Integrated Impact Assessment – Lung Function and Sleep Services

A key commitment for the Fit for the Future programme is to deliver the requirements for Service Change as set out in Delivering Service Change for Patients (NHS England, 2018). An important component of this is delivery of an Integrated Impact Assessment on proposed solutions. This document contains all analysis conducted to determine the impacts of each proposed change.

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1. Equality Impact Assessment

1.1. Key Findings

Potential Positive Impacts

- Refine and improve pathways for outpatients and inpatients through hub and spoke model
- Reduce the requirement for patients to visit the service multiple times
- Reduce patient's exposure to infections by ensuring that they only visit one department during their visit
- The inpatient spoke site could be used in a flexible way to accommodate Lung Cancer patients who are currently required to visit the sites multiple times, within 2 weeks, prior to diagnosis. The spoke will enable dedicated support for inpatients to ensure they are seen in a timelier manner.
- Improve access to the service for patients staying overnight in hospital
- Improve the service's estate and therefore introduce capacity for multidisciplinary clinics
- Increase staff resilience by bringing staff together to improve management of rotas and staff cover for absences and by cross training a number of clinical members of staff in G.I. Physiology.
- Allow for the optimum equipment to be available for patients at the time of their appointment, therefore alleviating the need for outpatients to visit the service multiple times to access the equipment they need for treatment.
- Reduce the need for out of county referral for patients due to improved waiting times
- Increasing the accessibility of the service will assist with impromptu patient queries.
- The use of apps and virtual appointments may be beneficial for some patients and improve their experience
- Primary Care Networks could also be used to facilitate the transportation of CPAP equipment and replacements to patients. This would reduce the risk of equipment being delayed and negate the need for patients to visit the hospital to pick up equipment for their treatment
- Although the service has not received any negative feedback from patients who receive a remote follow up appointment, there is scope to provide additional support to patients who may struggle with telephone appointments through 'Attend Anywhere' remote video consultations.

- There is scope to utilise Primary Care Networks (PCNs) and Community Hospitals to provide sleep diagnostic appointments, which would mean that patients could travel to a site nearest to them as opposed to the hospital.
- There is no conclusive evidence to suggest that access to and experience of acute hospital care differs solely based on a person's sex.

Potential Negative Impacts

- The re-location of some lung function and sleep services will impact a third of patient and carer travel times.
- By consolidating Lung Function and Sleep services onto a main hub, it will require all outpatients who are receiving lung function testing to visit CGH for their appointment. This will mean that for some patients, there will be a negative impact upon their travel time and cost.
- The age of an individual combined with additional factors including other 'protected characteristics' may affect their health and social care needs. Individuals may also experience discrimination and inequalities because of their age.
- Studies of secondary care usage have found that ethnicity is a significant predictor of acute hospital admission. The district with the highest proportion of ethnic diversity is Gloucester city meaning that a geographical distribution of services away from GRH might have a greater impact on these communities
- The use of apps and virtual appointments may have a negative impact for some patients.
- Forest of Dean is the only district locally that exceeds the national average in terms of the proportion of residents living with a disability. People with disabilities may have an increased risk of developing secondary conditions that are more likely to result in the need for acute care. This geographical clustering means that geographical changes to where services are delivered may have a disproportionate impact on those with disabilities in terms of access. A travel impact assessment will be needed to fully assess this impact.

Public and staff Engagement

Patients

To gather service user views around the proposal to implement a hub and spoke model with a consolidated hub at CGH, patients were asked to complete a series of questions when they attended the service for their appointment. The surveys were completed in April 2021 and 84 patients provided their feedback on the proposal. Table 1 below shows results from the engagement exercise.

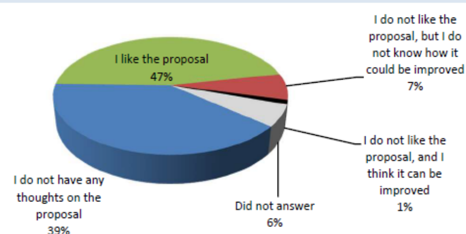
TABLE1- Lung Function and Sleep Services- Patient Engagement Survey Results

Lung Function and Sleep Service Patient Engagement Survey Results

NHS Gloucestershire Hospitals NHS Foundation Trust

Q3: What are you thoughts on the proposal and could it be improved?

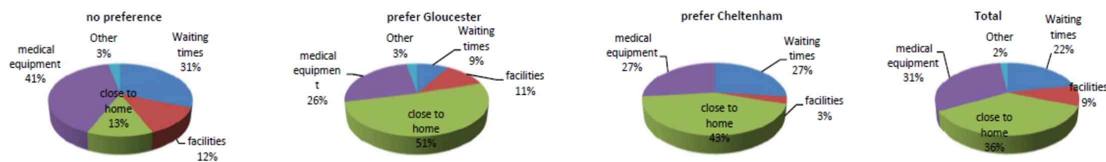
Answers	Number of responses
I do not have any thoughts on the proposal	**33**
I like the proposal	**39**
I do not like the proposal, but I do not know how it could be improved	**6**
I do not like the proposal, and I think it can be improved by...	**1**
Having outpatient use of spoke site at Glos based on location (of patient)	1
Did not answer	**5**
Grand Total	**84**



Overall 47% of patients asked indicated that they liked the proposal. A significant proportion, 39% said they had not thoughts on the proposal. There were only 7 patients (8%) that indicated that they ***did not*** like the proposal - and only 1 improvement to the proposal was offered. All patients who said they did not like the proposal also indicated that their site preference was Gloucester.

Q4: All of the below are important to us as a service; however which would you consider to be the MOST important factor when visiting the Lung function Department?

Answers	Break down by site preference no preference	prefer Gloucester	prefer Cheltenham	Total
Waiting times to be seen from referral to appointment	10	3	8	21
The facilities available	4	4	1	9
closest to where I live	4	18	13	35
access to the latest possible medical equipment	13	9	8	30
Other	1	1		2



In phase 1 engagement BAME communities expressed concerns around issues for those without readily available access to their own transport and likewise to their families who wish to visit. This is related to events when a patient may receive their treatment in a different hospital site as a result of the proposed changes.

The Lung Function and Sleep Service targeted engagement started on 1 August 2021 and ran until 6 September 2021. There have been several ways in which the NHS has involved current and potential future patients and staff during the engagement including an Engagement Booklet, a targeted Information Bus Tour, face-to-face surveying, online survey and FREEPOST survey.

Feedback from the findings shows that 73 people responded to the survey of which 41 people responded to the open-ended question 'What *do you think about our idea to create a 'Hub' at Cheltenham General Hospital and a 'spoke' at Gloucestershire Royal Hospital for Lung Function/ Sleep Services?* The table below shows the themes identified and responses to the question.

Themes	**Negative**	**Neutral**	**Positive**	**Grand Total**
Benefits			9	9
Equipment access	2			2
Hub location			1	1
Improve environ			1	1
IP at GRH	1			1
Quality service		1		1
Travel time	9			9
(blank)		6	11	17
Grand Total	**12**	**7**	**22**	**41**

The majority of respondents felt positive about the proposed changes and this is reflected in the feedback from the survey which took place in April 2021. Changes to travel time was the biggest concern for some as indicated in the table above.

Respondents were also asked to think about what the most important things to consider were to help reduce a negative impact. Of the 33 people who responded to this question 7 identified travel (including public transport) as an area of concern.

Indications show that respondents to this survey were on the whole positive about proposed changes but approximately 10% of people were concerned about travel impact.

Staff

In order to obtain a clinical perspective and support from a service management on the reconfiguration of Lung Function and Sleep, all members of staff were involved in an engagement session to discuss the opportunities and potential risks that should be considered when redesigning the service. Initial feedback received suggested that the service could be reconfigured to either CGH; on both sites or single sited on either location. Full details are available in the Business Case.

The engagement session identified that the Lung Function staff were had a preference of implementing a 'hub and spoke' model, as this would allow for benefits associated with the majority of the service having a presence on one site but with the flexibility to continue seeing inpatients and those who cannot travel across the county on the spoke site.

Lung Function and Sleep services staff have been central to the assessment of options and the development of proposals

Recommendations based on evidence review

- It is recommended that additional engagement is conducted with BME communities, particularly those with greater vulnerability to long term conditions, to obtain their views on changes to location of services
- It is important to engage the public and service users to understand how they perceive the movement of the service, and if they think it will have an impact on their quality of care and experience, or on their carers and family
- Ensure sufficient time, resource and focus is allocated to engagement with a range of groups on travel impacts including parking for families and visitors as well as patients. Staff travel may also be a factor.
- Consideration should be given to the data that shows that the highest numbers of admission were in the 18-64 age groups. A large number of patients admitted were female and may be, working or parents to younger children and changes to location of services may have a possibly negative impact for some.
- A large number of patients admitted may be female and consideration should to be given to those who are pregnant, have given birth in the last 26 weeks, or are on maternity leave.
- Analysis of current patient demographics indicates that many patients did not state their religion and so it is difficult to know how different religions are impacted e.g. some patients will want reassurance that they can request the gender of their doctor

for religious reasons. It is important to ensure an evenly represented group feedback through the next phase of engagement,

- Previous public feedback from staff and patients suggests parking can be a challenge at both sites. Therefore, by moving services to CGH it is important to assess if there is an appropriate number of disabled parking bays to accommodate increases in demand of services.
- Moving sites can also be a challenge for patients with a sensory impairment who may be familiar with their local hospital site but may be required to travel to the other site. Additional support may be needed to help patients navigate this change.
- High quality signposting, good quality wheelchair access, and interactive information for those with sensory impairments will be necessary to help patients navigate this change. Both sites will already have facilities in place for patients with disabilities, but it is important to ensure these are optimised.
- It is recommended that those with a disability are involved in the engagement to understand their needs and perceived challenges. It is also recommended that local transport providers are engaged with to understand if there are transport options running between the two hospitals and frequency of these.
- Explore the possibility of modernising areas within sites if needed.

2. EQIA analysis

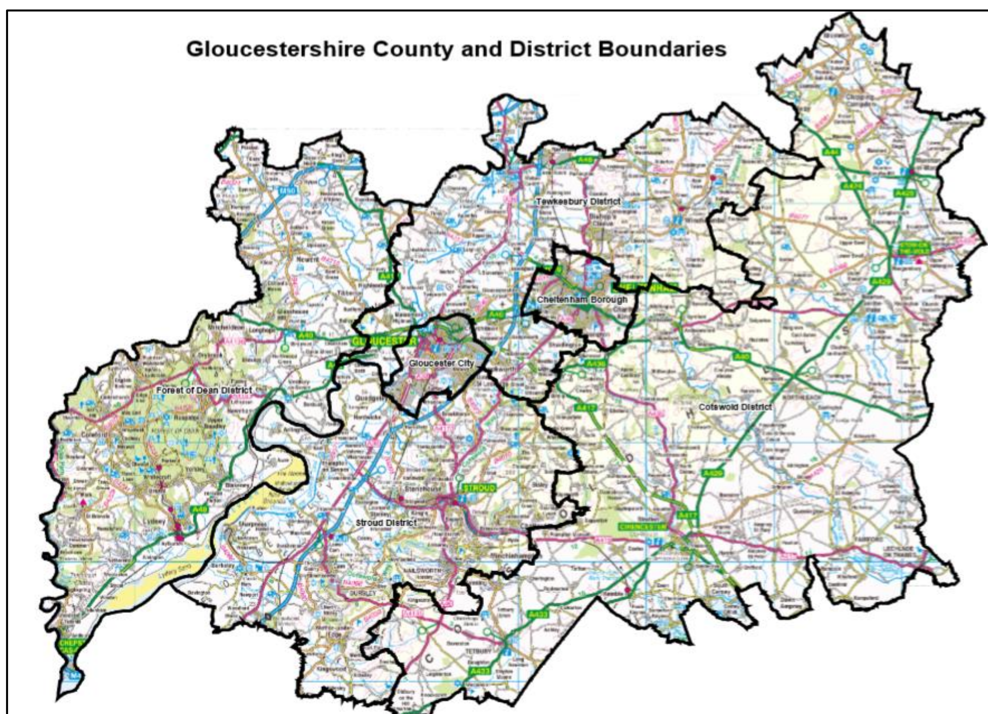
Public bodies have a legal duty to eliminate unlawful discrimination, to advance equality of opportunity and to have particular regard to the impact of potential service changes on defined segments of the population – known as those with ‘protected characteristics. The main protected characteristics defined in legislation and national guidance are:

1. Age
2. Disability
3. Sex
4. Pregnancy
5. Marital status
6. Race
7. Sexual orientation
8. Religion
9. Gender reassignment

Catchment Area

Gloucestershire covers 6 districts: Gloucester, Stroud, Forest of Dean, Tewkesbury, Cheltenham and Cotswold (see map below). This report will use this geography for analysing prevalence within the population to supplement analysis of specific patient cohorts identified through hospital data.

TABLE 2- Gloucestershire County and District Boundaries



2.1 Age

The age of an individual combined with additional factors including other 'protected characteristics' may affect their health and social care needs. Individuals may also experience discrimination and inequalities because of their age. Analysis of the 2008 European Social Survey in 2012 found that age discrimination was the most common form of prejudice experienced in the UK, affecting both younger and older people, with 28% of respondents saying they had experienced prejudice based on age.

Assuming current population trends continue, the population in Gloucestershire will rise by 44,300 between 2016 and 2026, from 623,100 to 667,400 (an increase of 0.7% per annum). The dominating feature of the population projections is the sharp increase in population in the age group 65 or over. These changes mean that by 2041, the proportion of people in the county who are aged 65 or over will have risen from 20.8% to 28.9%, and the proportion of people aged 85 or over will have risen from 2.9% to 5.5%. Population projections in the older age categories far exceed national averages (see Table 3).

TABLE 3: ONS Subnational Population Projections for Gloucestershire, the districts and England by age group, 2016 to 2041

	0-19			20-64			65+		
	Number of people		% change	Number of people		% change	Number of people		% change
	2016	2041	2016 to 2041	2016	2041	2016 to 2041	2016	2041	2016 to 2041
Cheltenham	26,500	27,200	2.6%	69,100	67,200	-2.7%	21,900	33,600	53.4%
Cotswold	17,600	18,400	4.5%	47,000	44,500	-5.3%	21,500	33,500	55.8%
Forest of Dean	18,300	19,600	7.1%	46,700	45,200	-3.2%	20,200	32,100	58.9%
Gloucester	32,100	35,200	9.7%	75,600	80,600	6.6%	20,800	35,300	69.7%
Stroud	26,200	28,600	9.2%	65,400	67,100	2.6%	25,800	40,400	56.6%
Tewkesbury	19,800	22,800	15.2%	49,300	52,100	5.7%	19,500	32,100	64.6%
Gloucestershire	**140,600**	**152,000**	**8.1%**	**353,000**	**356,700**	**1.0%**	**129,700**	**206,700**	**59.4%**
England	13,107,000	13,672,900	4.3%	32,278,400	33,285,800	3.1%	9,882,800	14,993,600	51.7%

Activity

Between Feb 2019 and Jan 2020, the Lung Function and Sleep service saw a total of 7,389 patients at 10,974 outpatient appointments across both sites (an average of 1.4 appointments / patient). Of these 43% (3,286) attended CGH and 57% (4,419) attended GRH. Within each outpatient appointment patients may have multiple procedures, with an average of 2.7 procedures / patient or 1.9 procedures / appointment. However, it must be acknowledged that this figure may be slightly higher as G.I. patients (approximately 600 patients per year) seen by the service are coded under a different clinical code to Lung Function and Sleep patients.

