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National Rehabilitation Centre: Travel Impact Analysis

National Rehabilitation Centre

East Midlands Region

July 2019

Report Specification

Recipients

National Rehabilitation Centre, East Midlands.

Data Source

Sources

Data was originally provided from the Secondary Uses Service by NHS England following a request from the National Rehabilitation Centre Programme Team. Revised data for the 2018 calendar year was later provided by the East Midlands Major Trauma Centre to more closely reflect patients who might use the National Rehabilitation Centre. It covers finished inpatient rehabilitation episodes taking place during this period.

Travel distances and times are calculated using this data and analysed using fastest path algorithms.

Geography

This report covers patients using inpatient rehabilitation services at Nottingham University Hospitals NHS Trust, University Hospitals of Leicester NHS Trust, Derby Teaching Hospitals NHS Foundation Trust and United Lincolnshire Hospitals NHS Trust sites.

Data Receipt

Data was supplied on 14 June 2019 to provide a basis for agreeing assumptions and drafting a scope for the work. Final data was supplied on 10 July 2019 from which all analysis in this report is taken.

Production

Produced by

David Oates, Clinical Commissioning Intelligence Specialist, david.oates@nhs.net
Dominic Rowney, Principal Information Analyst, dominic.rowney@nhs.net

Reviewed by

Ian Nicholson, Head of Clinical Commissioning Intelligence, i.nicholson@nhs.net

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Executive Summary

This report estimates the current travel distance and time undertaken by people visiting patients who require rehabilitation services in the East Midlands region. It also models potential changes in distances and time if rehabilitation services are established at a new National Rehabilitation Centre located on the Stanford Hall Rehabilitation Estate near Loughborough.

The methodology used combines industry standard, multi-modal transport travel distance algorithms which optimise journeys to the nearest hospital site in terms of the shortest distance / time by private transport means or shortest time only by public transport.

The East Midlands region provided data on patients using inpatient rehabilitation services covering the calendar year 2018. To ensure patient confidentiality, aggregate data has been supplied. This data was restricted to numbers of patients and total length of stay of patients normally resident in each Lower Super Output Area (LSOA).

Total days spent in rehabilitation services per LSOA were used to estimate the number of visits made by friends and family to the nearest existing site and the total distance / time that this took. This method was then applied to model travel distances and journey times to the proposed new location for rehabilitation services at Stanford Hall Rehabilitation Estate.

There were 1296 episodes of rehabilitation in 2018, excluding 35 episodes where the patient's location was not available in the data provided. These episodes involved 19224 bed days (approximately 2745 weeks of care). The average length of stay in rehabilitation for this cohort was 24 days.

It is unlikely that all of these cases would transfer to the NRC. However, this pool of potential users has been included in the analysis as criteria and pathways for admission to the NRC have not been fully established.

Patients live 10.7 miles from the nearest current site on average but this can vary from 3.2 miles on average for Leicester City CCG patients to 39 miles for those from South Lincolnshire CCG.

If all patients were instead treated at the proposed National Rehabilitation Centre, most people would have to travel further to visit patients. Patients would be treated on average 25 miles from home – a further 13.9 miles compared to the nearest current hospital.

Patients from North and North East Lincolnshire CCGs would face the greatest impact, travelling more than 40 miles further to the NRC on average. It should be noted, however, that there are relatively few patients from these CCGs and the total additional miles travelled per year would be less than for most other CCGs. More patients from Lincolnshire East and West CCGs were included in the dataset and these patients would face longer journeys on average. In contrast, West Leicestershire CCG patients would travel fewer miles compared to their nearest current site.

Patients live on average 20 minutes by car from their nearest current site. This would increase to 39 minutes for a single journey to the NRC.

Travelling by public transport, journey times to the current nearest hospital are considerably longer than by private transport (an hour on average). Most people would incur greater travel time to reach the NRC by public transport (an additional 66 minutes on average) with people from the Lincolnshire CCGs particularly affected.

There could be significant impact for some people visiting patients using rehabilitation services if all rehabilitation services are transferred to the National Rehabilitation Centre.

A small number of people, for example some of those from the Lincolnshire CCGs, would be particularly adversely affected. It is recommended that consideration is given to the availability of alternatives to treatment at the National Rehabilitation Centre for people living furthest from the proposed site. Providing choice in the location of rehabilitation services will be particularly important for visitors who do not have access to a car.

Introduction

1.1 Background

The East Midlands region plans to develop the first National Rehabilitation Centre to be located on the Stanford Hall Rehabilitation Estate (SHRE) near Loughborough.

Whilst it is anticipated that rehabilitation services will be improved if this development is agreed, it is important to consider the travel implications arising from moving services to a new location. The East Midlands region has a requirement to understand more about the journeys people make to visit patients where they are currently treated and any differences which would be experienced if they are treated at the National Rehabilitation Centre.

1.2 Purpose of Report

This report provides detail on current and potential changes in travel distance/time for people visiting patients who require rehabilitation services.

Methodology

2.1 Scope and data sources

The scope of this study was agreed with the Programme Director, National Rehabilitation Centre. The study is restricted to estimated changes in travel incurred by people visiting patients who require inpatient rehabilitation services.

The specialties and patients which may move to a National Rehabilitation Centre are neurosciences, complex musculo-skeletal, major trauma, amputee and incomplete spinal cord injury patients.

Patients using the National Rehabilitation Centre are expected to come from the East Midlands (Nottinghamshire, Derbyshire, Lincolnshire and Leicestershire).

The East Midlands region provided data on patients using inpatient rehabilitation services covering the calendar year 2018. To ensure patient confidentiality, aggregate data was supplied. This data was restricted to numbers of patients and total length of stay of patients normally resident in each Lower Super Output Area (LSOA). LSOAs are a geographic area designed to improve the reporting of small area statistics in England and Wales. The minimum LSOA population is 1000 and the mean is 1500.

