Luton % (n)	All % (n)
Clear about when to call					
Yes, definitely	88 (481)	79 (402)	93 (583)	84 (317)	86 (1783)
No/ Not sure	12 (67)	21 (104)	8 (47)	16 (62)	14 (280)
Call service again?					
Yes	89 (489)	84 (424)	88 (556)	85 (320)	87 (1789)
No/ Not sure	11 (61)	16 (80)	12 (75)	15 (58)	13 (274)

Table 6.9: Services contacted if NHS 111 had not been available

	Durham & Darlington % (n)	Nottingham % (n)	Lincolnshire % (n)	Luton % (n)	P value*
Doctor/nurse at general practice	21 (111)	23 (106)	29 (179)	28 (101)	.015
999 Ambulance Service	16 (84)	22 (100)	19 (122)	16 (60)	.060
Emergency Department	16 (86)	16 (73)	23 (145)	21 (76)	.002
Urgent Care Centre	30 (159)	5 (25)	4 (23)	10 (36)	.000
Minor Injuries Unit	1 (7)	0 (2)	1 (3)	1 (3)	.255
Walk-in centre	12 (66)	19 (89)	6 (39)	21 (78)	.001
NHS Direct	22 (117)	37 (173)	30 (190)	32 (118)	.001
N=100%+	555	518	638	387	

+respondents were asked to tick one option only but many ticked multiple services, therefore % not equal to 100%.

*adjusted for age, sex, and ethnicity

6.4 Discussion

Summary of findings

We have conducted a postal survey of 1200 users in each pilot site 4-6 months after the services became live. Of the responders 93% were very or quite satisfied with the way NHS 111 handled the whole process, which is comparable to the satisfaction rate reported for NHS Direct when it was first introduced[8]. Eighty four percent of users strongly agreed or agreed that NHS 111 helped them to contact the right service but 14% were not clear about when to use this new service.. There were some differences by site which may reflect service delivery or may be due to population differences.

Strengths and limitations

This is a large survey of users of NHS 111. The response rate was considerably lower than expected but comparable with the postal survey of access to general practice in England which obtained a response rate of 41% in 2008 and 38% in 2009 (Department of Health, 2011). We intend to explore non-response bias.

Implications

Early users were generally satisfied with this new service. This preliminary analysis identified no problems with the service. As with any new service, there is work to be done in terms of educating people about when to use it.

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7. Next Steps

The evaluation is due to finish in February 2012. A number of tasks will be completed during the next 6 months. These are:

- Further analysis of routine data on activity and whole system impact using a full years post implementation data including a comparison of the effects of different operating models
- Completion of analysis of the before and after population surveys
- Conduct and analysis of the second user survey currently in progress. This has been conducted in each pilot site at 9 months post implementation of NHS111 to take account of changes which may occur as the new service matures and develops and activity increases
- Completion and analysis of a series stakeholder interviews to explore practical issues around NHS111 delivery and the impact on the emergency and urgent care system. This work is currently underway and includes interviews with NHS111 provider services, commissioners, ambulance service managers and emergency department managers. Together with the work already completed for the "lessons learned" exercise reported in the first interim report and a detailed description of the different operating models in each of the 4 pilot sites this will provide a comprehensive picture of the planning, processes and challenges associated with designing and implementing an NHS111 service
- An assessment of the ability of NHS111 to deliver definitive clinical assessment. The aim of this study is to examine in more detail the questions about whether NHS 111 achieves definitive clinical assessment for callers to the service. An expert panel consensus approach will be used to review a sample calls to NHS 111 and the proportion of calls where definitive clinical assessment is achieved calculated. Processes and factors which impede the achievement of definitive clinical assessment will be identified
- An economic evaluation using a cost consequence analysis to measure the costs associated with setting up, implementing and running an NHS111 service and the consequences in terms of the economic impact on the wider emergency and urgent care system.

The final report will be completed in February 2012.

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Appendix 1 - Description of Operating Models

Lincolnshire

Provider

- NHS Direct Call handling provider, EMAS ambulance service and Lincolnshire OOH

Software & content

- CS Hosting NHS Pathways and CMS Dos. KMS dos used as a contingency for any CMS dos issue/non return.

Call Routing

- From go live to 1st April, only calls processed were direct dial 111 calls.
- From 1st April 2011 callers dialling OOH were directed to call 111 there is no other OOH traffic

Design and Call Volume

- Calls are routed to NHS Direct using a separate number and routing to other services and are identified to agents as Lincoln 111.
- Where calls reach a 'to be seen endpoint' NHS Direct warm transfer the call for an appointment to be booked for face to face.
- There is contingency in operation for some of the time (commissioner agreed) this contingency may see alternate clinical content in operation.
- Marketing activity was higher impact at launch.

Nottingham City

Providers

- NHS Direct Call handling provider, NEMS face to face OOH service, EMAS Ambulance service

Software & content

- CS Hosting NHS Pathways and CMS Dos. KMS dos used as a contingency for any CMS dos issue/non return.

Call Routing

- Calls are auto routed from the OOH service to 111
- All other callers dial 111

Design and Call Volume

- Calls are routed to NHS Direct using a separate number and routing to other services and are identified to agents as Nottingham 111 and separately Nottingham OOH.
- Where calls reach a 'to be seen endpoint' NHS Direct warm transfer the call to NEMS for an appointment to be booked for face to face, the caller then speaks to a call handler or Nurse to book an appointment/allocate home visit etc
- There is currently a flexibility arrangement in operation where commissioners have authorised a further probing of calls that reach a to be seen outcome over 12 hours, signed off by the East Mids programme board on 11th August.
- NHS Direct are also commissioned to provide cover for Protected learning Time for GP surgeries, which sees an increase in call volumes during non OOH times.

Luton

Provider

- NHS Direct Call handling provider, Care UK OOH provider and EEAST ambulance service

Software & content

- CS Hosting NHS Pathways and CMS Dos. KMS dos used as a contingency for any CMS dos issue/non return.

Call Routing

- Calls are thought to be mixed in terms of auto route and messaging from the OOH service to 111
- All other callers dial 111

Design and Call Volume

- Calls are routed to NHS Direct using a separate number and routing to other services and are identified to agents as Luton 111 and separately Luton OOH.
- Where calls reach a 'to be seen endpoint' NHS Direct warm transfer the call for an appointment to be booked for face to face appointment to booking agents within NHS Direct, the booking agent applies commissioner criteria for a home visit.

County Durham & Darlington

Provider

- NEAS Call handling provider, CD&D Urgent Care Centres and NEAS ambulance service

Software & content

- Cleric hosting NHS Pathways and CMS Dos.

Call Routing

- Calls auto route from the old SPA number and some GP surgeries out of hours to 111
- All other callers dial 111

Design and Call Volume

- Calls are routed to NEAS
- There may be different demographic collection protocols compared to the provider in the other areas
- Where calls reach a ‘to be seen endpoint’ agents have access to the UCC systems for booking appointments.