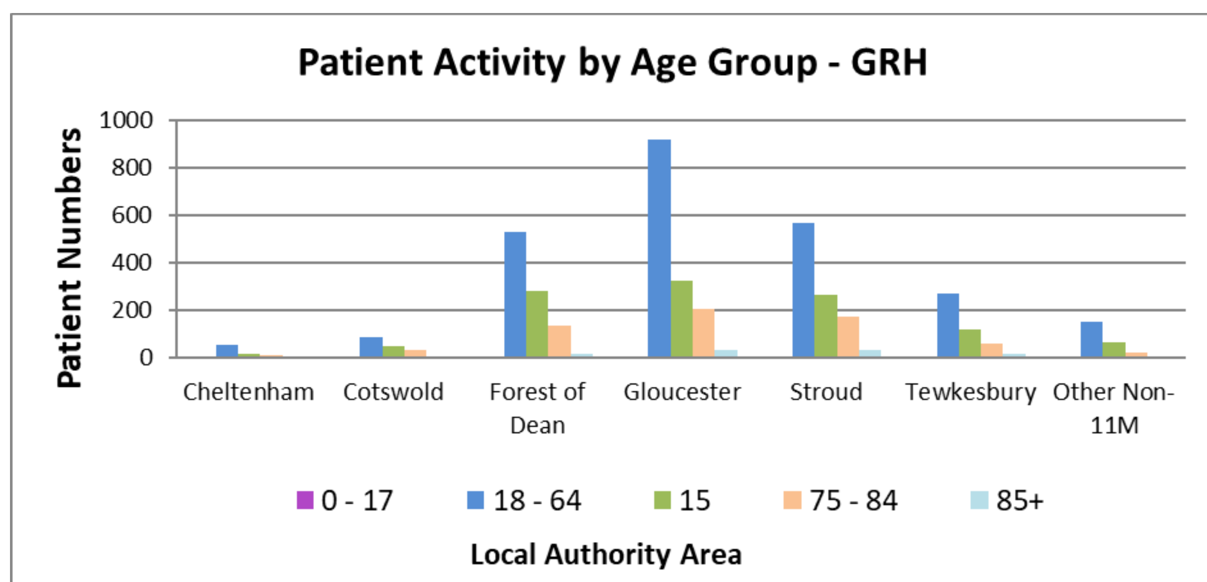
Attendance by Age

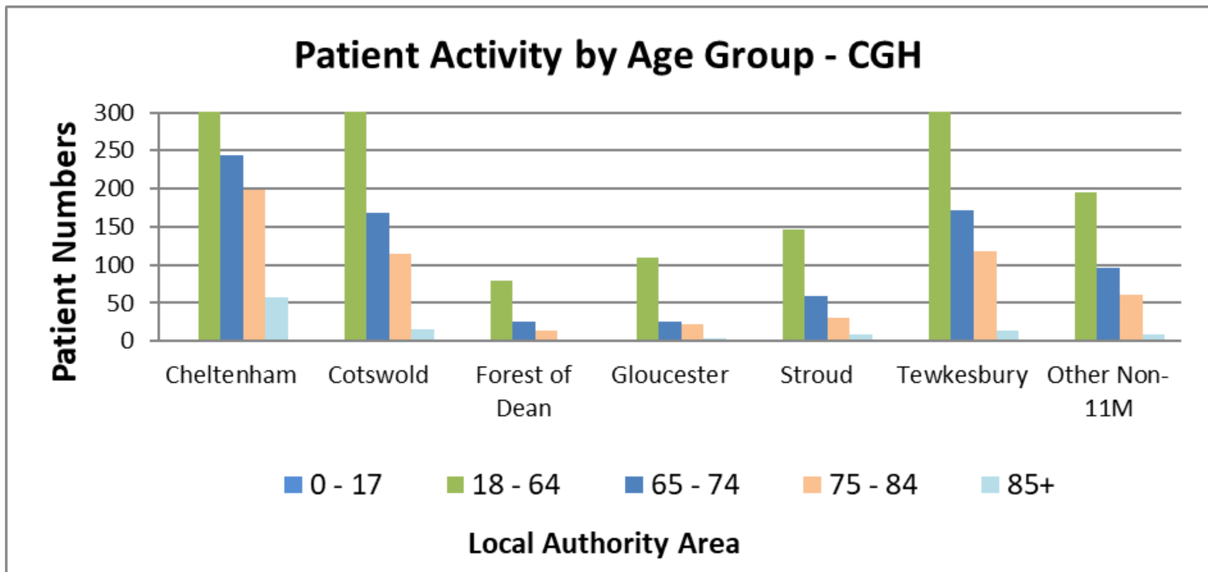
The Lung Function and Sleep activity by age activity (Tables 4 and 5) indicates that the largest group of patients who visit the service are between 18 and 64 years old (4,402 patients), this equates to 57% of all patients seen between April 2019 and March 2020. Furthermore, the second largest age group for both sites were patients aged between 65 and 74 years old (1,902 patients) which equates to 25 % of total activity. It should be noted that the sum of patients attending each site is greater than the total number of patients as some patients attend both sites.

It is important to consider the impact that the centralisation of the Lung Function and Sleep service to CGH may have on elderly patients, as these patients may need more support in order to travel to the service. However, a significant number of patients who attend the Lung Function and Sleep service are between 18 and 64 (57%) and there is no evidence to suggest that patients would be negatively impacted by the centralisation of this service. Moreover, for patients who are over 65 and may suffer with comorbidities associated with lung function and sleep, the centralisation of the service may have a positive impact as they can access multiple services in one place and in one visit.

Consideration should be given to the data that shows that the highest numbers of patients were in the 18-64 age groups. This means that many patients using the service have been shown to be female and may be working or parents to younger children and changes to location of services may have a possibly negative impact for some. A large number of patients have been shown to be female, and consideration should also to be given to those who are pregnant, have given birth in the last 26 weeks, or are on maternity leave.

TABLE 4-5 Attendance at both sites by age




Patient Activity by Age Group - CGH
Patient Numbers
300
250
200
150
100
50
0
Cheltenham
Cotswold
Forest of Dean
Gloucester
Stroud
Tewkesbury
Other Non-11M
0 - 17
18 - 64
65 - 74
75 - 84
85+
Local Authority Area

EQIA summary for Age

Proposed Change	Scale of Potential impact	Evidence of Potential Impact and potential duration	Nature of potential impact and recommendations
A 'hub and spoke' model has been proposed for the Lung Function and Sleep service. The main hub (CGH) would be a consolidated service utilised for outpatient appointments and services; and the spoke site (GRH) would operate a dedicated inpatient service and support the Lung Cancer patient pathway.	**Large Scale Impact** The proportion of people in the county who are aged 65 or over will rise from 20.8% to 28.9% and the proportion of people aged 85 or over will rise from 2.9% to 5.5% by 2040. Population projections in the older age categories far exceed national averages.	**Long Term Impact** Long term conditions are more prevalent in those over the age of 65 making this cohort more likely to access services and may require extra provision and support to do so. The acute medical problems of older people are often similar to those of younger adults, but the presentation can be atypical or there can be a number of co-existing problems that make diagnosis difficult. In these patients a minor illness can lead to deterioration[1]. The age of an individual combined with additional factors including other 'protected characteristics' may affect their health and social care needs. Individuals may also experience discrimination and inequalities because of their age.	**Overall Impact Positive** **Large Positive Impact** The reconfiguring of services will mean quality of care and expertise will be enhanced, particularly beneficial to patients with long term conditions or co-morbidities which are more prevalent in patients over 65. **Moderate Negative Impact** Patients over 65 may need further support to access services in the new location if their journey becomes longer and they are less familiar with the centralised location. Respondents to previous consultations who were over 65 expressed concerns regarding travel times and travel options. The data would suggest that patients who utilise the service and live in Gloucester city district would be most impacted by a consolidation of OP services to CGH in respect of travel costs and time. However, there are mitigations in place such as the

[1] Lawson P, Richmond C. 13 Emergency problems in older people. Emergency Medicine Journal 2005;22:370-374.

			Pullmans 99 Bus which runs between the two hospital sites. **Recommendations** Liaising with local transport e.g. through local authority partners to provide information about transport options for those over 65 and to understand more about transport plans over the next 5 to 10 years to understand if there is any plans to expand current transport options in the future. Plans to ensure patients are not moved multiple times between sites or wards at each site, particularly older patients, and those with dementia. Consideration should be given to the data that shows that the highest numbers of patients were in the 18-64 age groups. This means that many patients using the service have been shown to be female and may be working or parents to younger children and changes to location of services may have a possibly negative impact for some. Many patients have been shown to be female, and consideration should also to be given to those who are pregnant, have given birth in the last 26 weeks, or are on maternity leave.

2.2 Disability

Dementia, learning disabilities and physical disabilities have all been considered under this category.

Learning Disabilities: Estimated projections suggest that in 2019 there will be approximately 11,825 people aged 18+ living with a learning disability in Gloucestershire equating to 2.3% of the adult population. Of this group, about 2,400 are estimated to have moderate or severe learning disabilities, equating to 0.5% of the adult population.

Disabilities: According to the 2011 Census, 16.7% of Gloucestershire residents reported having a long-term limiting health problem or disability. At a household level, 24.2% of households had at least one person with a long-term limiting health problem or disability.

Dementia: Only 12% of people with dementia have no comorbidities. 40% have 1-2 and 48% have 3 and a quarter of hospitals beds are occupied by patients with dementia over the age of 65.

Sensory Impairment: A sensory impairment is something that affects your hearing, vision or both your hearing and vision. Most people accessing support because of a sensory impairment are over 55 years and population projections suggest this will increase. They often experience multiple long-term conditions which can impact on accessing health care services. Several services are on offer to sensory impaired people in the county including Gloucestershire Deaf Association who provide British Sign Language (BSL) Interpreters in our health care settings.

Attendance by Disability

Between Feb 2019 and Jan 2020, the Lung Function and Sleep service saw a total of 7,389 patients at 10,974 outpatient appointments across both sites (an average of 1.4 appointments / patient).

Currently there is no data available to provide an insight into the proportion of patients seen by the service who may have a disability and whilst it is difficult to suggest that a consolidation of Lung Function and Sleep to main hub at CGH would have a significant adverse or positive effect on these patients, we do know that the Forest of Dean (closer to GRH) is the only district locally that exceeds the national average in terms of the proportion of residents living with a disability. This geographical clustering means that geographical changes to where services are delivered may have a disproportionate impact on those with disabilities in terms of access. However, it is important to acknowledge that patients with a

disability can often experience health inequalities as a result of poor-quality healthcare. Therefore, regardless of site, we would expect colleagues to provide a safe and accessible environment to all patients, including those who have a disability.

EQIA summary for Disability

Proposed Change	Scale of Potential impact	Evidence of Potential Impact and potential duration	Nature of potential impact and recommendations
A 'hub and spoke' model has been proposed for the Lung Function and Sleep service. The main hub (CGH) would be a consolidated service utilised for outpatient appointments and services; and the spoke site (GRH) would operate a dedicated inpatient service and support the Lung Cancer patient pathway.	**Moderate Scale Impact:** 16.7% of Gloucestershire residents reported having a long-term limiting health problem or disability. Approximately 11,825 people aged 18+ living with a learning disability in Gloucestershire equating to 2.3% of the adult population.	**Long Term Impact** People with a physical or learning disability will require increased provision and assistance to access services and are at a higher risk of requiring services, especially those with multiple long-term conditions. Forest of Dean is the only district locally that exceeds the national average in terms of the proportion of residents living with a disability. People with disabilities may have an increased risk of developing secondary conditions that are more likely to result in the need for acute care. This geographical clustering means that geographical changes to where services are delivered may have a disproportionate impact on those with disabilities in terms of access. A travel impact assessment will be needed to fully assess this impact.	**Overall Impact: Positive** **Large Positive Impact** The reconfiguring of services will mean quality of care and expertise will be enhanced, particularly beneficial to patients with long term conditions or co-morbidities which are more prevalent in patients with disabilities. **Moderate Positive Impact** Providing services from a calmer site, with a shorter overall length of stay, may well benefit those with disabilities as they may be more affected by such factors than the general population. **Moderate Negative Impact** Feedback from staff and patients suggests parking can be a challenge at both sites. Therefore, by consolidating services it is important to assess if there is an appropriate number of disabled parking bays to accommodate increases in demand of, for example, specific elective procedures. The data would suggest that patients who utilise the service and live in Gloucester city district would be most impacted by a centralisation to CGH in respect of travel costs

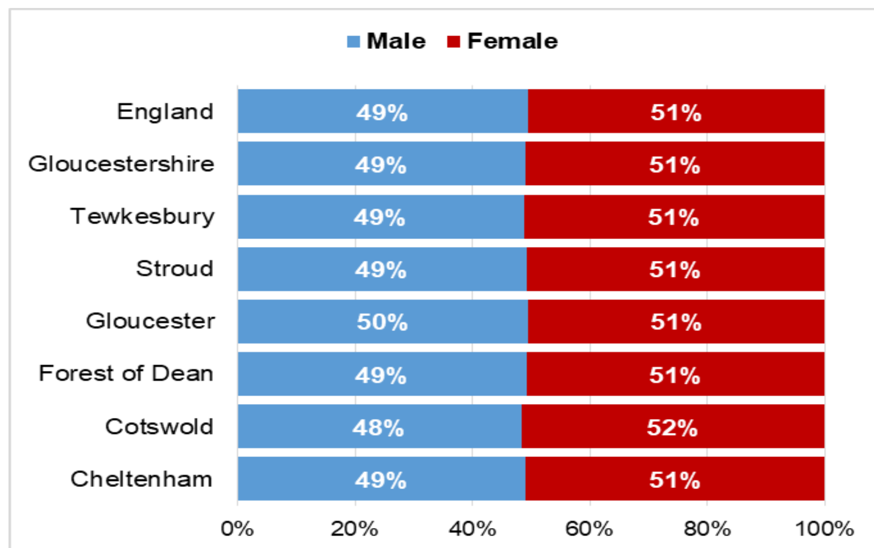
			and time. However, there are mitigations in place such as the Pullmans 99 Bus which runs between the two hospital sites **Recommendations** Moving sites can also be a challenge for patients with a sensory impairment who may be familiar with their local hospital site but may be required to travel to the other site. Additional support may be needed to help patients navigate this change. High quality signposting, good quality wheelchair access and interactive information for those with sensory impairments will be necessary to help patients navigate this change. Both sites will already have facilities in place for patients with disabilities, but it is important to ensure these are optimised. It is recommended that those with a disability are involved in the engagement to understand their needs and perceived challenges. It is also recommended that local transport providers are engaged with to understand if there are transport options running between the two hospitals and frequency of these.

2.3 Sex

The sex of an individual, combined with additional factors such as living alone, may affect their health and social care needs. Individuals may also experience discrimination and inequalities because of their sex. A report by the European Social Survey found 24% of respondents had experienced prejudice based on their sex. Discrimination on the grounds of sex was reported by more respondents than discrimination based on ethnicity.

The overall population split by sex in Gloucestershire is slightly skewed towards females, with males making up 49.1% of the population and females accounting for 50.9%. In Gloucestershire in 2017, 52.9% of people aged 65-84 were female, whilst for people aged 85+ the difference was more marked with females accounting for 64.6% of the total population. This situation is also reflected at district, regional and national level. As a result of this, 71% of single pensioner households are shown to be headed by a woman. It is worth highlighting that women were more likely than men to be living in a household without access to a car.

