NHS
North of England
Commissioning Support

Success
Regime
West, North & East Cumbria

Community Hospitals: Travel Impact Analysis

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Report Specification

Recipients

Success Regime West, North & East Cumbria.

Data Source

Sources

Data was sourced from the Secondary Uses Service data already available to NECS for the period 1 April 2015 to 31 March 2016. It covers finished day case and inpatient activity taking place during this period so excludes any admissions that were not complete until after 31 March 2016.

Reference is made to the Department for Transport research paper 'Analysis of travel times on local 'A' roads, England: 2014' https://www.gov.uk/government/statistics/analysis-of-travel-times-on-local-a-roads-england-2014.

Travel distances are calculated using data made available by the Ordnance Survey (OS OpenData) https://www.ordnancesurvey.co.uk/business-and-government/products/os-open-roads.html

Avoidable Mortality in Cumbria – A Review of 73 Fatal Road Traffic Collisions, Centre for Public Health, Liverpool John Moores University

Geography

This report covers patients with a recorded address within the geographical boundaries of Cumbria CCG.

Period

Data was obtained on 9 May 2016.

Production

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30 May 2016

Saved in

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Success Regime: Community Hospital Beds Travel Impact Analysis

Introduction

North of England Commissioning Support Unit has been asked to undertake an initial travel impact analysis to model the effect of possible changes in the configuration of nine community hospital sites managed by Cumbria Partnership NHS Foundation Trust (CPFT). Following further initial consultation, the West, North and East Cumbria Success Regime has requested revisions:

- exclude inpatient cases with zero days length of stay recorded
- exclude oral surgery cases (previously identified separately)
- to specify which hospital each patient would attend in addition to identifying additional travel details.

In addition, capacity of hospital sites is examined for each option. There is a reduction in capacity to 104 beds across all options compared to the current position which is 130 beds, although some of these are not in use due to resource issues. This is a risk until ICC hubs are established that can help people maintain their health and independence.

Scope and approach

The analysis is based on activity data relating to the location of patients who have used community hospital beds provided by CPFT during the period 1 April 2015 to 31 March 2016.

The postcode area, district, sector and first digit of unit of the recorded address of the person attending hospital has been used to calculate the distance by road to the hospital attended. Following this, work was undertaken to model the impact on travel if the community hospital used was not available. In this instance, the community hospital nearest to the patient's home address was selected.

NECS was asked to model a range of options:

1. Minimal consolidation of beds to six sites across WNE Cumbria

2a. Consolidation around 5 sites (including Cockermouth) with effective use of other sites

2b. Consolidation around 5 sites (including Workington) with effective use of other sites

3. Consolidation around 3 sites with effective use of other sites.

Modelling assumptions

The models include people who attended given community hospitals for geriatric medicine. This covers a wide range of diagnoses (over 500 distinct categories). Differences are modelled only for patients whose existing site would be no longer available.

In all options, it is assumed that patients would attend the nearest available site if the hospital they had used was not available.

It has been assumed that patients have travelled to hospital from their home. It is likely that, in many cases, the person will have travelled to hospital from another location, particularly another hospital (please see the Baseline Position below).

For reasons of confidentiality, we did not have access to patients' home addresses, so truncated postcodes have been mapped to the nearest travel node (usually within 400 metres).

Some admissions will arise while a person is travelling far away from their home (for example while on holiday). For this reason, analysis was restricted to patients with a recorded address within the geographical boundaries of Cumbria CCG. Data was sourced from the Secondary Uses Service data already available to NECS.

For model 3, it is assumed that "Carlisle New Site" will be colocated at the Carleton Site in Carlisle.
It is assumed that all roads are available for travel and that the shortest routes are taken.

It was not possible to include 28 records in the travel impact analysis due to either an invalid postcode being recorded or the individual having an address outside of Cumbria. This equates to 1.2% of admissions overall so is not significant. 8 of these records relate to the Copeland Unit at West Cumberland Hospital which remains in each of the options (reducing those records without a location to c0.8%). A further 8 relate to Alston admissions and 5 were recorded at Penrith Hospital (both sites being likely to serve patients from the neighbouring county).