2.2 Rehabilitation sites

The following sites were included in the modelling:

- Nottingham University Hospitals NHS Trust (NUH) – QMC and City Hospital Sites – NG7 2UH, NG5 1PB
- University Hospitals of Leicester NHS Trust (UHL) – LE1 5WW
- Derby Teaching Hospitals NHS Foundation Trust (DTH) - DE22 3NE and London Road site DE1 2QY
- United Lincolnshire Hospitals NHS Trust (ULH) – LN2 5QY
- Proposed site of the National Rehabilitation Centre using LE12 5QW.

2.3 Travel Impact Analysis modelling

The travel implications of historical and current use of existing rehabilitation services was modelled using data supplied by commissioners on the numbers of patients by LSOA and their total length of stay.

As detailed postcode data for patients using rehabilitation services is not available, the population weighted centroid for each LSOA was used as a proxy for the patient's home address. The population weighted centroid is produced by the Office for National Statistics and provides a single summary reference point within the LSOA based on the distribution of the population in the LSOA[1]. The easting and northing of this centroid was then used to enable travel distances to each rehabilitation site to be calculated.

Travel distances to each rehabilitation site were calculated using shortest / fastest path algorithms originally devised by Edsger Wybe Dijkstra[2]. These algorithms form the basis for most methods of calculating travel time / distance. It was assumed that patients in each LSOA were treated in the nearest hospital to that LSOA.

Proprietary speed datasets were used to provide an estimate of drive times for private transport. Public transport travel times were also modelled and make allowances for arriving at a bus stop and the onward journey after alighting from a bus.

Total days spent in rehabilitation services per LSOA were used to estimate the number of visits made by friends and family and the total distance and time that this took.

This method was then applied to provide travel distances and journey times to the proposed new location for rehabilitation services at Stanford Hall Rehabilitation Estate. Differences arising from this change were then reported.

[1] Population Weighted Centroids Guidance. Office for National Statistics https://www.arcgis.com/sharing/rest/content/items/b20460edf2f3459fa7d2771eacab51fc/data

[2] Dijkstra's algorithm https://en.wikipedia.org/wiki/Dijkstra%27s_algorithm

2.4 Patient Confidentiality

No patient identifiable data has been made available to the researchers undertaking this study. Aggregate data at LSOA level has been used to model likely travel scenarios.

2.5 Assumptions and Limitations

It is understood that the prime focus of this study is to assess visitor journeys. The commissioner has specified an average frequency of visits of three times per week which is used alongside the patients' length of stay to calculate the number of journeys made.

As the address of visitors is not recorded, it is assumed that visitors live at the same location as the patient.

As detailed postcode data is not available, travel distances are calculated from the population centroid of the LSOA where the patient is normally resident. Whilst this approach can only provide an approximation of actual travel distances, it is felt that this methodology provides the best balance between assessing the likely travel impact and maintaining patient confidentiality.

As the hospital that the patient attended is not available in the data set to be used, it is assumed that patients in each LSOA were treated in the nearest hospital to that LSOA. This may underestimate the travel incurred using current services.

To calculate travel times, road speeds adjusted for typical traffic speeds at a specified time of day were used. As the relevant visiting times for each site were not known, all journeys were set to start at 1.30pm on a Wednesday. It is not possible to ascertain if all roads were available at the time of travel or if there were any temporary delays, eg due to accidents.

The dataset supplied included 35 patients with no LSOA identified. 9 of these patients had no fixed abode. The others were due to an invalid home address being recorded. These records have been excluded from this study as travel details cannot be calculated. These records account for 2.6% of the dataset so this is unlikely to affect the findings.

It was not possible to identify public transport routes for 31 patients. These have been excluded from the public transport modelling.

Results

3.1 Baseline

The dataset supplied included 35 patients with no LSOA identified. 9 of these patients had no fixed abode. The others were due to an invalid home address being recorded. These records have been excluded from this study as travel details cannot be calculated. These records account for 2.6% of the dataset so this is unlikely to affect the findings.

There were 1296 episodes of rehabilitation in 2018. These episodes involved 19224 bed days (approximately 2745 weeks of care). The average length of stay in rehabilitation for this cohort was 24 days.

Figure 1 shows where patients who received rehabilitation services in 2018 normally live. There were four patients who lived more than 100 minutes by car from the nearest hospital. As their inclusion would require a less detailed scale, they have been excluded from the map below.

Figure 1 Home location of patients using rehabilitation services 2018:

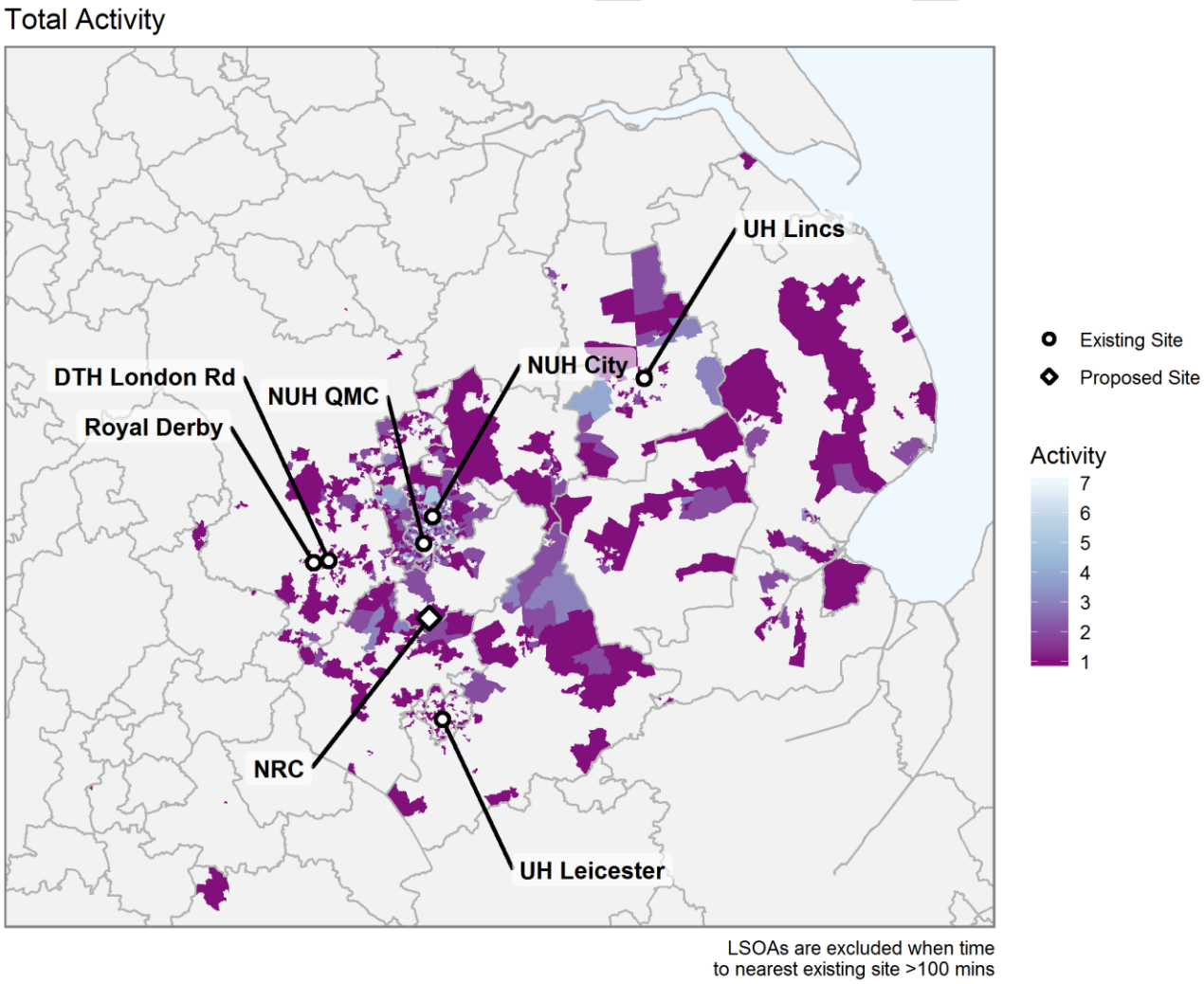


Table 1 shows rehabilitation activity in 2018 by the responsible CCG. As the hospital used was not included in the dataset, it is assumed that patients used the nearest hospital which will probably underestimate current travel. This shows that the Nottingham and Southern Derbyshire CCGs make greatest use of the services covered in this report. Patients live 10.7 miles from the nearest hospital on average but this can vary from 3.2 miles on average for Leicester City patients to 39 miles for those from South Lincolnshire CCG.

Table 1 Baseline by CCG 2018

CCG	Total Episodes	Average LoS (Days)	Min Distance from Nearest Site (in miles)	Average Distance from Nearest Site (in miles)	Max Distance from Nearest Site (in miles)
NHS EAST LEICESTERSHIRE AND RUTLAND CCG	62	16.4	2.1	15.4	47.4
NHS LEICESTER CITY CCG	59	13.4	1.1	3.2	5.0
NHS LINCOLNSHIRE EAST CCG	51	17.9	10.3	34.4	44.9
NHS LINCOLNSHIRE WEST CCG	60	16.0	0.8	7.0	23.0
NHS MANSFIELD AND ASHFIELD CCG	69	22.1	2.0	13.0	22.5
NHS NEWARK & SHERWOOD CCG	47	22.9	3.2	17.2	24.8
NHS NORTH EAST LINCOLNSHIRE CCG	1	5.0	36.1	36.1	36.1
NHS NORTH LINCOLNSHIRE CCG	2	24.0	15.1	15.1	15.1
NHS NOTTINGHAM CITY CCG	442	36.9	0.5	4.0	99.6
NHS NOTTINGHAM NORTH AND EAST CCG	118	33.3	1.8	4.9	28.4
NHS NOTTINGHAM WEST CCG	118	32.0	2.0	5.7	19.8
NHS SOUTH LINCOLNSHIRE CCG	18	26.6	1.9	39.0	45.3
NHS SOUTH WEST LINCOLNSHIRE CCG	33	13.5	10.2	24.2	30.0
NHS SOUTHERN DERBYSHIRE CCG	140	15.5	0.6	8.6	89.0
NHS WEST LEICESTERSHIRE CCG	76	14.9	5.6	17.5	163.7
Grand Total	**1296**	**24.2**	**0.5**	**10.7**	**163.7**

Table 2 shows the nearest current site for patients and the average, minimum and maximum distances from home. 39% of patients live closest to the NUH City Hospital.

Table 2 Baseline information on nearest current sites:

Nearest Site	Activity 2018	% of Total Activity	Minimum Distance from Nearest Site (in miles)	Average Distance from Nearest Site (in miles)	Maximum Distance from Nearest Site (in miles)
Royal Derby	32	2%	1.8	14.0	94.8
Derby: London Road	121	9%	0.6	7.9	43.0
NUH: City Hospital	509	39%	0.8	6.8	89.0
NUH QMC	337	26%	0.5	9.3	40.7
University Hospital of Leicester	127	10%	1.1	10.8	163.7
United Lincolnshire Hospitals	170	13%	0.8	22.1	45.3
Grand Total	**1296**	**100%**	**0.5**	**10.7**	**163.7**

Table 3 shows the total weeks spent in rehabilitation. It also estimates the number of journeys per year made by relatives or friends visiting patients and the total miles incurred (assuming visitors travel from the patients' home address to the nearest current site). It is assumed that each patient receives three visits per week. Return journeys are counted. Patients from Nottingham City CCG incur the most miles travelled due to greater numbers of cases and a high average length of stay for patients (just under 37 days).