TABLE 6: population by proportion of males and females within the catchment area, Gloucestershire and England.



Attendance by Sex

Between Feb 2019 and Jan 2020, the Lung Function and Sleep service saw a total of 7,389 patients at 10,974 outpatient appointments across both sites (an average of 1.4 appointments / patient).

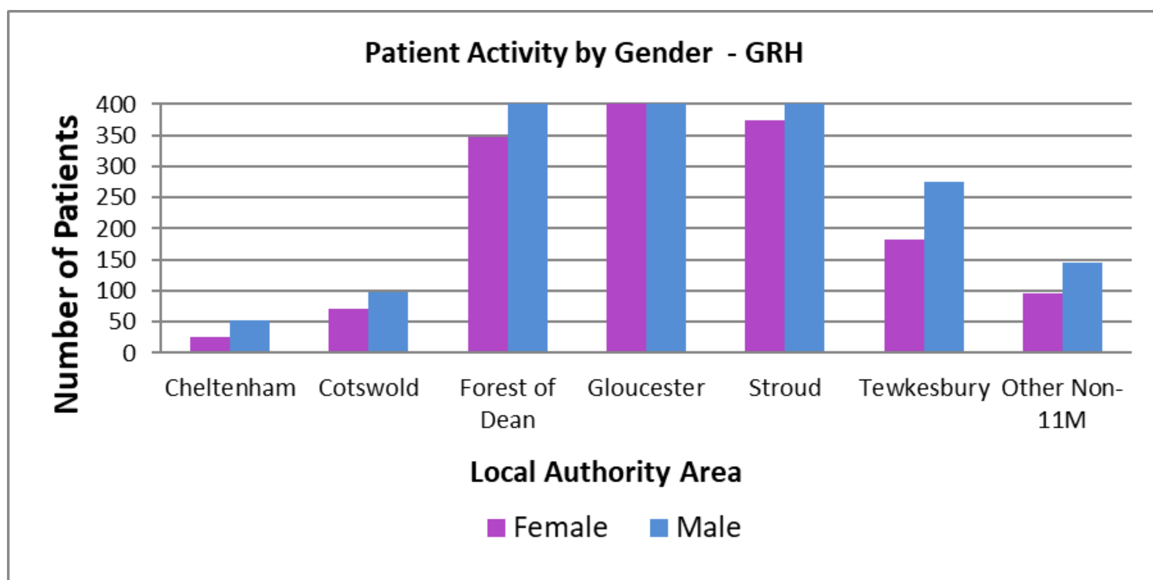
Lung Function and Sleep activity (Table 7-8) present the number of male and female patients by local authority area that were seen by the service between April 2019 and March 2020. It can be observed that for both GRH and CGH, more male patients (4,714 patients

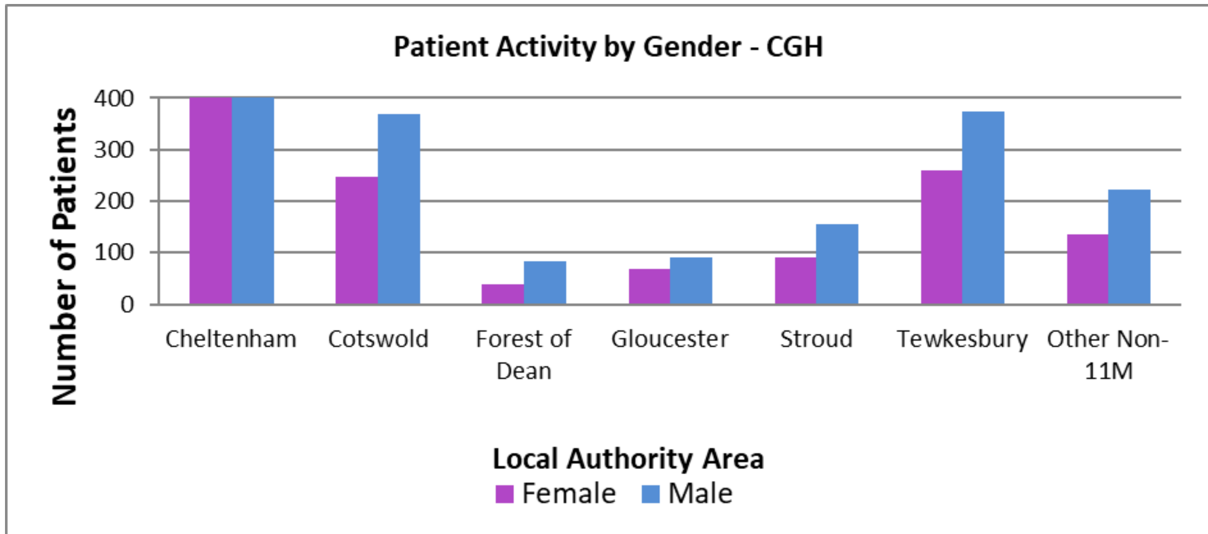
for both sites across the period) were seen than female (2,991 patients for both sites across the period). Furthermore, the majority of patients seen by the Lung Function and Sleep service across all local authority areas were male.

There is no conclusive evidence to suggest that access to and experience of acute hospital care differs solely based on a person's gender.

Consideration should be given to the data that shows that the highest numbers of patients were in the 18-64 age groups. This means that many patients using the service have been shown to be female and may be working or parents to younger children and changes to location of services may have a possibly negative impact for some. A large number of patients have been shown to be female, and consideration should also to be given to those who are pregnant, have given birth in the last 26 weeks, or are on maternity leave.

TABLE 7-8 – Attendance by Sex




Patient Activity by Gender - CGH
Number of Patients
400
300
200
100
0
Cheltenham
Cotswold
Forest of Dean
Gloucester
Stroud
Tewkesbury
Other Non-11M
Local Authority Area
Female
Male

EQIA Summary for Sex

Proposed Change	Scale of Potential impact	Evidence of Potential Impact and potential duration	Nature of potential impact and recommendations
A 'hub and spoke' model has been proposed for the Lung Function and Sleep service. The main hub (CGH) would be a consolidated service utilised for outpatient appointments and services; and the spoke site (GRH) would operate a dedicated inpatient service and support the Lung Cancer patient pathway.	There is no conclusive evidence to suggest that access to and experience of acute hospital care differs solely based on a person's sex. Analysis of previous stroke patients has identified that 53% are male and 47% female.	There is no conclusive evidence to suggest that access to and experience of acute hospital care differs solely based on a person's sex.	**Overall Impact: Positive** **Large Positive Impact** The reconfiguring of services will mean quality of care and expertise will be enhanced, particularly beneficial to patients with long term conditions or co-morbidities. **Moderate Negative Impact** The data would suggest that patients who utilise the service and live in Gloucester city district would be most impacted by a centralisation to CGH in respect of travel costs and time. However, there are mitigations in place such as the Pullmans 99 Bus which runs between the two hospital sites. **Recommendations** Proposed changes to services are expected to maintain current inclusive support service approach. It is recommended to engage with a representative distribution of the population to include both male and females. Consideration should be given to the data that shows that the highest numbers of patients were in the 18-64 age groups. This means that

			many patients using the service have been shown to be female and may be working or parents to younger children and changes to location of services may have a possibly negative impact for some. A large number of patients have been shown to be female, and consideration should also to be given to those who are pregnant, have given birth in the last 26 weeks, or are on maternity leave.

2.4 Pregnancy

The Equality Act protects women who are pregnant, have given birth in the last 26 weeks (non-work context) or are on maternity leave (work context) against discrimination in relation to their pregnancy.

There were 6,739 live births in Gloucestershire in 2016. Table 2 shows the age of mothers at the delivery of their baby in five-year age bands), the highest proportion of deliveries were to women aged 30 to 34 continuing the trend of later motherhood. Births to mothers aged 25-29 and 30-34 account for a slightly higher proportion of total births in Gloucestershire than they do nationally, whilst those to mothers aged under 25 account for a slightly lower proportion.

At district level, Gloucester and the Forest of Dean have a higher proportion of births to mothers aged under 20 (4.0% and 3.6% respectively) than Gloucestershire and England. Cheltenham, Cotswold and Stroud have a higher proportion of births to mothers aged 35+ than Gloucestershire and England.

TABLE 9: % of births by age of mother

	Total number of live births	% of total births by age of mother						
		under 20	20-24	25-29	30-34	35-39	40-44	45+
Cheltenham	1,328	2.0	10.6	24.4	36.3	21.5	5.1	0.2
Cotswold	730	1.5	10.5	25.2	34.2	22.6	5.3	0.5
Forest of Dean	844	3.6	15.8	32.5	29.5	15.2	3.3	0.2
Gloucester	1,768	4.0	16.2	31.6	31.6	13.7	2.7	0.3
Stroud	1,094	1.9	10.3	28.6	34.3	19.7	4.8	0.3
Tewkesbury	975	1.9	11.7	31.4	33.8	17.5	3.5	0.1
Gloucestershire	**6,739**	2.6	12.8	29.1	33.3	17.9	4.0	0.3
England	663,157	3.2	14.6	28.0	31.8	18.1	4.0	0.3

Attendance during Pregnancy

Between Feb 2019 and Jan 2020, the Lung Function and Sleep service saw a total of 7,389 patients at 10,974 outpatient appointments across both sites (an average of 1.4 appointments / patient).

For the Lung Function and Sleep service there is no data available to identify the proportion of patients who were pregnant, had given birth within the previous 26 weeks or were on maternity leave. However, there is also no evidence to suggest that the creation of a hub and spoke model for this service would result in changes to pregnancy, maternity or

neonatal services or would impact adversely upon women who would be protected under the Pregnancy and Maternity section of the Equality Act (2010).

Thought should however be given to the data that shows that the highest numbers of patients were in the 18-64 age groups. This means that a large number of patients using the service are female, and consideration should therefore also to be given to those who are pregnant, have given birth in the last 26 weeks, or are on maternity leave.

EQIA Summary for Pregnancy

Proposed Change	Scale of Potential impact	Evidence of Potential Impact and potential duration	Nature of potential impact and recommendations
A 'hub and spoke' model has been proposed for the Lung Function and Sleep service. The main hub (CGH) would be a consolidated service utilised for outpatient appointments and services; and the spoke site (GRH) would operate a dedicated inpatient service and support the Lung Cancer patient pathway.	**Moderate Scale Impact** There were 6,739 live births in Gloucestershire in 2016; Gloucester and the Forest of Dean have a higher proportion of births to mothers aged under 20 (4.0% and 3.6% respectively) than Gloucestershire and England. Cheltenham, Cotswold and Stroud have a higher proportion of births to mothers aged 35+ than Gloucestershire and England.	**Long Term Impact** There is currently limited data to determine any impact of the changes for women during pregnancy.	**Overall Impact: Positive** **Large Positive Impact** The reconfiguring of services will mean quality of care and expertise will be enhanced, particularly beneficial to patients with long term conditions or co-morbidities. **Moderate Negative Impact** The data would suggest that patients who utilise the service and live in Gloucester city district would be most impacted by a centralisation to CGH in respect of travel costs and time. However, there are mitigations in place such as the Pullmans 99 Bus which runs between the two hospital sites. **Recommendations** Proposed changes to services are expected to maintain current inclusive support service approach. It is recommended to engage with a representative distribution of the population, to include those pregnant or new parents. Thought should be given to the data that shows that the highest numbers of patients were in the 18-64 age groups. This means that many patients using the service are female,

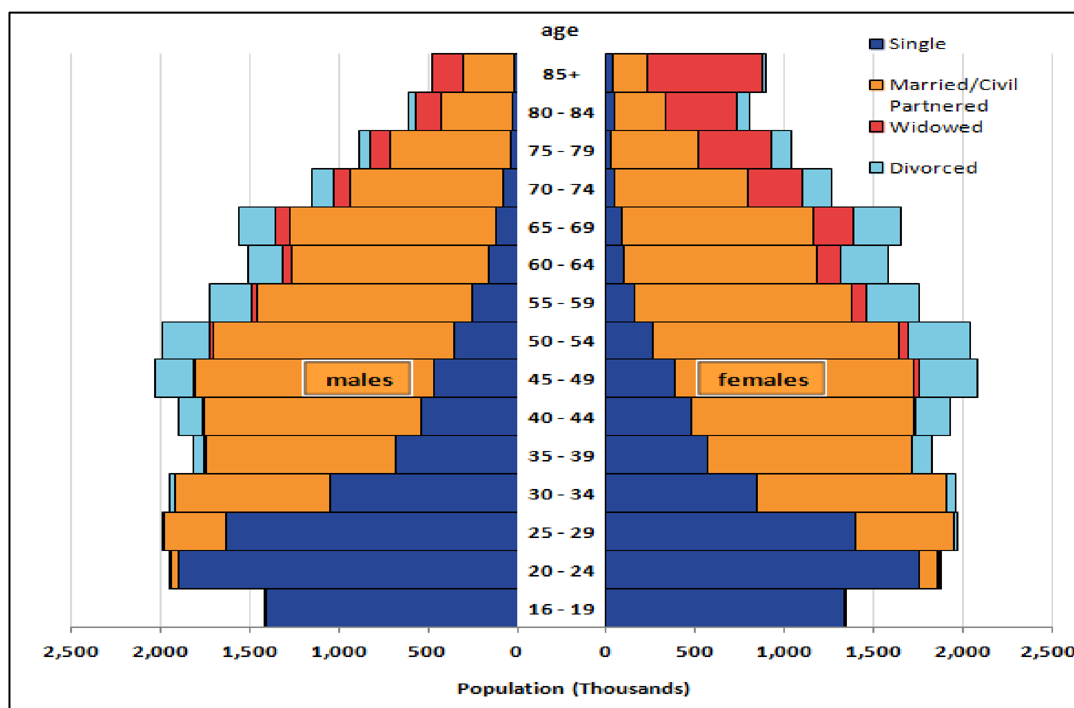
			and consideration should therefore to be given to those who are pregnant, have given birth in the last 26 weeks, or are on maternity leave.

2.5 Marital status

According to the latest data from the ONS, the majority (50.6%) of the population in England and Wales aged 16 and over in 2015 were married and this is similar in Gloucestershire. The next largest group within the population were single, never married or civil partnered (34.5%). The population who were divorced or widowed made up a smaller proportion of the total population at 8.1% and 6.5% respectively. The smallest group within the population were those who were civil partnered, making up 0.2% of the population aged 16 and over in 2015.

It is reported that within Gloucestershire just over 50% of the population who are over the age of 16 are married, which is higher than the national figure. This is also true for the proportion of the population within Gloucestershire who are divorced or widowed. However, the proportion of the population who are single or separated is lower than the national figure.

TABLE 10: Population Estimates (aged 16 and over) by marital status, age group and sex, 2015



Attendance by Marital Status

Between Feb 2019 and Jan 2020, the Lung Function and Sleep service saw a total of 7,389 patients at 10,974 outpatient appointments across both sites (an average of 1.4 appointments / patient).

The activity by marital status table below illustrates that the trend seen within Gloucestershire, is dissimilar to the trend seen by patients within the Lung Function and

Sleep service. Although majority of patients seen by the service reported that they were married (42% of patients), the second highest marital status was single (16% of patients). Furthermore, patients who reported themselves as divorced only made up 4% of patients seen.