Due to the lack of reliable data on road speeds to calculate travel times, distance to travel in miles is provided as the main focus. An estimate of additional travel time based on an average speed of 35 miles per hour is provided. This speed is based on a very small random sample of journeys (12) tested on Google maps which averaged 34.7mph. Reference to the Department for Transport research 'Analysis of travel times on local 'A' roads, England: 2014' found that "In 2014, the average speed of vehicles on urban local 'A' roads is estimated to be 19.3 mph and on rural local 'A' roads is estimated to be 37.2 mph". This should be considered as a very broad estimate. Further work could be undertaken to better estimate travel times at a later date if required.

BASELINE POSITION

In 2015/16, there were 2217 admissions to the community hospitals. This excludes 92 admissions for oral surgery at Workington Community Hospital and 28 cases without location data as noted in the Modelling assumptions. If inpatient cases with zero days length of stay recorded are removed, this figure reduces to 1996.

1641 (82.2%) admissions were non-emergency transfers from another hospital (presumably step down). Whilst travel impact may be less of a factor in these instances, travel for friends and family visiting the patient will be a factor. As the address of relatives is not available, the postcode of the patient is used in all cases (assuming that many who visit a patient may live at the same address or close by). 357 (17.9%) people were admitted from their usual place of residence.

Numbers of admissions in the year vary from 105 at Alston Hospital to 339 at Copeland. Perhaps relevant for visitors, the average length of stay in a community hospital was 21 days. There is a wide variation in length of stay from 12.8 days at Cockermouth Hospital to almost 34 days at Wigton.

Community Hospital Activity April 2015 to 31 March 2016

Hospital	No of admissions	%	Average of Length_Of_Stay
BRAMPTON HOSPITAL	181	8.5%	25.9
COCKERMOUTH HOSPITAL	266	13.0%	12.8
KESWICK HOSPITAL	167	7.3%	23.0
MARYPORT HOSPITAL	218	13.1%	16.4
ALSTON HOSPITAL	105	2.7%	18.8
PENRITH HOSPITAL	339	16.5%	26.5
COPELAND (WCH)	296	15.7%	19.6
WIGTON HOSPITAL	149	8.7%	33.9
WORKINGTON COMMUNITY HOSPITAL	275	14.4%	16.9
Grand Total	**1996**	**100.0%**	**21.0**

Average distance travelled to community hospitals from home 2015/16

Hospital	No of admissions	Average distance from home (miles)
BRAMPTON HOSPITAL	181	9.5
COCKERMOUTH HOSPITAL	266	4.4
KESWICK HOSPITAL	167	7.3
MARYPORT HOSPITAL	218	4.0
ALSTON HOSPITAL	105	12.6
PENRITH HOSPITAL	339	6.3
COPELAND (WCH)	296	5.0
WIGTON HOSPITAL	149	7.5
WORKINGTON COMMUNITY HOSPITAL	275	2.2
Grand Total	**1996**	**5.8**

North of England Commissioning Support

Option 1: Minimal consolidation of beds to six sites across WNE Cumbria

This option maintains community hospitals at Workington, Keswick, Penrith, Brampton, Copeland and Cockermouth. This is the least change option. This option affects 472 people with an estimated 1680 additional miles to travel to the nearest community hospital (estimate 48 hours). The greatest impact relates to patients who previously would have been cared for in Wigton Hospital:

Hospital	No of admissions	Baseline average distance from home (Miles)	No. of patients affected	Average Miles travelled to nearest available site	Average Additional miles travelled	Est additional travel time time per journey @35mph	Est. Total Additional miles travelled	Est total additional travel time time (Hours)
MARYPORT HOSPITAL	218	4.0	218	6.3	2.5	00:04:17	545.0	15.6
ALSTON HOSPITAL	105	12.6	105	14.0	1.3	00:02:14	136.5	3.9
WIGTON HOSPITAL	149	7.5	149	14.1	6.7	00:11:29	998.3	28.5
Grand Total	**1996**	**5.8**	**472**	***6.5***	***3.5***	**00:18:00**	**1680**	**48.0**