Table 3 Baseline information on total visits to nearest current sites:

Row Labels	Activity 2018	Total LoS in 2018 (weeks)	Total Weeks of Rehabilitation	Estimated Journeys per Year	Estimated Total Miles Travelled by Visitors Per Year
NHS EAST LEICESTERSHIRE AND RUTLAND CCG	62	110	662	10016	18448
NHS LEICESTER CITY CCG	59	94	565	1817	6314
NHS LINCOLNSHIRE EAST CCG	51	100	599	21596	32305
NHS LINCOLNSHIRE WEST CCG	60	96	577	4108	8255
NHS MANSFIELD AND ASHFIELD CCG	69	168	1005	10412	21545
NHS NEWARK & SHERWOOD CCG	47	118	707	11785	19936
NHS NORTH EAST LINCOLNSHIRE CCG	1	1	4	151	231
NHS NORTH LINCOLNSHIRE CCG	2	3	20	308	490
NHS NOTTINGHAM CITY CCG	442	1022	6132	32693	71001
NHS NOTTINGHAM NORTH AND EAST CCG	118	280	1681	7334	19081
NHS NOTTINGHAM WEST CCG	118	265	1589	8113	20711
NHS SOUTH LINCOLNSHIRE CCG	18	53	320	13166	18521
NHS SOUTH WEST LINCOLNSHIRE CCG	33	54	325	8125	12779
NHS SOUTHERN DERBYSHIRE CCG	140	250	1497	12975	25354
NHS WEST LEICESTERSHIRE CCG	76	132	790	16919	26813
Grand Total	**1296**	**2746**	**16473**	**159520**	**301783**

3.2 Modelling National Rehabilitation Centre Travel Impact: Distance

If all patients were instead treated at the proposed National Rehabilitation Centre, most people would have to travel further to visit patients. Patients would be treated on average just under 25 miles from home – a further 13.9 miles compared to the nearest current hospital. Based on people visiting a patient three times per week, this would involve an additional 212,994 miles travelled per year. It should be noted that it is unlikely that all patients would transfer to the NRC so this may be seen as worst case scenario.

As would be expected, the impact on travel will vary considerably depending upon where patients live. The very small number of patients from North and North East Lincolnshire CCGs would face the greatest impact, travelling more than 40 miles further on average. There are relatively few patients from these CCGs and the total additional miles travelled per year would be less than for most other sites. More patients from Lincolnshire East and West CCGs were included in the dataset and these patients would face longer journeys on average. In contrast, West Leicestershire CCG patients would travel fewer miles compared to their nearest current site.

Table 4 demonstrates the potential impact for people visiting patients at the NRC compared to their nearest current hospital.

Table 4 Modelling travel to the NRC:

Row Labels	Activity 2018	Average Distance from Nearest Site (in miles)	Average Distance to New Site (in miles)	Average Difference in miles Travelled compared to current nearest site	Total Additional Miles Travelled Per Year
NHS EAST LEICESTERSHIRE AND RUTLAND CCG	62	15.4	21.3	5.9	3271
NHS LEICESTER CITY CCG	59	3.2	18.1	14.9	8165
NHS LINCOLNSHIRE EAST CCG	51	34.4	69.2	34.8	18057
NHS LINCOLNSHIRE WEST CCG	60	7.0	46.3	39.3	23080
NHS MANSFIELD AND ASHFIELD CCG	69	13.0	31.0	18.1	16936
NHS NEWARK & SHERWOOD CCG	47	17.2	29.6	12.4	9023
NHS NORTH EAST LINCOLNSHIRE CCG	1	36.1	84.2	48.1	202
NHS NORTH LINCOLNSHIRE CCG	2	15.1	59.1	44.0	898
NHS NOTTINGHAM CITY CCG	442	4.0	15.1	11.2	66573
NHS NOTTINGHAM NORTH AND EAST CCG	118	4.9	18.5	13.6	22938
NHS NOTTINGHAM WEST CCG	118	5.7	16.9	11.3	17978
NHS SOUTH LINCOLNSHIRE CCG	18	39.0	47.9	8.9	3253
NHS SOUTH WEST LINCOLNSHIRE CCG	33	24.2	38.0	13.8	4188
NHS SOUTHERN DERBYSHIRE CCG	140	8.6	23.0	14.5	21325
NHS WEST LEICESTERSHIRE CCG	76	17.5	14.0	-3.5	-2894
Grand Total	**1296**	**10.7**	**24.6**	**13.9**	**212994**

The impact of a single journey to the NRC compared to the current nearest site is further examined in Table 5 to show the maximum and minimum changes involved. For a small number of patients, being supported at the NRC could result in a very small increase or even a reduction in travel. However, for some patients, it is likely that other provision would be preferred unless specialist care at the NRC is required.

Table 5 Additional Modelling of travel to the NRC:

Row Labels	Average Distance to New Site (in miles)	Average Difference in miles Travelled compared to current nearest site	Minimum Difference in miles Travelled compared to current nearest site	Max Difference in miles Travelled compared to current nearest site
NHS EAST LEICESTERSHIRE AND RUTLAND CCG	21.3	5.9	-12.2	24.8
NHS LEICESTER CITY CCG	18.1	14.9	8.5	20.8
NHS LINCOLNSHIRE EAST CCG	69.2	34.8	10.2	46.5
NHS LINCOLNSHIRE WEST CCG	46.3	39.3	7.5	48.5
NHS MANSFIELD AND ASHFIELD CCG	31.0	18.1	13.4	24.8
NHS NEWARK & SHERWOOD CCG	29.6	12.4	3.7	24.6
NHS NORTH EAST LINCOLNSHIRE CCG	84.2	48.1	48.1	48.1
NHS NORTH LINCOLNSHIRE CCG	59.1	44.0	44.0	44.0
NHS NOTTINGHAM CITY CCG	15.1	11.2	-12.2	39.7
NHS NOTTINGHAM NORTH AND EAST CCG	18.5	13.6	1.9	20.0
NHS NOTTINGHAM WEST CCG	16.9	11.3	-4.9	15.9
NHS SOUTH LINCOLNSHIRE CCG	47.9	8.9	2.5	16.3
NHS SOUTH WEST LINCOLNSHIRE CCG	38.0	13.8	-2.4	44.0
NHS SOUTHERN DERBYSHIRE CCG	23.0	14.5	0.3	23.3
NHS WEST LEICESTERSHIRE CCG	14.0	-3.5	-13.9	19.6
Grand Total	**24.6**	**13.9**	**-13.9**	**48.5**