Although there is data available for the marital status of Lung Function and Sleep Patients (please see activity by marital status table 11), it must be noted that the data obtained is only partial as a result of incomplete data being available within the clinical system (up to 25% incomplete data).

Importantly, there is no evidence to suggest that the consolidation of this service onto a main hub at CGH will cause a negative or positive impact upon this cohort of patients.

TABLE 11- Attendance by marital status

Marital Status	Number of Patient Reported Marital Status	Number of Patients as a %	Number of Individuals within Gloucestershire as a % (Census 2011)
Married	3,203	42%	50.2%
Not Stated	2,756	36%	n/a
Single	1,261	16%	30.5%
Divorced	317	4%	9.5%
Widowed	115	1%	7.2%
Separated	54	1%	2.3%

EQIA Summary for Marital Status

Proposed Change	Scale of Potential impact	Evidence of Potential Impact and potential duration	Nature of potential impact and recommendations
A 'hub and spoke' model has been proposed for the Lung Function and Sleep service. The main hub (CGH) would be a consolidated service utilised for outpatient appointments and services; and the spoke site (GRH) would operate a dedicated inpatient service and support the Lung Cancer patient pathway.	There is currently limited data to ascertain any impact of the changes for those who are from any particular marital status	There is currently limited data to ascertain any impact of the changes for those who are from any particular marital status.	**Overall Impact: Positive** **Large Positive Impact** The reconfiguring of services will mean quality of care and expertise will be enhanced, particularly beneficial to patients with long term conditions or co-morbidities. **Moderate Negative Impact** The data would suggest that patients who utilise the service and live in Gloucester city district would be most impacted by a centralisation to CGH in respect of travel costs and time. However, there are mitigations in place such as the Pullmans 99 Bus which runs between the two hospital sites. **Recommendations** Proposed changes to services are expected to maintain current inclusive support service approach. It is recommended to engage with a representative distribution of the population to include those who are married, divorced, widowed, single and separated.

2.6 Ethnicity

The 2011 Census found that 7.7% of Gloucestershire residents (46,100 people) were born outside of the UK compared with a national figure of 13.4%. Furthermore, it was reported that 4.6% of the population within Gloucestershire were from a Black and Minority Ethnic (BME) background and with the majority residing in Gloucester City. The proportion of people from BME backgrounds within Gloucestershire was considerably lower than the national figure of 14.6%.

Based on data, from the Gloucestershire county council population profile, amongst people aged 65 and over, 58.5% of Asian/Asian British people and 56.7% of Black African/Caribbean/Black British people had a long-term health problem/disability compared with 48.9% of White British people. Amongst the Gloucestershire population of all ages, people of Gypsy or Irish Traveller origin were much more likely to be in poor health than other ethnic groups (15.9% of Gypsy/Irish Travellers compared with 4.6% of White British people).

Attendance by Ethnicity

Between Feb 2019 and Jan 2020, the Lung Function and Sleep service saw a total of 7,389 patients at 10,974 outpatient appointments across both sites (an average of 1.4 appointments / patient).

There is limited data that can be obtained to provide an insight into the ethnicity of patients who access this service. This is the result of potentially ambiguous ethnicity descriptions provided within the clinical system; and therefore, they have not been used.

Whilst it is difficult to assess the impact of the centralisation of Lung Function and Sleep services on ethnic minorities, the creation of a hub and spoke model aims to ensure the best quality care is made available to all patients and will especially benefit patients with complex or long-term needs but we also recognise that the impact may be greater on communities living in Gloucester city.

EQIA Summary for Ethnicity

Proposed Change	Scale of Potential impact	Evidence of Potential Impact and potential duration	Nature of potential impact and recommendations
A 'hub and spoke' model has been proposed for the Lung Function and Sleep service. The main hub (CGH) would be a consolidated service utilised for outpatient appointments and services; and the spoke site (GRH) would operate a dedicated inpatient service and support the Lung Cancer patient pathway.	The district with the highest proportion of ethnic diversity is Gloucester city meaning that a geographical distribution of services away from GRH might have a greater impact on these communities.	**Long Term Impact** In Gloucestershire amongst people aged 65 and over, 58.5% of Asian/Asian British people and 56.7% of Black African/Caribbean/Black British people had a long-term health problem/disability compared with 48.9% of White British people. Studies of secondary care usage have found that ethnicity is a significant predictor of acute hospital admission.	**Overall Impact: Positive** **Large Positive Impact** The reconfiguring of services will mean quality of care and expertise will be enhanced, particularly beneficial to patients with long term conditions or co-morbidities **Moderate Negative Impact** The data would suggest that patients who utilise the service and live in Gloucester city district would be most impacted by a consolidation of OP to CGH in respect of travel costs and time. However, there are mitigations in place such as the Pullmans 99 Bus which runs between the two hospital sites. **Recommendations** It is recommended that information regarding travel times and repatriation between sites is made clear to help residents and patients understand more about the transfer process and how frequently transfers are to happen. Having patient representatives as an integral

			part of the co-design of services is crucial to ensure there is wide representation from those with the conditions that are being impacted.

2.7 Sexual orientation

There is a substantial body of evidence which demonstrates that Lesbian, Gay, Bisexual, Trans and Queer (LGBTQ+) people experience discrimination and marginalisation in their daily lives, including in health care. People who are LGBTQ+ are more likely to have experienced depression or anxiety, attempted suicide or had suicidal thoughts and self-harmed than men and women in general[2]. LGBTQ+ population aged over 55 are more likely than heterosexual people over 55 to live alone and are more likely than heterosexual people to say that they expect to rely on health and social care providers as they get older.[3] The prevalence of the LGBTQ+ population in Gloucestershire is estimated to be around 5% - 7%[4].

Attendance by Sexual Orientation

Between Feb 2019 and Jan 2020, the Lung Function and Sleep service saw a total of 7,389 patients at 10,974 outpatient appointments across both sites (an average of 1.4 appointments / patient).

There is currently no definitive data available to provide an insight into how many LGBTQ+ patients access the Lung Function and Sleep service. However, we anticipate that there will be no significant negative or positive impacts for these patients as a result of consolidating the service to CGH. As a Trust we would expect all our colleagues to create an inclusive environment for patients, regardless of the physical location of the service.

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[2] Stonewall, 2015, Mental Health, Stonewall health briefing
http://www.stonewall.org.uk/sites/default/files/Mental_Health_Stonewall_Health_Briefing__2012_.pdf Accessed 18/12/2017
Stonewall, 2011, Lesbian, Gay and Bisexual People in Later Life.
www.stonewall.org.uk/sites/default/files/LGB_people_in_Later_Life__2011_.pdf Accessed 18/12/201

[4] https://inform.gloucestershire.gov.uk/media/2087689/equality-profile-2019-final.pdf

EQIA Summary for Sexual Orientation

Proposed Change	Scale of Potential impact	Evidence of Potential Impact and potential duration	Nature of potential impact and recommendations
A ‘hub and spoke’ model has been proposed for the Lung Function and Sleep service. The main hub (CGH) would be a consolidated service utilised for outpatient appointments and services; and the spoke site (GRH) would operate a dedicated inpatient service and support the Lung Cancer patient pathway.	**Small- Moderate Scale Impact** The LGBTQ+ community is estimated to form 5% - 7% of the Gloucestershire population.	**Long Term Impact** According to the Stonewall survey, 13% of LGBTQ+ people have experienced some form of unequal treatment from healthcare staff because they are LGBTQ+ and 23% have witnessed it. This includes 32% of trans people and 24% of Asian LGBTQ+ people who have experienced unequal treatment.	**Overall Impact: Positive** **Large Positive Impact** The reconfiguring of services will mean quality of care and expertise will be enhanced, particularly beneficial to patients with long term conditions or co-morbidities. **Moderate Negative Impact** The data would suggest that patients who utilise the service and live in Gloucester city district would be most impacted by a consolidation of OP to CGH in respect of travel costs and time. However, there are mitigations in place such as the Pullmans 99 Bus which runs between the two hospital sites. **Recommendations** Proposed changes to services are expected to maintain inclusive support service approach. It is recommended to ensure LGBTQ+ communities are included in the consultation and are able to feed back their views as changes to health care settings can be challenging to patients who may already feel healthcare is unequal (as shown in the Stonewall survey)1.

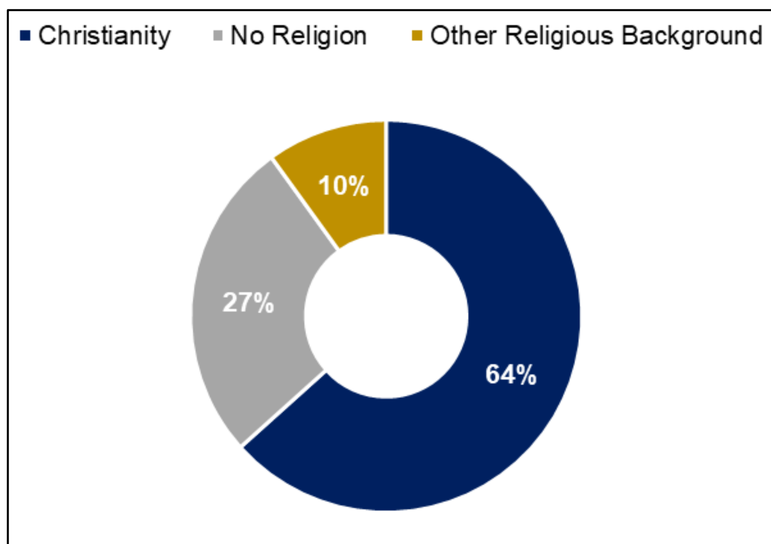
[1] Stonewall, 2015, Mental Health, Stonewall health briefing http://www.stonewall.org.uk/sites/default/files/Mental_Health_Stonewall_Health_Briefing__2012_.pdf Accessed 18/12/2017
Stonewall, 2011, Lesbian, Gay and Bisexual People in Later Life. www.stonewall.org.uk/sites/default/files/LGB_people_in_Later_Life__2011_.pdf Access

2.8 Religion

According to the 2011 Census, 63.5% of residents in Gloucestershire were Christian, making it the most common religion. This was followed by no religion which accounts for 26.7% of the total population.

Gloucestershire has a higher proportion of people who are Christian, have no religion or have not stated a religion than the national figures. In contrast it has a lower proportion of people who follow a religion other than Christianity, which reflects the ethnic composition of the county.

TABLE 12: Gloucestershire population broken down by religious background



At district level:

- Cheltenham had the lowest proportion of people who are Christian at 58.7% of the total population; this was lower than the county and marginally lower than the national figure.
- Cotswold had the highest proportion of people who follow Christianity.
- Cheltenham had the highest proportion of Buddhists, Hindus and people who have no religion.
- At 3.2% of the total population Gloucester had the highest proportion of Muslims.
- Stroud had the highest proportion of people who follow an "Other Religion" and of people who did not state their religion.

Admission by Religion

Between Feb 2019 and Jan 2020, the Lung Function and Sleep service saw a total of 7,389 patients at 10,974 outpatient appointments across both sites (an average of 1.4 appointments / patient).

In respect of the Lung Function and Sleep service, it appears to follow a similar pattern to the wider county with Christianity (48% of patients) being reported as the most common religion, followed by 'Religion Not Stated' (45 % of patients). However, it must be noted that this data set had a significant amount of incomplete data (up to 25% incomplete) and therefore it is difficult to obtain a holistic picture of Lung Function and Sleep patient's religion.

The consolidation of the Lung Function and Sleep Service to a main hub at CGH is unlikely to have a significant negative or positive impact upon people of faith. Both CGH and GRH have a team of Chaplains who provide spiritual and pastoral care and support for all faiths to help people find strength comfort and meaning at what can be a very difficult time in their lives.

EQIA Summary for Religion

Proposed Change	Scale of Potential impact	Evidence of Potential Impact and potential duration	Nature of potential impact and recommendations
A 'hub and spoke' model has been proposed for the Lung Function and Sleep service. The main hub (CGH) would be a consolidated service utilised for outpatient appointments and services; and the spoke site (GRH) would operate a dedicated inpatient service and support the Lung Cancer patient pathway.	There is currently limited data to ascertain any impact of the changes for those who are from any particular religious background	**Long Term Impact** Approximately 64% of the Gloucestershire population are from a Christian background and almost 27% have no religion. Only estimated 10% of the population has other religious backgrounds.	**Overall Impact: Positive** **Large Positive Impact** The reconfiguring of services will mean quality of care and expertise will be enhanced, particularly beneficial to patients with long term conditions or co-morbidities. **Moderate Negative Impact** The data would suggest that patients who utilise the service and live in Gloucester city district would be most impacted by a consolidation of OP to CGH in respect of travel costs and time. However, there are mitigations in place such as the Pullmans 99 Bus which runs between the two hospital sites. **Recommendations** It is important to ensure an evenly represented group feedback through the consultation, meaning that religions are represented when feeding back views. Many patients did not state their religion and so it is difficult to know how different religions are impacted which is why it is important to ensure the consultation captures feedback from all religions. As an example, some patients will want reassurance that they can request the gender of their doctor for religious reasons

2.9 Gender reassignment

The Equality Act 2010 protects transgender people. It is therefore important this is clearly understood and followed within the organisation, for both patients and staff who are transgender.

Transgender people are more likely to report mental health conditions and to attempt suicide than the general population[5]. Transgender people encounter significant difficulties in accessing and using health and social services[6]. Numbers of people identifying as transgender across the county is increasing with current estimates at 0.6% people aged 16 and over[7].

There is currently no definitive data around the proportion of the national or local population who experience some degree of gender variance. However, it is estimated at both a national and a local level, these individuals represent between 0.6-1% of the adult population.

Admission by Gender reassignment

Similarly, to sexual orientation, there is no definitive data available to provide an insight into how many individuals who experience some degree of gender variance access the Lung Function and Sleep Service. Furthermore, there is no evidence to suggest that the creation of a hub and spoke will cause a negative or positive impact upon this cohort of patients. However as with the other Protected Characteristics the reconfiguring of services will mean quality of care and expertise will be enhanced, particularly beneficial to patients with long term conditions or co-morbidities.

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[5] House of Commons Women and Equalities Committee, 2016, Transgender Equality . www.publications.parliament.uk/pa/cm201516/cmselect/cmwomeq/390/390.pdf Accessed 24/01/2019
[6] Stonewall (2015) Unhealthy Attitudes www.stonewall.org.uk/sites/default/files/unhealthy_attitudes.pdf Accessed 24/01/2019
[7] https://inform.gloucestershire.gov.uk/media/2087689/equality-profile-2019-final.pdf

EQIA Summary for Gender Re-assignment

Proposed Change	Scale of Potential impact	Evidence of Potential Impact and potential duration	Nature of potential impact and recommendations
A 'hub and spoke' model has been proposed for the Lung Function and Sleep service. The main hub (CGH) would be a consolidated service utilised for outpatient appointments and services; and the spoke site (GRH) would operate a dedicated inpatient service and support the Lung Cancer patient pathway.	**Small Scale Impact** The estimated prevalence of gender re-assignment is 0.6% in Gloucestershire.	There is limited evidence regarding the impact to those who have undergone gender reassignment, however, impacts may mirror those of sexual orientation (see above)	**Overall Impact: Positive** **Large Positive Impact** The reconfiguring of services will mean quality of care and expertise will be enhanced, particularly beneficial to patients with long term conditions or co-morbidities. **Moderate Negative Impact** The data would suggest that patients who utilise the service and live in Gloucester city district would be most impacted by a consolidation of OP to CGH in respect of travel costs and time. However, there are mitigations in place such as the Pullmans 99 Bus which runs between the two hospital sites. **Recommendations** Proposed changes to services are expected to maintain inclusive support service approach. It is recommended to ensure transgender people are included in the engagement.