The following table shows which hospital these people would attend if they were transferred to the next nearest hospital:

	Nearest hospital Model 1							
Current Hospital	No Change	Brampton Hospital	Cockermouth Hospital	Keswick Hospital	Penrith Hospital	Workington CH	Copeland (WCH)	Total admissions (Model 1)
BRAMPTON HOSPITAL	181							292
COCKERMOUTH HOSPITAL	266							397
KESWICK HOSPITAL	167							172
MARYPORT HOSPITAL		3	49			158	8	
ALSTON HOSPITAL		67			37		1	
PENRITH HOSPITAL	339							397
COPELAND (WCH)	296							305
WIGTON HOSPITAL		41	82	5	21			
WORKINGTON COMMUNITY HOSPITAL	275							433
Grand Total	**1524**	**111**	**131**	**5**	**58**	**158**	**9**	**1996**

The following table shows bed days used if these people moved to the above hospitals and stayed for the same lengths of time. There would be likely to be capacity issues at all sites, except Keswick:

Current Hospital	Total bed days (Model 1)	Bed capacity (Model 1)	Max bed days	Est Occupancy based on current LoS
BRAMPTON HOSPITAL	7601	16	5840	130.2%
COCKERMOUTH HOSPITAL	6761	16	5840	115.8%
KESWICK HOSPITAL	4002	16	5840	68.5%

Current Hospital	Total bed days (Model 1)	Bed capacity (Model 1)	Max bed days	Est Occupancy based on current LoS
PENRITH HOSPITAL	10370	24	8760	118.4%
COPELAND (WCH)	5963	16	5840	102.1%
WORKINGTON COMMUNITY HOSPITAL	7240	16	5840	124.0%
Grand Total	**41937**	**104**	**37960**	110.5%

Option 2: Consolidation around 5 sites, including Cockermouth

This option maintains community hospitals at Copeland (32 beds), Cockermouth (16 beds), Penrith (24 beds), Brampton (16 beds) and Keswick (16 beds). This option affects 747 people with an estimated 3698 additional miles to travel to the nearest community hospital (estimate 106 additional hours). There is a substantial impact for the people who would have used Workington due to the relatively large numbers using this site. The average travel times for people who would have used Maryport Hospital also increases compared to option 1 as many would have moved to Workington.

Hospital	No of admissions	Average miles from home	No. of patients affected	Average Miles travelled to nearest available site	Average Additional miles travelled	Est additional travel time time per journey @35mph	Est. Total Additional miles travelled	Est total additional travel time time (Hours)
MARYPORT HOSPITAL	218	4.0	218	8.1	4.3	00:07:25	942.6	26.9
ALSTON HOSPITAL	105	12.6	105	14.0	1.3	00:02:14	136.8	3.9
WIGTON HOSPITAL	149	7.5	149	14.1	6.7	00:11:27	994.7	28.4
WORKINGTON COMMUNITY HOSPITAL	275	2.2	275	8.1	5.9	00:10:08	1,624.3	46.4
Grand Total	**1996**	**5.8**	**747**	***7.6***	***4.9***	***00:00:00***	***3698***	***106***

The following table shows which hospital these people would attend if they were transferred to the next nearest hospital:

Nearest Hospital Model 2

	Nearest Hospital Model 2						
Current Hospital	**No Change**	**Brampton Hospital**	**Cockermouth Hospital**	**Keswick Hospital**	**Penrith Hospital**	**Copeland (WCH)**	**Total admissions (Model 2)**
BRAMPTON HOSPITAL	181						292
COCKERMOUTH HOSPITAL	266						694
KESWICK HOSPITAL	167						172
MARYPORT HOSPITAL		3	193			22	
ALSTON HOSPITAL		67			37	1	
PENRITH HOSPITAL	339						397
COPELAND (WCH)	296						441
WIGTON HOSPITAL		41	82	5	21		
WORKINGTON COMMUNITY HOSPITAL			153			122	
Grand Total	**1249**	**111**	**428**	**5**	**58**	**145**	**1996**