3.3 Estimated Travel Time by Car

Journey times for the routes identified have been estimated. These times are based on journeys starting at 1.30pm on a Wednesday and use typical road speeds at that time. These estimates do not account for delays on particular days due to road closures, accidents etc.

Figure 2 provides a map of the estimated travel times to the nearest current hospital. The location of the proposed NRC site is shown for information only.

Figure 2 Estimated Travel Times by Car to the Nearest Current Hospital:

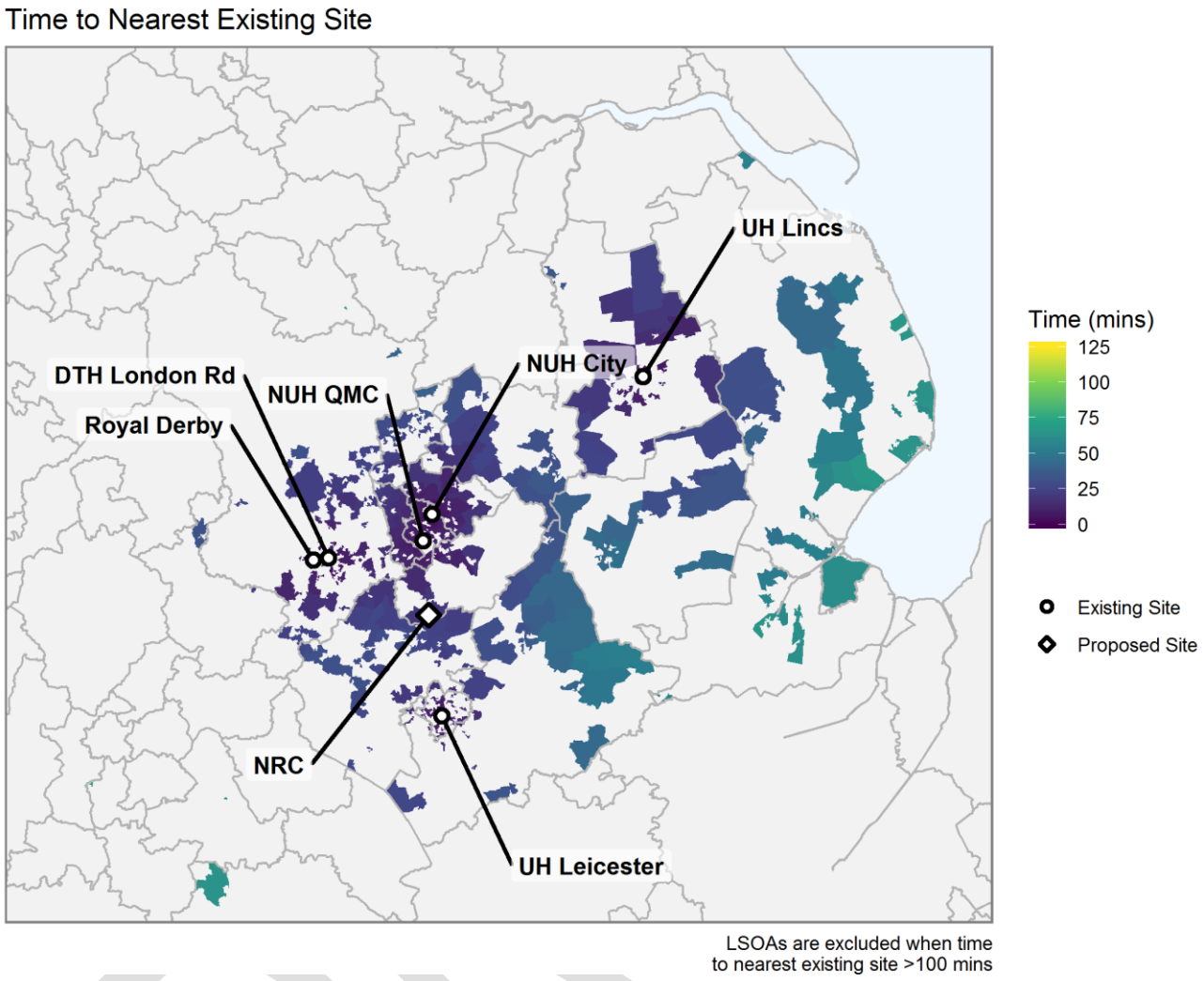


Table 6 shows estimated journey times by car to the current nearest hospital and the difference that would be incurred if the patient was instead treated at the National Rehabilitation Centre. Patients live on average 20 minutes by car from their nearest current site. This would increase to 39 minutes for a single journey to the NRC.

Based on three return visits per week's stay, it is estimated that people would currently spend over 5,000 hours per year on travel to visit patients receiving inpatient rehabilitation services. This would double to 10,267 hours if all rehabilitation services were located in the NRC. As would be expected from the travel distances shown earlier, people who would currently visit patients from the Lincolnshire CCGs would face the greatest increase in travel times for a single journey (between 44 and 52 additional minutes). However, 30% of all travel time to the NRC would be undertaken by visitors of Nottingham City CCG patients (3059 hours in total).