3 Health Inequalities Impact Assessment

3.1 Key Findings

Potential Positive impacts

- The reconfiguring of services will mean quality of care and expertise will be enhanced, particularly beneficial to patients with long term conditions or co-morbidities.
- It will also result in ring fenced services which means more access to services and therefore better health outcomes for the patient and improved self-care.
- There will be reduced waiting times for patients and less out of county referrals.
- Relocation of services support shorter lengths of stay, faster diagnostics and minimised waiting times which will help carers who have to attend hospital regularly.

Potential Negative Impacts

Travel

The preferred option (hub at CGH and spoke at GRH), consolidates the majority of services on the CGH site. Our previous analysis has indicated that for services moved from Gloucestershire Royal Hospital to Cheltenham General Hospital, the impact for patients living in our localities is as follows:

- No/Low impact – North Cotswolds, South Cotswolds, Tewkesbury, Gloucester (East), Stroud and Berkley Vale
- Positive impact – Cheltenham
- Negative impact – Forest of Dean and Gloucester (West)

In order to assess the specific travel impact upon Lung Function and sleep services patients in more depth, patient postcode data has been utilised further to determine the type and extent of impact upon patient travel. For 66% of patients (and potentially their carers) it will have a neutral impact, however, for 34% of patients (and potentially their carers), the Hub and Spoke model will have a negative impact upon their travel time. The above figures exclude sleep patients as patient appointments for sleep follow ups will be primarily conducted via telephone.

Carers

Changes of hospital sites may result in extended travel time or a more complex journey, this could lead to carers finding this more challenging.

Carers may have to attend a different site or even both sites and contend with the challenges that come with this, for example, parking which is reportedly a challenge from engagement with the public.

Deprivation

Approximately 7.7% of the Gloucestershire population live within the most deprived IMD quintile, which equates to just over 48,000 people. At a district level, Gloucester city has the highest proportion of its population living in the most deprived areas (25%) equating to approximately 32,500 people; this is followed by Cheltenham (11,700), Forest of Dean (2,600) and Tewkesbury (1,800). None of the areas within neither Stroud nor Cotswold fall under the most deprived quintile. Overall, an estimated 72% of the population living in the most deprived areas appear to live closer to GRH (based on district level map information) and this equates to around 35,000 people. Given that the majority of the population living in the most deprived areas live closer to GRH; consolidating/moving services to CGH will impact on accessing services for those living in the most deprived areas.

Also on the basis that there is a higher proportion of the population in the Gloucester district who are living in deprivation (25%) and who suffer from adulthood obesity (29%), there is a potential that patients who access the service from Gloucester may be the most impacted by a centralisation to CGH.

The deprivation data from Gloucestershire Council would suggest that patients who utilise the Lung Function and Sleep service and live in Gloucester city could be most impacted by the consolidation of a main hub to CGH, especially if they are from a low socio-economic background. However, for those patients who live in the centre of the city, there are buses that run between the two hospitals.

Homelessness

Given rates of homelessness are slightly higher in Gloucester; a consolidating/ moving services to CGH may be detrimental to this group. Services in this solution will be located further from the highest proportion of homeless people in Gloucestershire.

Substance Misuse

The age standardised hospital admissions due to substance misuse in Gloucestershire is among the lowest in the South West region at 38 per 100,000 persons; lower than both regional and national rates; however mortality rates suggest that the district of Gloucester

City has the highest rates of deaths due to substance misuse, significantly higher than county and national averages.

Mental Health

The prevalence of mental health disease within the GP practice registered population within Gloucestershire is among the lowest in the South West region at 0.8%; significantly lower than both regional and national averages

GHFT admission data demonstrates that more people attend GRH than CGH with mental health related issues.

Patients with anxiety disorders and other mental health disorders which may be exacerbated by change in routine or need to travel may find these challenging.

People living in rural and remote areas

The county is classed as a predominantly rural county by the ONS with 29.65% of the total population and 35.89% of the over 65 population living in rural areas. The rural nature of the county is what attracts many residents to the area and facilitates access to open space improving health and wellbeing, however it can also create problems of accessibility and isolation. This can affect all parts of the population and is a problem for people who rely on public transport and the elderly.

By consolidating Lung Function and Sleep services onto a main hub, it will require all outpatients who are receiving lung function testing to visit CGH for their appointment. This will mean that for some patients, there will be a negative impact upon their travel time and cost. This will be more of an issue for those living in rural locations in the west of the county.

Evidence Based Recommendations

- Ensure good levels of engagement on service changes with people living in lower income areas within Gloucester City is important to understand if they currently struggle to access healthcare and if they think the proposed movement of services from GRH to CGH will affect their access to, and outcomes of, healthcare.
- It is recommended the voices of those with mental health conditions are represented to identify how the proposed changes will impact them if they are required to travel further, or attend a new location.
- It is recommended that residents are made aware of transport options for low income families both from the hospital and from local transport services. This includes opportunities for subsidised travel.

- It is recommended that carers are part of the co-design with a specific interest in understanding what practical support may be required to help them navigate changes, specifically around disability access, travel information, and required facilities.
- It is recommended that organisations that advocate for homeless people locally are part of the co-design around transport and repatriation of those who are homeless to understand the pathway of care and how that impacts on homeless people or rough sleepers if they are required to travel out of their local area.
- It is recommended those with mental health conditions and organisations supporting those with mental health conditions form part of the design of services, particularly considering the impact of travel or a new environment on those with mental health conditions that may be exacerbated by these changes.

3.2 Deprivation

In general, Gloucestershire is not a very deprived county; looking at the 151 upper-tier authorities, Gloucestershire has a rank of 126, putting it in the least deprived quintile for overall deprivation. An average IMD rank for each of the six districts in Gloucestershire shows that even the most deprived district (Gloucester City) falls in the middle quintile (middle 20%) for deprivation out of 326 English authorities. Tewkesbury, Cotswold, and Stroud districts are in the least deprived quintile, with Cheltenham in the second least deprived quintile. However, there are pockets of deprivation and 13 areas of Gloucestershire are in the most deprived 10% nationally. These 13 areas account for 20,946 people (3.4% of the county population). Comparison of data between 2015 and 2019 indicates that there have been minimal changes to the increase/ decrease in levels of deprivation in the county[8].

Table 13 shows that Gloucester City has the highest proportion of population living in the most deprived quintile at around 25% and this is 2.5 times higher than the equivalent proportion for Cheltenham (10%).

Deprivation: Inequality in life expectancy

According to the latest available data, men who reside in the least deprived IMD quintile in Gloucestershire live 8.4 years longer on average compared to those who live in the most deprived areas; this is statistically similar to the regional average of 7.4 years but significantly better than the national average of 9.5 years[9].

The inequality in life expectancy among females also showed a similar trend with women living in the least deprived quintiles of Gloucestershire living 5.4 years longer on average than their counterparts living in the most deprived areas; this was significantly better than the national average but similar to the regional rates

[8] https://inform.gloucestershire.gov.uk/media/2094524/gloucestershire_deprivation_2019_v13.pdf
[9]https://fingertips.phe.org.uk/search/life%20expectancy#page/0/gid/1/pat/6/par/E12000009/ati/102/are/E10000013

TABLE 13: Overall Index of Multiple Deprivation 2019 Map of Gloucestershire by IMD 2019 Quintile[10].

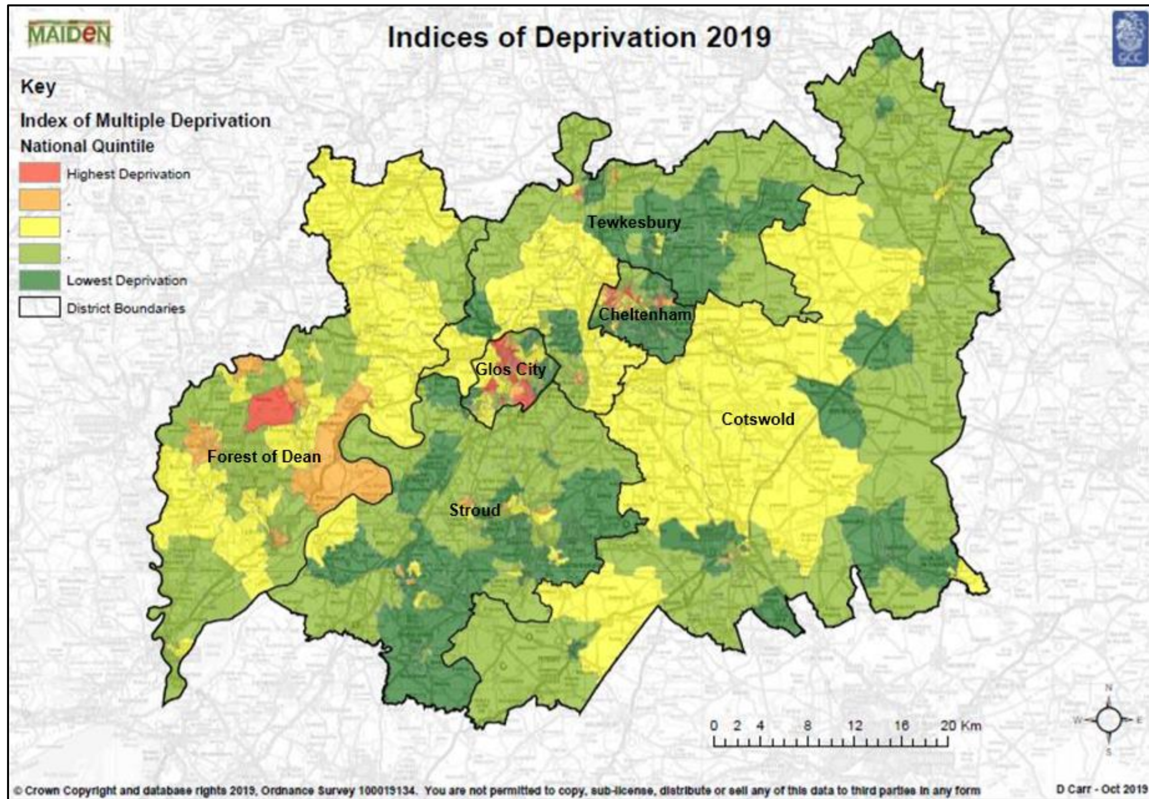
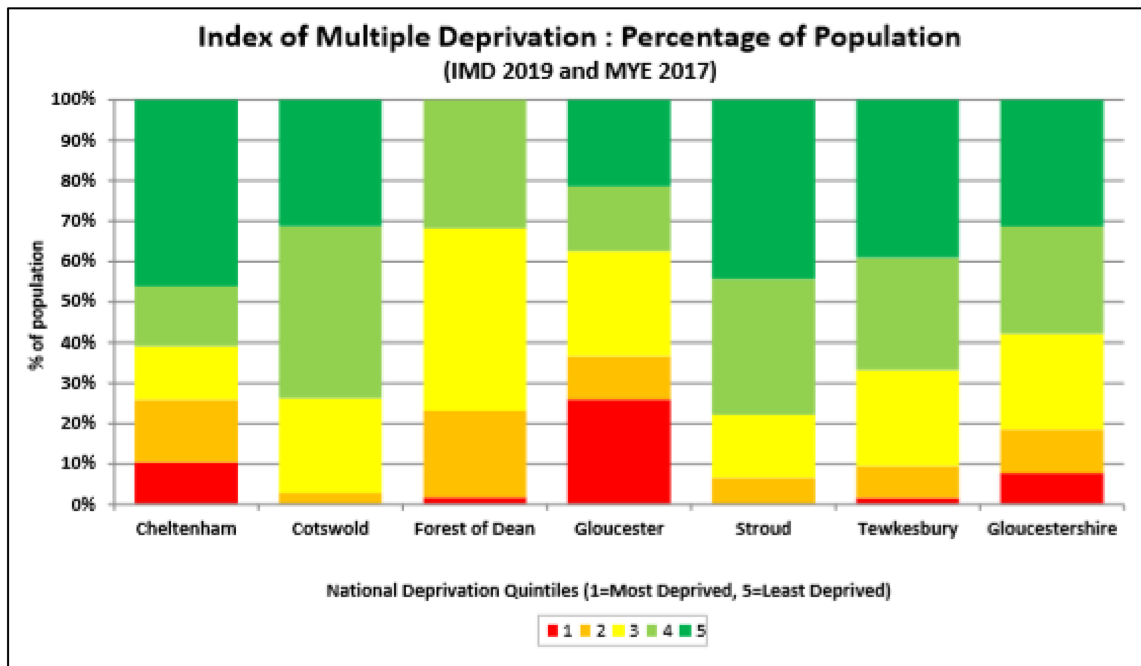


TABLE 14: Overall Index of Multiple Deprivation 2019 – Percentage of Population by Quintile and District.



10 https://inform.gloucestershire.gov.uk/media/2094524/gloucestershire_deprivation_2019_v13.pdf

TABLE 15: Graph showing number of years of inequality in life expectancy among males living in the most deprived and least deprived IMD quintiles; 2016-2018[11]