The following table shows bed days used if these people moved to the above hospitals and stayed for the same lengths of time. There would be likely to be capacity issues at a number of sites, particularly Brampton and Cockermouth. It is likely that some of those patients whose nearest hospital would be Cockermouth would need to be admitted into the increased capacity created in the Copeland Unit at West Cumberland Hospital:

Current Hospital	Total bed days (Model 2)	Bed capacity (Model 2)	Max bed days	Est Occupancy based on current LoS
BRAMPTON HOSPITAL	7601	16	5840	130.2%
COCKERMOUTH HOSPITAL	11873	16	5840	203.3%
KESWICK HOSPITAL	4002	16	5840	68.5%
PENRITH HOSPITAL	10370	24	8760	118.4%
COPELAND (WCH)	8091	32	11680	69.3%
WORKINGTON COMMUNITY HOSPITAL				
Grand Total	**41937**	**104**	**37960**	**110.5%**

Option 3: Consolidation around 5 sites, including Workington

This option maintains community hospitals at Copeland (32 beds), Workington (16 beds), Penrith (24 beds), Brampton (16 beds) and Keswick (16 beds). This option affects 738 people with an estimated 2858 additional miles to travel to the next nearest community hospital (estimate 81.7 hours). When compared with option 2, it can be seen to have a detrimental effect for those who would have previously been admitted to Wigton Hospital (an average increase of 1.3 miles). However, the average travel times for people who would have used Maryport Hospital reduces by a similar amount and, overall, this model incurs a lower travel impact than option 2.

Site Name	Number of Admissions	Baseline average distance from home (Miles)	No. of patients affected	Average Miles travelled to nearest available site	Average Additional miles travelled	Est additional travel time time per journey @35mph	Est. Total Additional miles travelled	Est total additional travel time time (Hours)
COCKERMOUTH HOSPITAL	266	4.4	266	7.8	3.3	00:05:38	873.0	24.9
MARYPORT HOSPITAL	218	4.0	218	6.7	3.0	00:05:09	654.0	18.7
ALSTON HOSPITAL	105	12.6	105	14.0	1.3	00:02:18	140.8	4.0
WIGTON HOSPITAL	149	7.5	149	15.4	8.0	00:13:41	1,190.0	34.0
Grand Total	**1996**	**5.8**	**738**	***7.1***	***3.8***	**00:26:46**	**2857.8**	**81.7**

The following table shows which hospital these people would attend if they were transferred to the next nearest hospital. It can be seen that there is a substantially increased demand placed on Workington Community Hospital:

Nearest Hospital Model 3

Current Hospital	No Change	Brampton Hospital	Keswick Hospital	Penrith Hospital	Workington Community Hospital	Copeland (WCH)	Total admissions (Model 3)
BRAMPTON HOSPITAL	181						297
COCKERMOUTH HOSPITAL		3	18	3	232	10	
KESWICK HOSPITAL	167						227
MARYPORT HOSPITAL		3			207	8	
ALSTON HOSPITAL		67		37		1	
PENRITH HOSPITAL	339						401
COPELAND (WCH)	296						315
WIGTON HOSPITAL		43	42	22	42		
WORKINGTON COMMUNITY HOSPITAL	275						756
Grand Total	**1258**	**116**	**60**	**62**	**481**	**19**	**1996**

The following table shows bed days used if these people moved to the above hospitals and stayed for the same lengths of time. There would be likely to be capacity issues at a number of sites, particularly Workington and Brampton. It is likely that some of those patients whose nearest hospital would be Workington would need to be admitted into the increased capacity created in the Copeland Unit at West Cumberland Hospital which is underused based on a 'nearest hospital' approach:

Current Hospital	Total bed days (Model 3)	Bed capacity (Model 3)	Max bed days	Est Occupancy based on current LoS
BRAMPTON HOSPITAL	7698	16	5840	131.8%
KESWICK HOSPITAL	5307	16	5840	90.9%