Table 6 Estimated Travel Time by Car, Current Nearest Site and to NRC:

	Ave. Time to Nearest Site (Single Journey Mins)	Est. Total time travelled per year (hours)	Average Time to New Site (Single Journey Minutes)	Est. Total time travelled per year to New Site (hours)
NHS EAST LEICESTERSHIRE AND RUTLAND CCG	29.0	307	35.9	370
NHS LEICESTER CITY CCG	11.2	105	33.5	310
NHS LINCOLNSHIRE EAST CCG	52.3	538	96.5	942
NHS LINCOLNSHIRE WEST CCG	14.1	138	62.4	606
NHS MANSFIELD AND ASHFIELD CCG	25.8	359	46.2	711
NHS NEWARK & SHERWOOD CCG	28.6	332	45.0	529
NHS NORTH EAST LINCOLNSHIRE CCG	55.0	4	106.0	7
NHS NORTH LINCOLNSHIRE CCG	24.0	8	76.0	26
NHS NOTTINGHAM CITY CCG	9.9	1183	28.5	3059
NHS NOTTINGHAM NORTH AND EAST CCG	12.2	318	35.5	991
NHS NOTTINGHAM WEST CCG	13.9	345	28.6	739
NHS SOUTH LINCOLNSHIRE CCG	56.6	309	76.2	429
NHS SOUTH WEST LINCOLNSHIRE CCG	38.4	213	54.6	296
NHS SOUTHERN DERBYSHIRE CCG	16.6	423	36.1	896
NHS WEST LEICESTERSHIRE CCG	29.9	447	23.7	355
Grand Total	**20.2**	**5030**	**39.4**	**10267**

Travel times to each hospital site vary depending on how close a patient lives to their nearest site and to the NRC. Figure 3 below shows the minimum, maximum journey times plus the interquartile range (middle 50%), and the mean average journey times for patients living closest to their current rehabilitation sites and to the NRC.

There are a minority of patients who face a long travel time to their current nearest site. For example, all patients who live closest to the University Hospital of Leicester live within an hour's drive of the hospital except two patients who live more than two hours away. It is likely that the recorded address of these two patients may not reflect their living arrangements at the time.

75% of patients live within 44 minutes of the NRC travelling by car. However, 10% of current patients live more than 64 minutes from the NRC. 5% would travel more than one hour and 23 minutes by car to reach the NRC.

Figure 3 Range of Travel Times by Car to Nearest Current Hospital & to NRC:

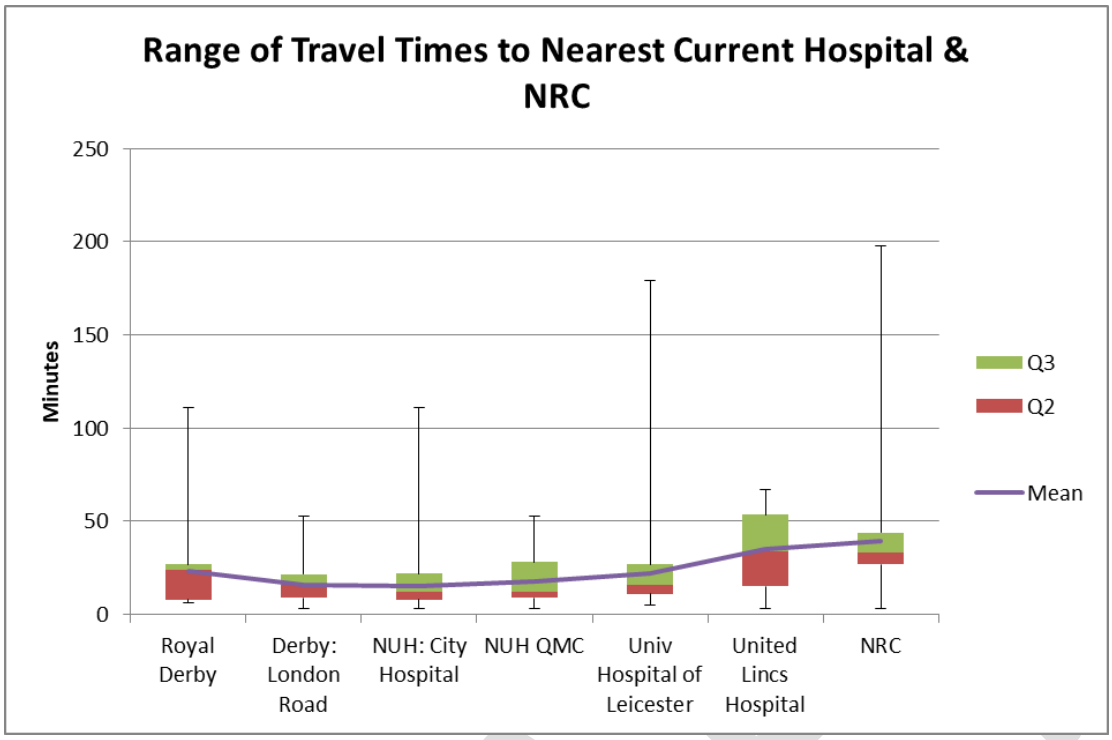
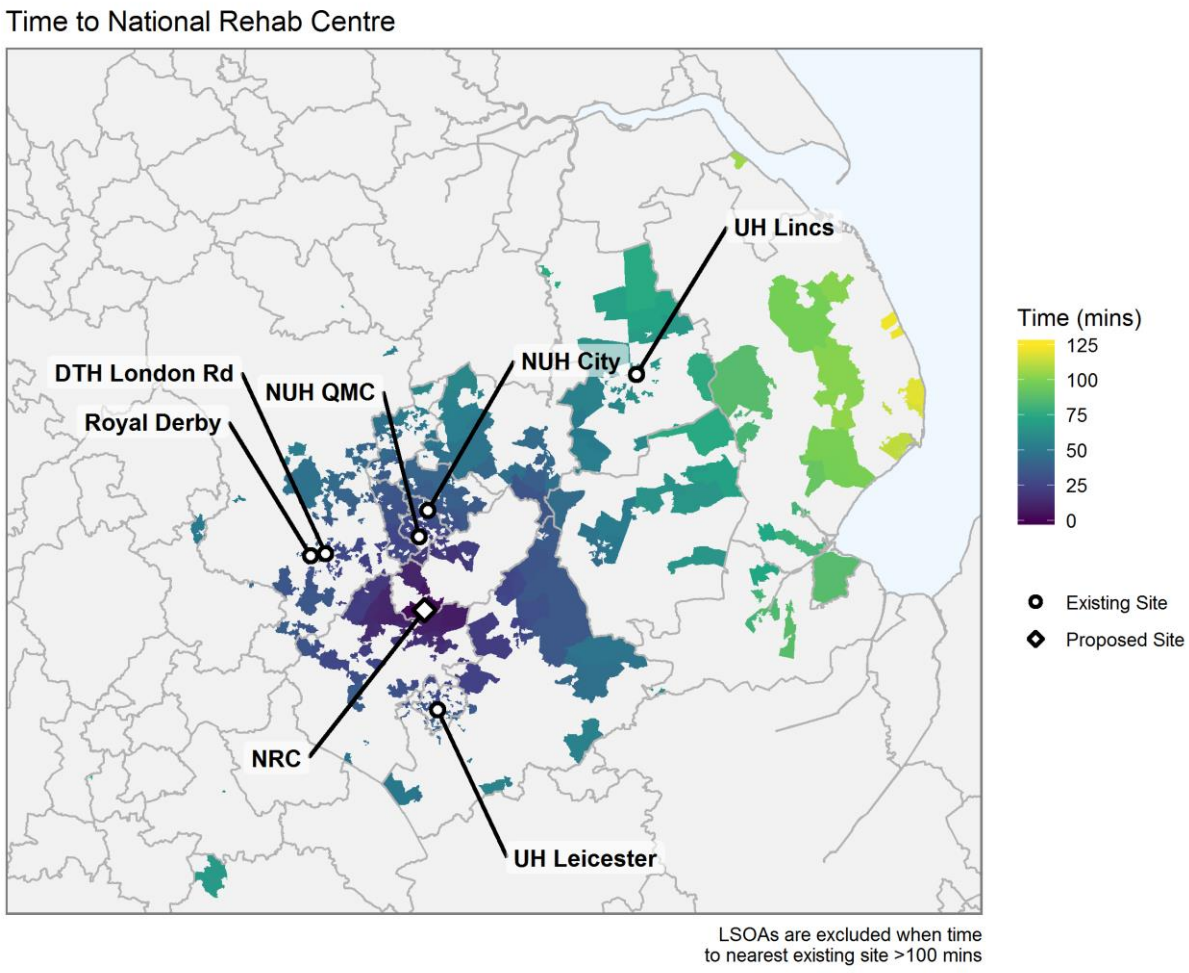