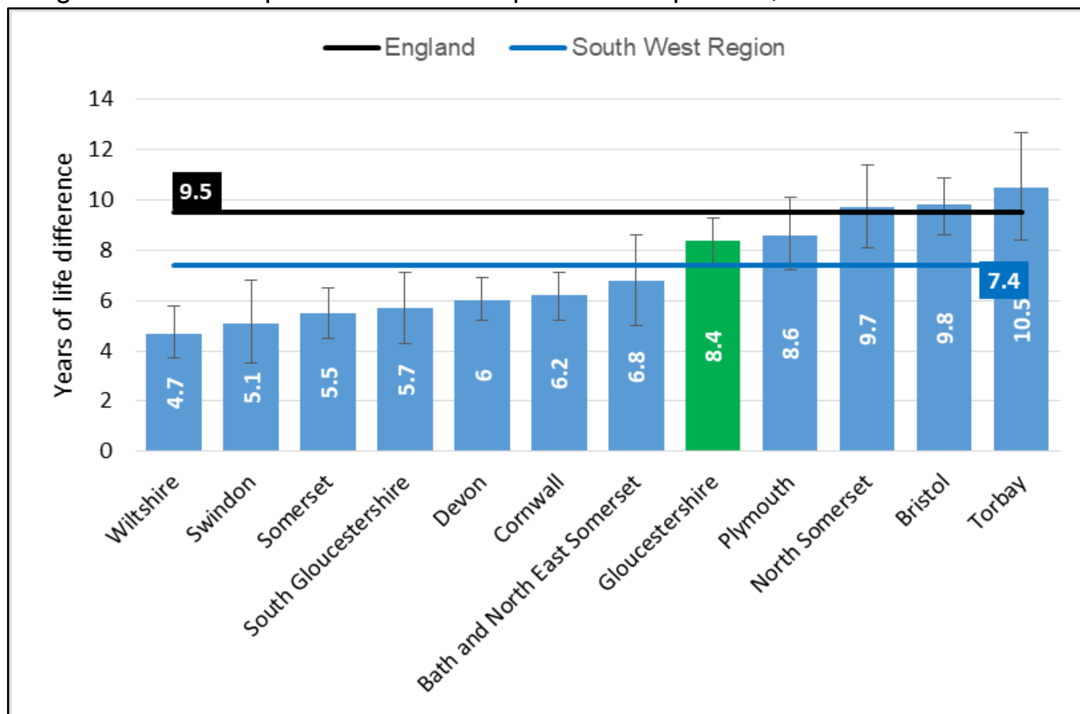
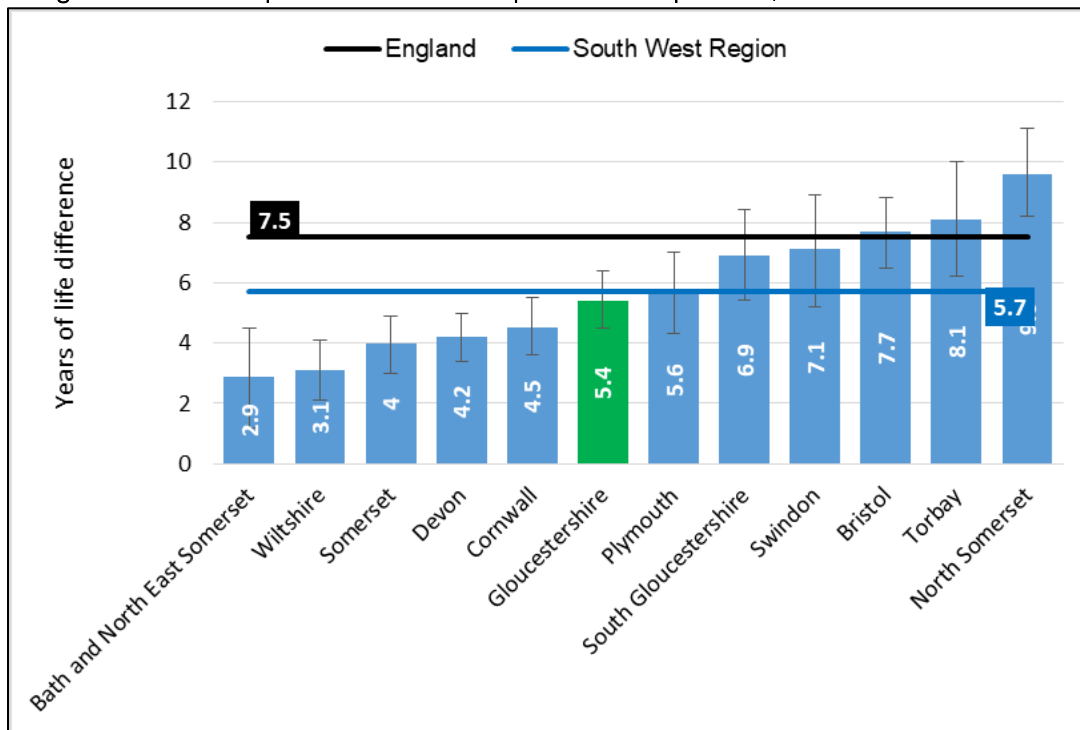


TABLE 16: Graph showing number of years of inequality in life expectancy among females living in the most deprived and least deprived IMD quintiles; 2016-2018



11 https://fingertips.phe.org.uk/search/life%20expectancy#page/0/gid/1/pat/6/par/E12000009/ati/102/are/E10000013

HIIA summary for Deprivation

Proposed Change	Scale of Potential impact	Evidence of Potential Impact and potential duration	Nature of potential impact and recommendations
A 'hub and spoke' model has been proposed for the Lung Function and Sleep service. The main hub (CGH) would be a consolidated service utilised for outpatient appointments and services; and the spoke site (GRH) would operate a dedicated inpatient service and support the Lung Cancer	**Large Scale Impact** Approximately 7.7% of the Gloucestershire population live within the most deprived IMD quintile which equates to just over 48,000 people being potentially impacted. At a district level, Gloucester city has the highest proportion of its population living in the most deprived areas (25%) equating to approximately 32,500 people; this is followed by Cheltenham (11,700), Forest of Dean (2,600) and Tewkesbury (1,800). None of the areas within Stroud nor Cotswold fall under the most deprived quintile. Overall, an estimated 72% of the population living in the most deprived areas appear to live closer to GRH (based on district level map information) and this equates to around 35,000 people.	**Long Term Impact** The lack of affordability for private vehicles in low-income households, combined with limited public transport services in many peripheral social housing estates, considerably exacerbates the problem (of inequalities to healthcare) in many parts of the UK[12] People in the most deprived areas in England can expect to have two or more health conditions at 61 years, which is 10 years earlier than people in the least deprived areas, according to research carried out by the Health Foundation[13] The more deprived areas in both England and Wales experienced a higher number of deaths from leading causes such as heart diseases, chronic respiratory diseases and lung	**Overall Impact: Positive** **Moderate Negative Impact** Given that around 35,000 people, accounting for 72% of the population living in the most deprived areas live closer to GRH; consolidating/moving services to CGH will impact on accessing services for those living in the most deprived areas. However, there are mitigations in place such as the Pullmans 99 Bus which runs between the two hospital sites. **Large Positive Impact** Overall, relocation of services will provide shorter lengths of stay, faster diagnostics and minimised waiting times which will help all patients including those living in areas of deprivation. **Recommendations**

[12] Lucas et al, 2019; Inequalities in mobility and Access in the UK Transport System: Evidence Review: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/784685/future_of_mobility_access.pdf
[13] https://www.health.org.uk/news-and-comment/news/people-in-most-deprived-areas-of-england-develop-multiple-health-conditions-10-years

patient pathway.		cancer than less deprived areas Inequalities in the provision of transport services are strongly linked with where people live, and the associated differences in life expectancy, access to employment, healthcare, education, are all influenced by deprivation. The lack of affordability for private vehicles in low-income households, combined with limited public transport services in many peripheral social housing estates, considerably exacerbates the problem in many parts of the UK[14]	Engaging with lower income areas within Gloucester City is important to understand if they currently struggle to access healthcare and if they think the proposed movement of services from GRH to CGH will Impact on their access to healthcare. It is recommended that residents are made aware of transport options for low income families both from the hospital and from local transport services. This includes opportunities for subsidised travel.

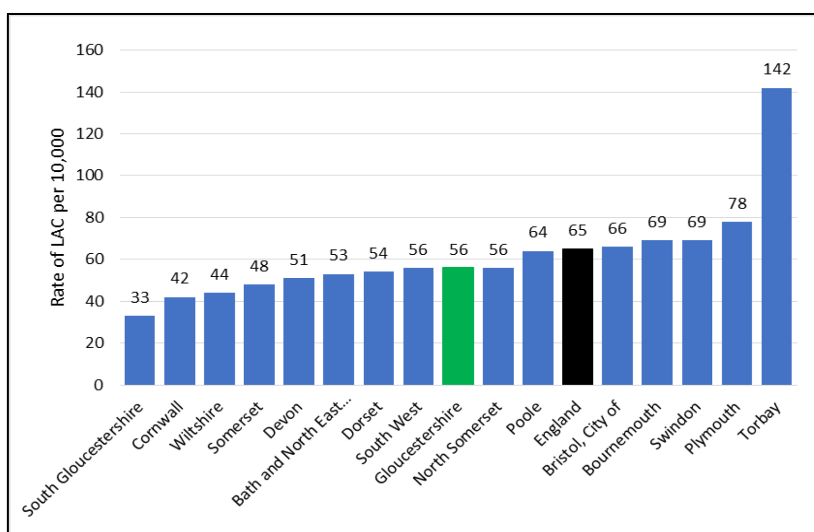
[14] Lucas et al, 2019; Inequalities in mobility and Access in the UK Transport System: Evidence Review: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/784685/future_of_mobility_access.pdf

3.3 Looked After Children (LAC)

According to data from the department for Education, there are just under 80,000 children who are in care in England. Most are taken into care over fears of abuse or neglect. They are vulnerable to health inequalities, and exhibit significantly higher rates of mental health issues, emotional disorders (anxiety and depression), hyperactivity and autistic spectrum disorder conditions[15].

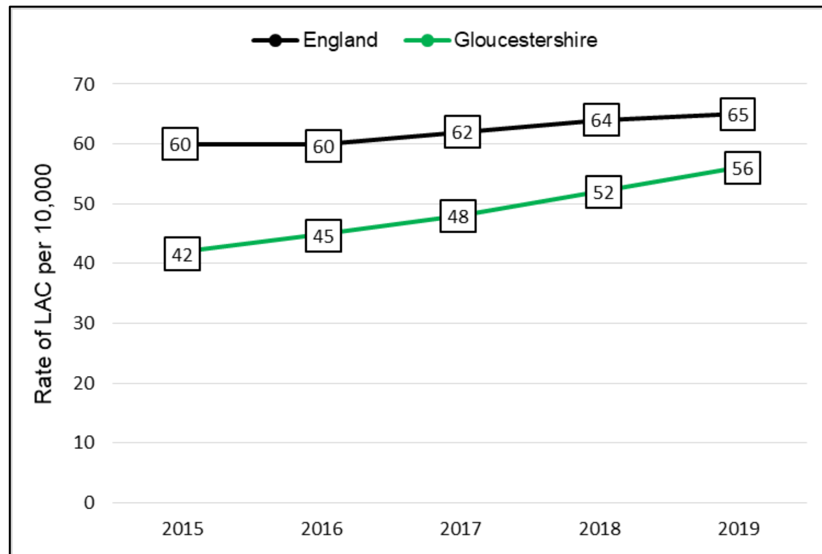
In Gloucestershire there were 718 looked after children in 2019; this equated to a rate of 56 per 10,000 persons, which is lower than England (65 per 10,000); however it is worth noting that the rate of LAC has increased by a third from 2015 to 2019[16] .

TABLE 17: Graph showing the rate of looked after children per 10,000 in local authorities in the South West region and national rate, 2019



[15] https://www.rcpch.ac.uk/resources/looked-after-children-lac
[16] https://www.gov.uk/government/statistics/children-looked-after-in-england-including-adoption-2018-to-2019

TABLE 18: Graph showing the rate of looked after children per 10,000 in Gloucestershire and England rate, 2015 to 2019



HIIA summary for Looked After Children (LAC)

Proposed Change	Scale of Potential impact	Evidence of Potential Impact and potential duration	Nature of potential impact and recommendations
A 'hub and spoke' model has been proposed for the Lung Function and Sleep service. The main hub (CGH) would be a consolidated service utilised for outpatient appointments and services; and the spoke site (GRH) would operate a dedicated inpatient service and support the Lung Cancer patient	**Small Scale Impact** In Gloucestershire there were 718 looked after children in 2019; this equated to a rate of 56 per 10,000 persons, which is lower than England (65 per 10,000); however it is worth noting that the rate of LAC has increased by a third from 2015 to 2019	**Long Term Impact** There is limited evidence regarding the impact to those who are looked after children; however evidence suggests that they are vulnerable to health inequalities, and exhibit significantly higher rates of mental health issues, emotional disorders (anxiety and depression), hyperactivity and autistic spectrum disorder conditions[17].	**Overall Impact: Neutral** The proposals are for adult services only. Proposed changes to services are expected to maintain current inclusive support service approach. It is recommended to consult with a representative distribution of the population.

[17] https://www.rcpch.ac.uk/resources/looked-after-children-lac

pathway.			

3.4 Carers and Unpaid Carers

Increasing numbers of people are living with complex health needs and disabilities and require help with everyday activities. These people are often cared for, informally and unpaid, by family, friends, and neighbours.

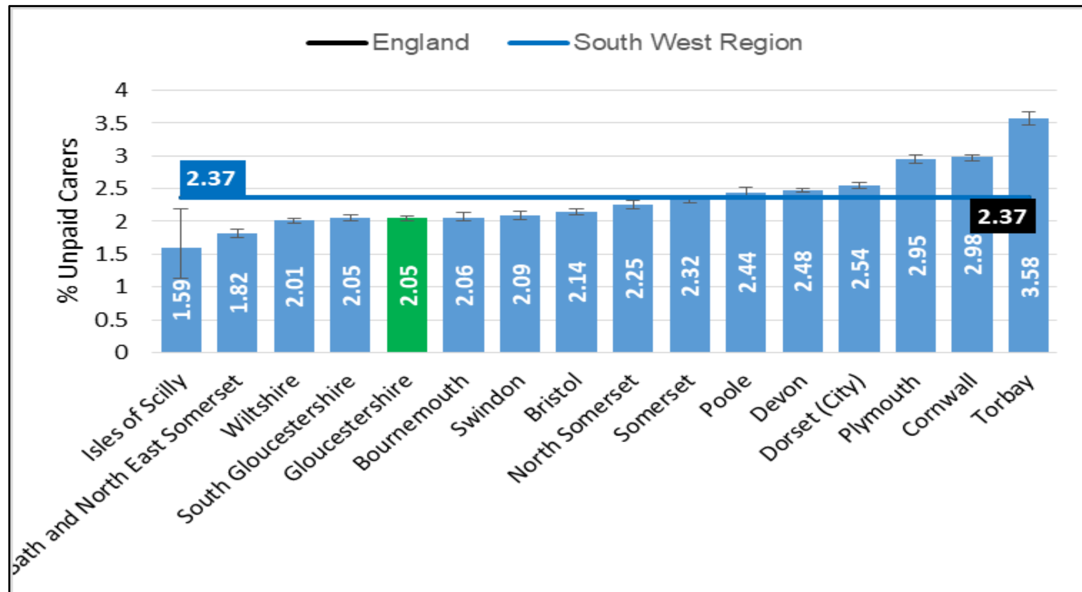
Around 6.5 million carers in the UK provide care worth an estimated £57 billion to £100 billion per year. The number varies across the UK with a higher proportion of carers in Wales and Northern Ireland[18].

Providing unpaid care can affect carers' education, employment, relationships, household finances, health and well-being. Effects on carers tend to worsen with the more care provided. Support for carers can be provided by a range of organisations, such as employers and governments, and it can include financial, employment-related, respite care, and emotional and social support. Some carers, such as those from ethnic minorities, can find it difficult to access support. Respite breaks, training, and counselling can improve carers' mental health and reduce stress.

There is very little publicly available data on the prevalence of unpaid and paid carers; according to the 2011 census the prevalence of unpaid carers within the Gloucestershire population was 2.05% and this was significantly lower than both regional and national averages (2.37%).

[18] https://researchbriefings.files.parliament.uk/documents/POST-PN-0582/POST-PN-0582.pdf

TABLE 19: Graph showing the prevalence of unpaid carers in local authorities in the South West region and national rate, 2011 census



HIIA Summary for carers and unpaid carers

Proposed Change	Scale of Potential impact	Evidence of Potential Impact and potential duration	Nature of potential impact and recommendations
A 'hub and spoke' model has been proposed for the Lung Function and Sleep service. The main hub (CGH) would be a consolidated service utilised for outpatient appointments and services; and the spoke site (GRH) would operate a dedicated inpatient service and support the Lung Cancer patient	**Small Scale Impact** According to the 2011 census the prevalence of unpaid carers within the Gloucestershire population was 2.05% and this was significantly lower than both regional and national averages, however, unpaid carers are likely to be under-represented.	**Long Term Impact** Caring responsibilities can have an adverse impact on the physical and mental health, education and employment potential of those who care, which can result in significantly poorer health and quality of life outcomes. These in turn can affect a carer's effectiveness and lead to the admission of the cared for person to hospital or residential care. 84% of carers said that caring has had a negative impact on their health and evidence suggests there is a 23% increased risk of stroke for spousal carers. Carers attribute their health risk to a lack of support, with 64% citing a lack of practical support.[19]	**Overall Impact: Positive** **Large Positive Impact:** The reconfiguration of lung function and sleep services will impact some patient and carer travel times; either positively (The relocation of services will provide more specialist care which could be beneficial for carers who are caring for someone with multiple conditions. Overall, relocation of services will provide shorter lengths of stay, faster diagnostics and minimised waiting times which will help carers who have to attend hospital regularly. **Moderate Negative Impact:** Changes of hospital sites may result in extended travel time or a more complex journey, this could lead to carers finding this more challenging.