Current Hospital	Total bed days (Model 3)	Bed capacity (Model 3)	Max bed days	Est Occupancy based on current LoS
PENRITH HOSPITAL	10504	24	8760	119.9%
COPELAND (WCH)	6100	32	11680	52.2%
WORKINGTON COMMUNITY HOSPITAL	12328	16	5840	211.1%
Grand Total	**41937**	**104**	**37960**	**110.5%**

Option 4: Consolidation around 3 sites

This option maintains community hospitals at Copeland (increasing to 48 beds) and Penrith (24 beds), and involves a new 32 bed unit at either Cumberland Infirmary or the Carleton Unit. For this model, it has been assumed that the new unit will be sited at the Carleton Unit. This option has the greatest impact on travel, affecting 1,361 people and involving 5,105 additional miles with an estimated 145.9 hours of additional travel time. Travel time is reduced for many of those who previously used Brampton Hospital as a substantial proportion were Carlisle residents.

Hospital	No of admissions	Baseline average distance from home (Miles)	No. of patients affected	Average Miles travelled to nearest available site	Average Additional miles travelled	Est additional travel time time per journey @35mph	Est. Total Additional miles travelled	Est total additional travel time time (Hours)
BRAMPTON HOSPITAL	181	9.5	181	5.9	-3.6	Reduced	-655.0	-18.7
COCKERMOUTH HOSPITAL	266	4.4	266	7.2	2.7	00:04:35	712.1	20.3
KESWICK HOSPITAL	167	7.3	167	13.3	6.2	00:10:33	1,028.4	29.4
MARYPORT HOSPITAL	218	4.0	218	14.7	10.9	00:18:44	2,382.8	68.1
ALSTON HOSPITAL	105	12.6	105	13.8	1.1	00:01:54	116.3	3.3
WIGTON HOSPITAL	149	7.5	149	10.4	3.0	00:05:06	442.6	12.6
WORKINGTON COMMUNITY HOSPITAL	275	2.2	275	6.1	3.9	00:06:43	1,078.2	30.8
Grand Total	**1996**	**5.8**	**1,361**	***8.3***	***3.9***	***00:47:36***	***5,105.4***	***145.9***

It can be seen that locating a community hospital in Carlisle would have a beneficial effect for the large population living in that area. However, there is a greater impact for those who used Maryport Hospital in 2015/16 and would have attended Workington Community Hospital under option 3.

The following table shows which hospital these people would attend if they were transferred to the next nearest hospital:

Nearest Hospital Model 4

Current Hospital	No Change	Copeland (WCH)	Penrith Hospital	The Carleton Clinic	Total admissions (Model 4)
BRAMPTON HOSPITAL		2	3	176	
COCKERMOUTH HOSPITAL		251	4	11	
KESWICK HOSPITAL		15	138	14	
MARYPORT HOSPITAL		202		16	
ALSTON HOSPITAL		1	78	26	
PENRITH HOSPITAL	339				563
COPELAND (WCH)	296				1048
WIGTON HOSPITAL		9	1	139	
WORKINGTON COMMUNITY HOSPITAL		272		3	
The Carleton Clinic					385
Grand Total	**635**	**752**	**224**	**385**	**1996**

The following table shows bed days used if these people moved to the above hospitals and stayed for the same lengths of time. The main pressure point would then be at Penrith hospital. Some of those patients whose nearest hospital would be Penrith could be admitted into the new site in Carlisle.

However, overall capacity remains the same and the capacity at Carlisle could only accommodate 1030 additional bed days whilst Penrith is 5089 days over capacity:

Current Hospital	**Total bed days (Model 4)**	**Bed capacity (Model 4)**	**Max bed days**	**Est Occupancy based on current LoS**
PENRITH HOSPITAL	13849	24	8760	158.1%
COPELAND (WCH)	17438	48	17520	99.5%
The Carleton Clinic	10650	32	11680	91.2%
Grand Total	**41937**	**104**	**37960**	**110.5%**