Figure 4 Travel Times by Car to the NRC:



3.4 Estimated Travel Time by Public Transport

Estimated travel time by public transport includes estimated time walking to and from bus / train points. Because the proportion of visitors who would travel by public transport is not known, single journey times only are modelled to provide an indication on the travel impact for those using public transport.

Table 7 shows the average, minimum and maximum times it would take to reach the current nearest hospital by public transport. It can be seen that journey times are considerably longer than by private transport (one hour on average).

Table 7 Estimated Travel Time by Public Transport, Current Nearest Site:

CCG	Ave. Time to Nearest Site (Single Journey Minutes)	Minimum Time to Nearest Site (Single Journey Minutes)	Max Time to Nearest Site (Single Journey Minutes)
NHS EAST LEICESTERSHIRE AND RUTLAND CCG	73	17	168
NHS LEICESTER CITY CCG	42	16	61
NHS LINCOLNSHIRE EAST CCG	125	34	257
NHS LINCOLNSHIRE WEST CCG	50	13	98
NHS MANSFIELD AND ASHFIELD CCG	76	37	108
NHS NEWARK & SHERWOOD CCG	77	47	108
NHS NORTH EAST LINCOLNSHIRE CCG	155	155	155
NHS NORTH LINCOLNSHIRE CCG	86	86	86
NHS NOTTINGHAM CITY CCG	42	10	169
NHS NOTTINGHAM NORTH AND EAST CCG	45	23	86
NHS NOTTINGHAM WEST CCG	39	13	74
NHS SOUTH LINCOLNSHIRE CCG	96	34	131
NHS SOUTH WEST LINCOLNSHIRE CCG	98	49	147
NHS SOUTHERN DERBYSHIRE CCG	54	8	158
NHS WEST LEICESTERSHIRE CCG	78	33	235
Grand Total	**60**	**8**	**257**

Table 8 below shows the average time it would take to travel to the National Rehabilitation Centre by public transport plus the average, minimum and maximum differences in journey times compared with travel to the nearest current site. While a small number of people may benefit from travelling to the NRC (shown in the minimum difference column), the average time to travel to the NRC by public transport would be over two hours. Most people would incur greater travel time (an additional 66 minutes on average) with people from the Lincolnshire CCGs particularly affected.