[19] https://www.england.nhs.uk/commissioning/comm-carers/carer-facts/

pathway.			. The data would suggest that patients and their carers who utilise the service and live in Gloucester city district would be most impacted by a movement of services to CGH in respect of travel costs and time. However, there are mitigations in place such as the Pullmans 99 Bus which runs between the two hospital sites. **Recommendations** It is recommended that carers are part of the co-design with a specific interest in understanding what practical support may be required to help them navigate changes, specifically around disability access, travel information and required facilities.

3.5 Homelessness

The number of rough sleepers identified by the Ministry of Housing, Communities and Local Government are extremely small in Gloucestershire identifying just 19 people. Therefore, this report will look at the impact to those statutorily homeless. This is identified as the count of households who are living in temporary accommodation provided under the homeless legislation.

As such, statutorily homeless households contain some of the most vulnerable members of our communities and are at a higher risk of long-term conditions, mental health, smoking and various other illnesses, thus this cohort require a higher provision of care20. Being homeless also comes with a higher risk of delayed discharge from hospital, lengthening stays or cause repeated admissions to hospitals[21].

Numerous risk factors are associated with the likelihood of someone becoming homeless, and these broadly fall under individual circumstances and the wider forces. The risks range from drug and alcohol issues, bereavement, or experience of the criminal justice system, to the wider determinants of health such as inequality, unemployment, and housing supply and affordability[22]

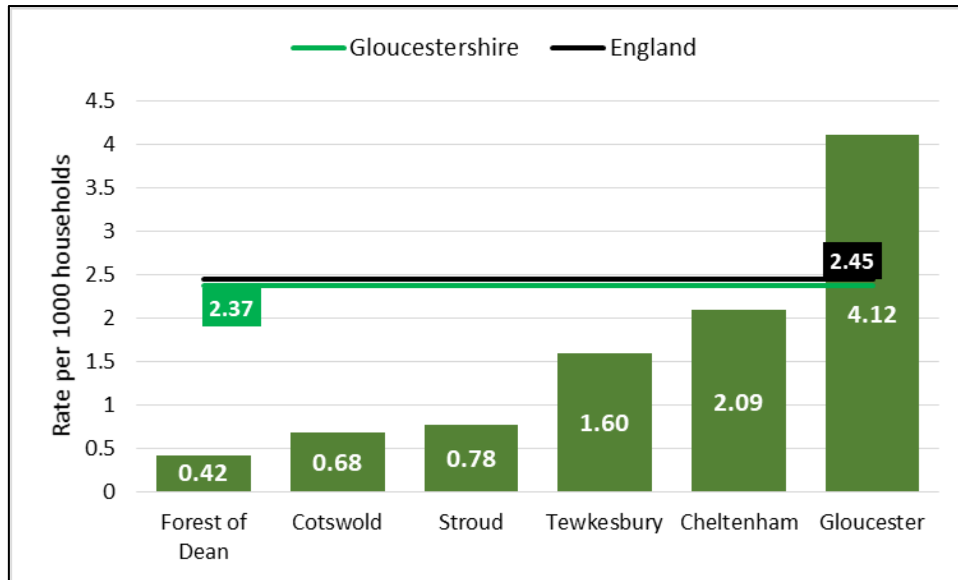
The rate of homelessness in Gloucestershire varies substantially by district. The highest rates are seen in Gloucester with 219 households accepted as homeless, equating to a rate of 4.12 per 1000 households; this is significantly higher than both county and national rates and double the rate of Cheltenham at 2.09.

[20] Morton , Jane. Primary Health Care (2014+); London Vol. 27, Iss. 8, (Sep 2017): 25. DOI:10.7748/phc.2017.e1289

[21] https://publichealthmatters.blog.gov.uk/2018/02/09/the-inequalities-of-homelessness-how-can-we-stop-them-dying-young/

[22] https://publichealthmatters.blog.gov.uk/2018/02/09/the-inequalities-of-homelessness-how-can-we-stop-them-dying-young/

TABLE 20: Graph showing rate of acceptances per 1000 households in Gloucestershire districts compared with Gloucestershire and national averages, 2017/18



Locally sourced data provided by NHS Gloucestershire Clinical Commissioning Group and Gloucestershire County Council indicates there are 40 rough sleepers in Gloucestershire currently; Gloucester 17, Cheltenham 9, Cotswold 7, Forest of Dean 3, Stroud 2 and Tewkesbury 2.

There are also 79 people registered with Gloucestershire's Homeless Healthcare team. This group are more likely to be male and are far younger than the overall CCG cohort. This cohort used A&E and community care services more, as well as mental health services.

HIIA summary for Homelessness

Proposed Change	Scale of Potential impact	Evidence of Potential Impact and potential duration	Nature of potential impact and recommendations
A 'hub and spoke' model has been proposed for the Lung Function and Sleep service. The main hub (CGH) would be a consolidated service utilised for outpatient appointments and services; and the spoke site (GRH) would operate a dedicated inpatient service and support the Lung Cancer patient pathway.	**Small Scale Impact** On average 2.37 per 1000 households are homeless in Gloucestershire. In Cheltenham 108 households are accepted as homeless, in Tewkesbury this figure is 61 households and in Cotswold 26. This means approx. 195 homeless may currently be living closer to CGH and therefore could be impacted by the proposed move of services to GRH from CGH (based on a map view of these areas being geographically closer) There are 79 people registered with the Homeless Healthcare team.	**Long Term Impact** Homeless people are at a higher risk of long-term conditions, mental health, smoking and various other illnesses, thus this cohort require a higher provision of care[23]. Being homeless also comes with a higher risk of delayed discharge from hospital, lengthening stays or cause repeated admissions to hospital[24]. Those known to Gloucestershire's homeless healthcare team are more likely to be male and are far younger than the overall CCG cohort. This cohort used A&E and community care services more, as well as mental health services.	**Overall Impact: Negative** **Large Negative Impact** Given rates of homelessness are slightly higher in Gloucester; a consolidating/moving services to CGH may be detrimental to this group. Services in this solution will be located further from the highest proportion of homeless people in Gloucestershire. Patients who are homeless, especially those from outside of Cheltenham district may need further support to access services in the new location if their journey becomes longer and they are less familiar with the centralised location. **Moderate Negative Impact** The data would suggest that patients who utilise the service and live in Gloucester city district would be most impacted by a

[23] Morton , Jane. **Primary Health Care (2014+); London** Vol. 27, Iss. 8, (Sep 2017): 25. DOI:10.7748/phc.2017.e1289
[24] https://publichealthmatters.blog.gov.uk/2018/02/09/the-inequalities-of-homelessness-how-can-we-stop-them-dying-young/

			centralisation to CGH in respect of travel costs and time. However, there are mitigations in place such as the Pullmans 99 Bus which runs between the two hospital sites. **Large Positive Impact** Homeless people are more likely to have long term conditions and multiple conditions which means consolidating and co-locating services will provide support for more complex needs such as these. **Recommendations** It is recommended that organisations that advocate for homeless people are part of the co-design around transport and repatriation of those who are homeless to understand the pathway of care and how that impacts on homeless people or rough sleepers if they are required to travel out of their local area. Explore if there are more outreach opportunities for homeless people and if this is needed.

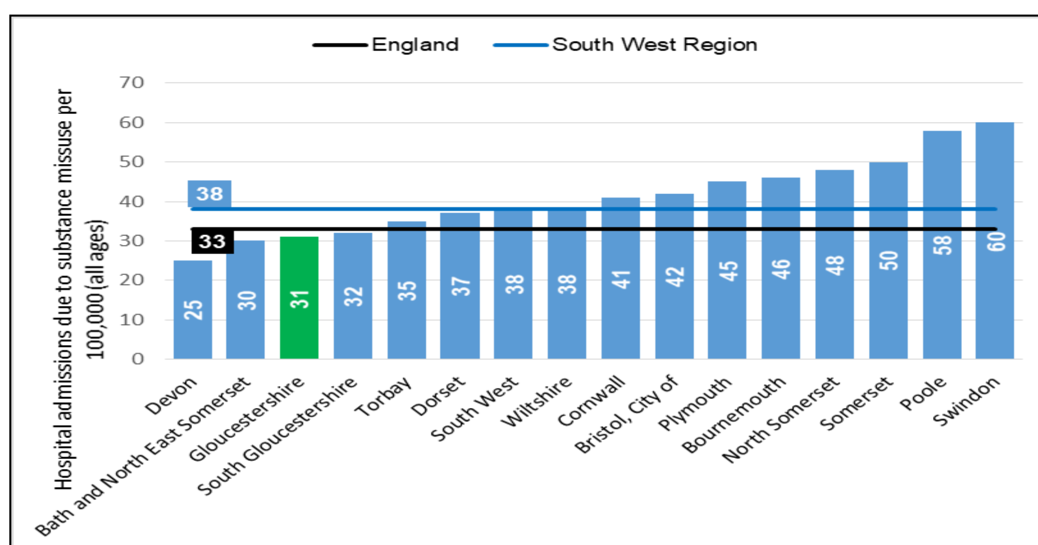
3.6 Substance Abuse

There is evidence to suggest that young people who use recreational drugs run the risk of damage to mental health including suicide, depression and disruptive behaviour disorders. Regular use of cannabis or other drugs may also lead to dependence. Among 10 to 15-year olds, an increased likelihood of drug use is linked to a range of adverse experiences and behaviour, including truancy, exclusion from school, homelessness, time in care, and serious or frequent offending25.

Patients with substance use disorder diagnoses, specifically those with drug use-related diagnoses, have higher rates of recurrent acute care hospital utilisation than those without substance use disorder diagnoses26.

The age standardised hospital admissions due to substance misuse in Gloucestershire is among the lowest in the South West region at 38 per 100,000 persons; lower than both regional and national rates, although there is a lack of data to determine statistical significance or comparisons. The age standardised mortality rate due to substance misuse is highest in the district of Gloucester with a rate of 7 per 100,000 over the period from 2016 to 2018; this is significantly higher than both Gloucestershire and England rates. All other districts had a rate similar to national and county rates or lower.

TABLE 21: Age standardised rate of hospital admissions due to substance misuse per 100,000 within local authorities within the South West region compared with regional and national rates, 2018/19



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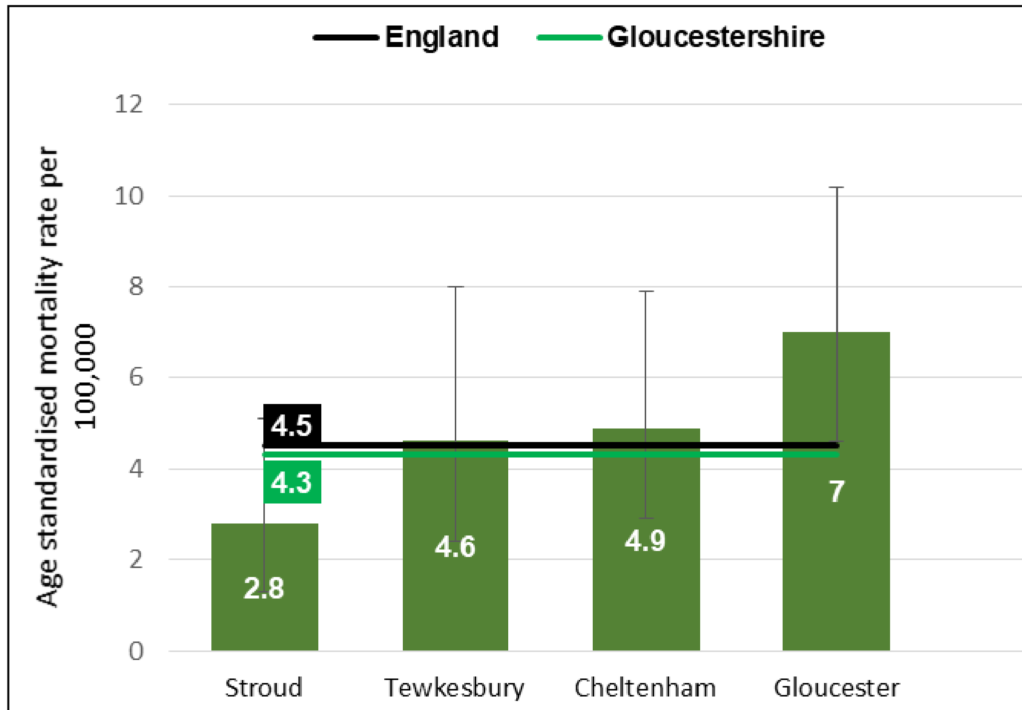
[25] Schlossarek S et al U: Psychosocial Determinants of Cannabis Dependence: A Systematic Review of the Literature. Eur Addict Res 2016;22:131-144.

[26] https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6034987/

TABLE 22: Age standardised mortality rate due to substance misuse per 100,000 within Gloucestershire districts, compared with county and national rates, 2016 - 2018



*Numbers were too low for Cotswold and Forest of Dean

HIIA Summary for Substance Misuse

Proposed Change	Scale of Potential impact	Evidence of Potential Impact and potential duration	Nature of potential impact and recommendations
A 'hub and spoke' model has been proposed for the Lung Function and Sleep service. The main hub (CGH) would be a consolidated service utilised for outpatient appointments and services; and the spoke site (GRH) would operate a dedicated inpatient service and support the Lung Cancer patient pathway.	**Moderate Scale Impact** The age standardised hospital admissions due to substance misuse in Gloucestershire is among the lowest in the South West region at 38 per 100,000 persons; lower than both regional and national rates; however mortality rates suggest that the district of Gloucester City has the highest rates of deaths due to substance misuse, significantly higher than county and national averages.	**Long Term** Patients with substance use disorder diagnoses, specifically those with drug use-related diagnoses, have higher rates of recurrent acute care hospital utilisation than those without substance use disorder diagnoses[27].	**Overall Impact: Positive** **Large Positive Impact** Overall, relocation of services will provide shorter lengths of stay, faster diagnostics and minimised waiting times which will help patients due to substance misuse and other related conditions Proposed changes to services are expected to maintain current inclusive support service approach

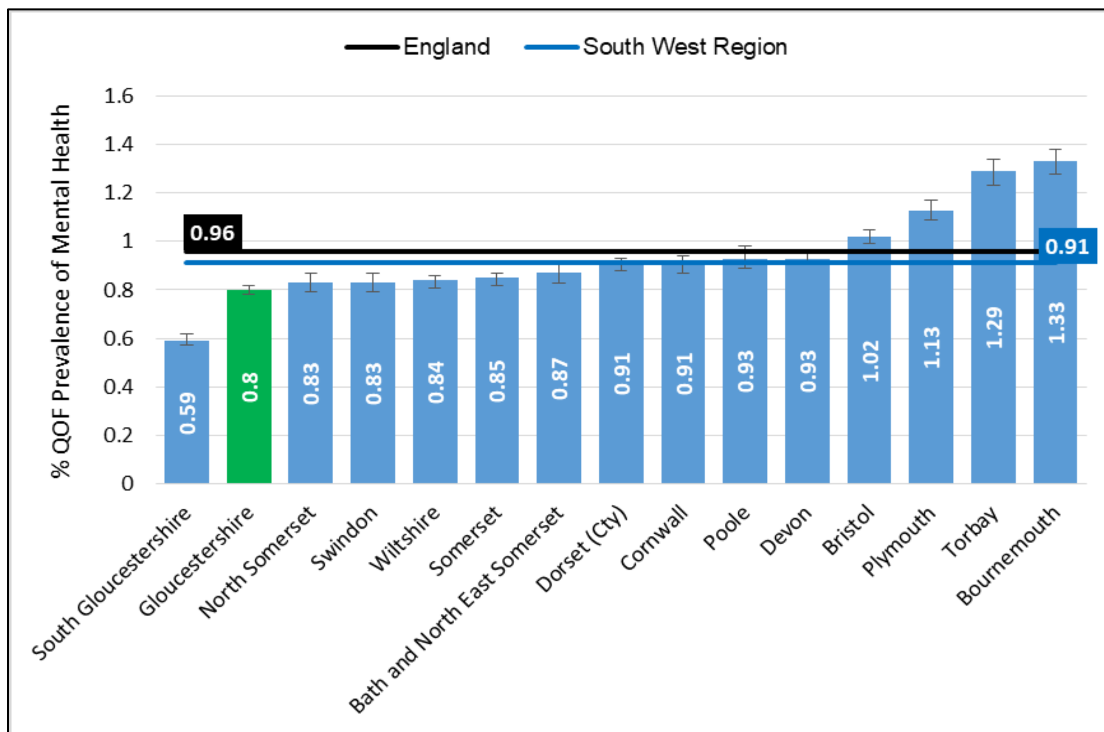
[27] Walley et al (2012) Acute care hospital utilization among medical inpatients discharged with a substance use disorder diagnosis. J Addict Med. 2012 Mar;6(1):50-6. doi: 10.1097/ADM.0b013e318231de51

3.7 Mental Health

The prevalence of mental health disease within the GP practice registered population within Gloucestershire is among the lowest in the South West region at 0.8%; significantly lower than both regional and national averages.