Table 8 Estimated Travel Time by Public Transport, Current Nearest Site and to NRC:

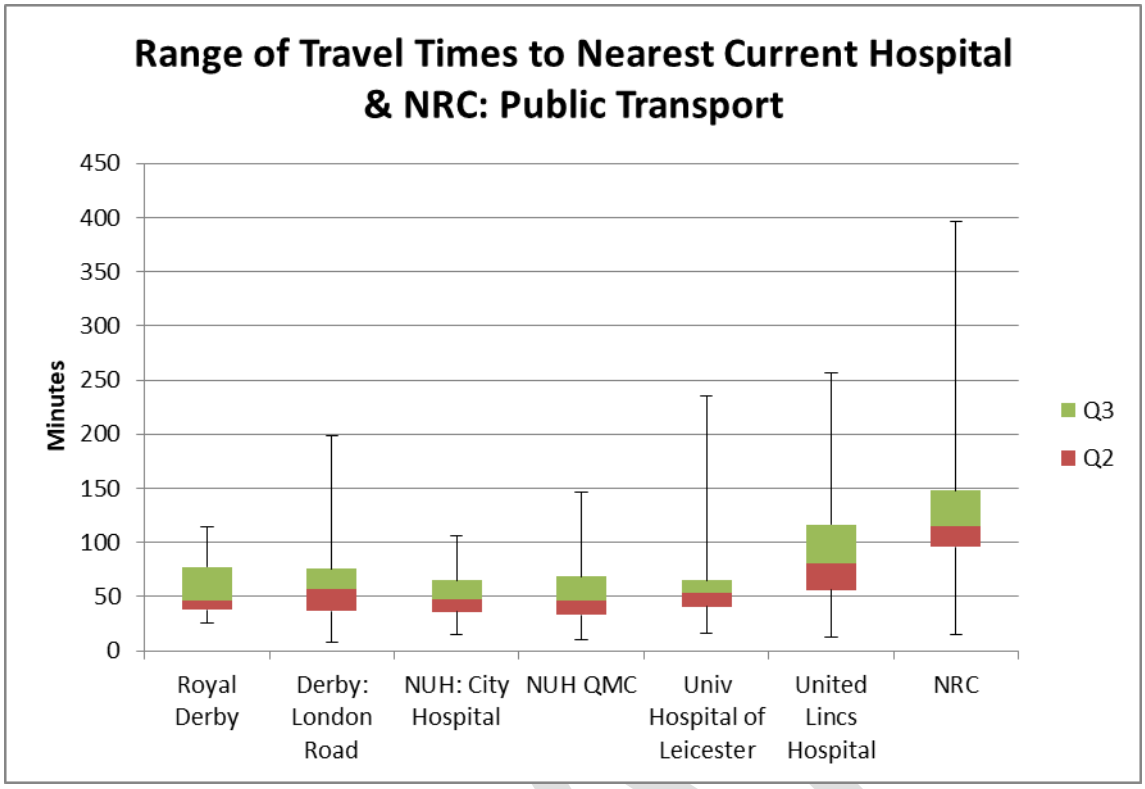
CCG	Ave. Time to Nearest Site (Single Journey Mins)	Average Time to NRC (Single Journey Minutes)	Average Difference To NRC (Minutes)	Minimum Difference To NRC (Minutes)	Max Difference To NRC (Minutes)
NHS EAST LEICESTERSHIRE AND RUTLAND CCG	73	138	65	9	236
NHS LEICESTER CITY CCG	42	132	89	42	209
NHS LINCOLNSHIRE EAST CCG	125	230	105	56	178
NHS LINCOLNSHIRE WEST CCG	50	171	121	63	167
NHS MANSFIELD AND ASHFIELD CCG	76	143	67	31	97
NHS NEWARK & SHERWOOD CCG	77	141	64	41	96
NHS NORTH EAST LINCOLNSHIRE CCG	155	278	123	123	123
NHS NORTH LINCOLNSHIRE CCG	86	244	158	158	158
NHS NOTTINGHAM CITY CCG	42	87	46	-39	109
NHS NOTTINGHAM NORTH AND EAST CCG	45	108	63	28	97
NHS NOTTINGHAM WEST CCG	39	105	66	37	118
NHS SOUTH LINCOLNSHIRE CCG	96	176	80	51	93
NHS SOUTH WEST LINCOLNSHIRE CCG	98	166	68	-2	133
NHS SOUTHERN DERBYSHIRE CCG	54	124	69	30	128
NHS WEST LEICESTERSHIRE CCG	78	117	39	-46	84
Grand Total	**60**	**126**	**66**	**-46**	**236**

Figure 5 below shows the minimum, maximum public transport journey times plus the interquartile range (middle 50%), and the mean average journey times for patients living closest to their current rehabilitation sites and to the NRC.

Travel to visit patients using public transport increases journey times considerably. Whilst more than 25% of people live within one hour by public transport of the hospitals currently used, only 3.6% live within one hour of the NRC.

It would take two hours and five minutes on average to travel to the NRC by public transport. This average is affected by some cases with very long travel times. However, the median travel time (the time for half the patients) is still 96 minutes.

Figure 5 Range of Travel Times by Public Transport to Nearest Current Hospital & NRC:



3.5 Other factors for consideration

Planning for the National Rehabilitation Centre aims to transfer "patients to a rehabilitation bed in a timely way, reducing the number of patient moves, reducing the overall length of stay for the cohort of patients and gaining improved outcomes"[3]. Reducing patient moves and the overall length of stay should mitigate some of the impact of longer travel times for visitors.

There will be three family rooms available at the National Rehabilitation Centre. These facilities will offer the potential for reduced visitor travel, especially if priority is given to those living furthest from the National Rehabilitation Centre.

[3] PCBC Synopsis, Miriam Duffy, Programme Director National Rehabilitation Centre.

Conclusions & Recommendations

4.1 Impact on patient journeys

It can be seen that there could be significant impact for some people visiting patients using rehabilitation services if all rehabilitation services are transferred to the National Rehabilitation Centre.

A small number of people, for example some of those from the Lincolnshire CCGs, would be particularly adversely affected. It is recommended that consideration is given to the availability of alternatives to treatment at the National Rehabilitation Centre for people living furthest from the proposed site. Providing choice in the location of rehabilitation services will be particularly important for visitors who do not have access to a car.