During 2018/19, 351 people attended CGH ED and 1447 attended GRH with a mental health issue. This total of 1798 across the 2 sites equates to 1.2% of all attendances during this year. This data clearly demonstrates that more people attend GRH than CGH with mental health related issues.

TABLE 23: Graph showing QOF prevalence of the registered population with a mental health disease in local authorities in South West compared to regional and national averages 2015/16 to 2017/18



There is no formal link between the Lung Function and Sleep service and mental health provision at both sites and it is not thought that the implementation of a hub and spoke model would have any adverse impact upon patients with mental health issues as mental health services are offered at both GRH and CGH.

HIIA Summary for Mental Health

Proposed Change	Scale of Potential impact	Evidence of Potential Impact and potential duration	Nature of potential impact and recommendations
A 'hub and spoke' model has been proposed for the Lung Function and Sleep service. The main hub (CGH) would be a consolidated service utilised for outpatient appointments and services; and the spoke site (GRH) would operate a dedicated inpatient service and support the Lung Cancer patient	**Moderate Scale Impact** The prevalence of mental health disease within the GP practice registered population within Gloucestershire is among the lowest in the South West region at 0.8%; significantly lower than both regional and national averages, however, a number of mental health conditions are undiagnosed or underrepresented. During 2018/19, 351 people attended CGH ED and 1447 attended GRH with a mental health issue. This total of 1798 across the 2 sites equates to 1.2% of all attendances during this year. This data clearly demonstrates that more people attend GRH than CGH with mental health related issues.	**Long Term Impact** There is a strong association between mental and physical ill health. People with long-term conditions, such as diabetes or cardiovascular disease, have significantly raised rates of depression, anxiety and other mental health problems. Evidence suggests that many of these people receive poorer quality care than those with a single condition.[28]	**Overall Impact: Positive** **Large Positive Impact** Overall, relocation of services will provide shorter lengths of stay, faster diagnostics and minimised waiting times which will help patients with mental heath disease and other related conditions There is no formal link between the Lung Function and Sleep service and mental health provision at both sites and it is not thought that the implementation of a hub and spoke model would have any adverse impact upon patients with mental health issues as mental health services are offered at both GRH and CGH. **Moderate Negative Impact** Patients with anxiety disorders and other mental health disorders which may be exacerbated by change in routine or need to

[28] https://www.kingsfund.org.uk/projects/mental-health-and-long-term-conditions-cost-co-morbidity

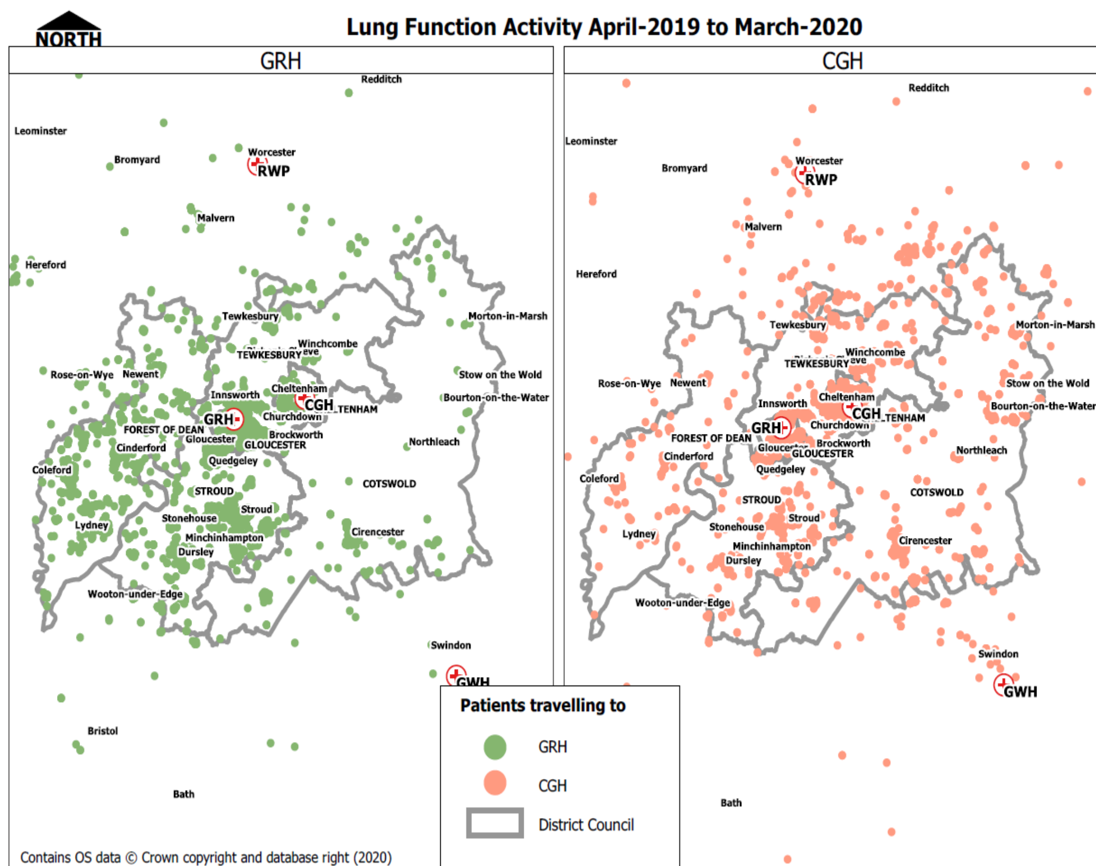
pathway.			travel may find these challenging. The data would suggest that patients who utilise the service and live in Gloucester city district would be most impacted by a centralisation to CGH in respect of travel costs and time. However, there are mitigations in place such as the Pullmans 99 Bus which runs between the two hospital sites. **Recommendations** It is recommended those with mental health conditions and organisations supporting those with mental health conditions form part of the design of services, particularly considering the impact of travel or a new environment on those with mental health conditions that may be exacerbated by these changes.

3.8 People living in rural and remote areas

The county is classed as a predominantly rural county by the ONS with 29.65% of the total population and 35.89% of the over 65 population living in rural areas. The rural nature of the county is what attracts many residents to the area and facilitates access to open space improving health and wellbeing, however it can also create problems of accessibility and isolation. This can affect all parts of the population and is a problem for people who rely on public transport and the elderly.

The heat map in table 24 shows the locations by postcode of patients travelling to GRH and CGH during the examined timeframe. The heat map clearly shows the ruralness of the county and distances that some people have to travel. Whilst the majority of services are currently available at both sites, the maps below, which reflect where patients live and which site they attended, illustrates there is already a broad distribution of patients across the county attending each site and most specifically at CGH, with patients often choosing the site with the shortest wait. Relocating lung function and sleep services to CGH will clearly impact on the travel times for some patients and their carers across the county.

TABLE 24: Lung function and sleep services - People travelling to GRH and CGH



Please note that each ‘dot’ represents 1 patient.

HIIA Summary for People living in rural and remote areas

Proposed Change	Scale of Potential impact	Evidence of Potential Impact and potential duration	Nature of potential impact and recommendations
A 'hub and spoke' model has been proposed for the Lung Function and Sleep service. The main hub (CGH) would be a consolidated service utilised for outpatient appointments and services; and the spoke site (GRH) would operate a dedicated inpatient service and support the Lung Cancer patient pathway.	**Large Scale Impact** The county is classed as a predominantly rural county by the ONS with 29.65% of the total population and 35.89% of the over 65 population living in rural areas. The rural nature of the county is what attracts many residents to the area and facilitates access to open space improving health and wellbeing, however it can also create problems of accessibility and isolation. This can affect all parts of the population and is a problem for people who rely on public transport and the elderly.	**Long Term Impact** The age of the population of the county is set to become older and many elderly people can be found in rural localities.	**Overall Impact: Positive** **Moderate Negative Impact** A large number of people living in the county live in rural settings. Several of these may fall into the older age group and many people may not have access to their own transport. Relocating lung function and sleep services to CGH will clearly impact on the travel times for some patients and their carers across the county. The data would suggest that patients who utilise the service and live in Gloucester city district would be most impacted by a centralisation to CGH in respect of travel costs and time. However, there are mitigations in place such as the Pullmans 99 Bus which runs between the two hospital sites. **Large Positive Impact** Overall, relocation of services will provide shorter lengths of stay, faster diagnostics and minimised waiting times which will help patients due to substance misuse and other related conditions

			Recommendations Liaising with local transport e.g. through local authority partners to provide information about transport options for those over 65 and to understand more about transport plans over the next 5 to 10 years to understand if there is any plans to expand current transport options in the future.

4 Health Impact Assessment

4.1 Key Findings

Potential Positive Impacts

Any changes to services can have a potentially positive impact for many cohorts of patients and their carers. This includes travel times, parking etc. for those who live nearer to the site. Many health conditions including cardiovascular disease, Diabetes, Neurological conditions, and Obesity may carry a higher prevalence of lung and sleep conditions. Changes to services may therefore result in improved provision of care.

Potential Negative Impacts

Any changes to services can have a potentially negative impact for many cohorts of patients and their carers. This includes travel times, parking etc. for those who live further away from the site.

Evidence Based Recommendations

- It is recommended to use existing forums to engage with patients with long term conditions and to engage with representative organisations for long term conditions such as Cardiovascular disease, Diabetes and Neurological conditions
- It is recommended to engage through existing forums with patients or via representative organisations for frailty and falls.

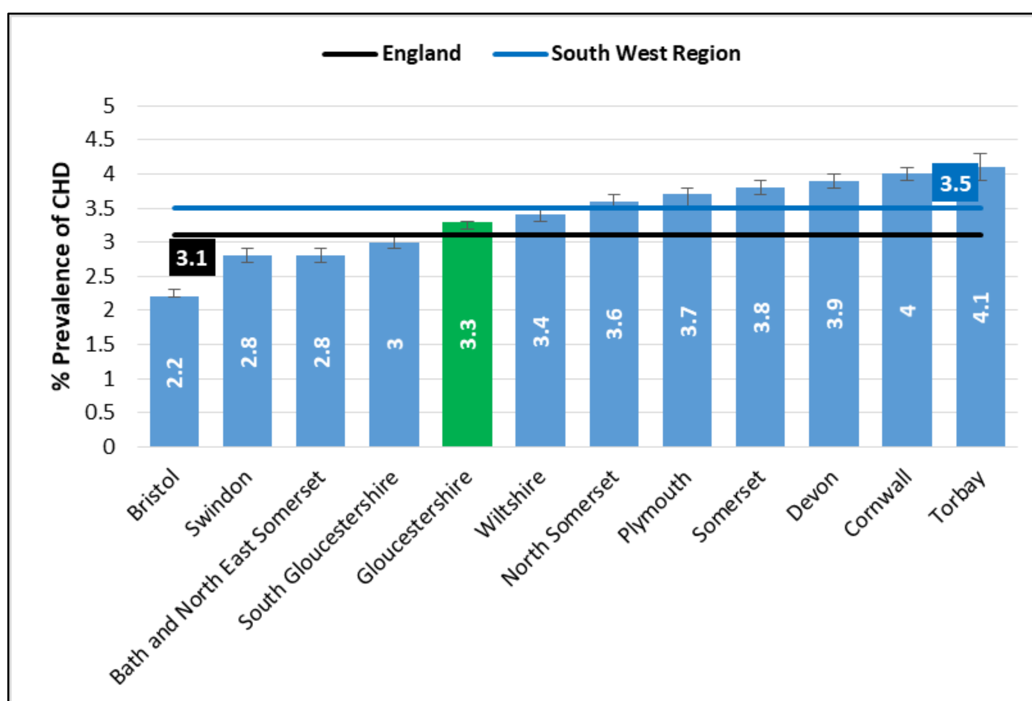
4.2 Cardiovascular disease

Cardiovascular disease (CVD) is responsible for 26% of all deaths in the UK. This equates to approximately 160,000 deaths each year or an average of 435 people each day and at least 42,000 of these deaths occur prematurely. [29] There are multiple risk factors for cardiovascular disease; these include old age, ethnicity, deprivation, gender, smoking, obesity etc.[30]

The more deprived areas in both England and Wales experienced a higher number of deaths from leading causes including cardiovascular and other related conditions than less deprived areas.[31]

The prevalence of cardiovascular disease within the GP practice registered population within Gloucestershire is 3.3%, which is significantly lower than the regional average (3.5%) but significantly higher than the national average (3.1%)

TABLE 25: Graph showing QOF prevalence of chronic heart disease in the registered population in local authorities in South West compared to regional and national averages, 2017/18



[29] https://www.heartuk.org.uk/downloads/heart-uk-state-of-the-nation-report-2018.pdf

[30] https://ada.com/cardiovascular-disease-risk-factors/

[31] https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/deaths/articles/howdoesdeprivationvarybyleadingcauseofdeath/2017-11-01

HIA summary for Cardiovascular disease

Proposed Change	Scale of Potential impact	Evidence of Potential Impact and potential duration	Nature of potential impact and recommendations
A 'hub and spoke' model has been proposed for the Lung Function and Sleep service. The main hub (CGH) would be a consolidated service utilised for outpatient appointments and services; and the spoke site (GRH) would operate a dedicated inpatient service and support the Lung Cancer patient	**Large Scale Impact** The prevalence of cardiovascular disease within the GP practice registered population within Gloucestershire is 3.3%, which is lower than the regional average (3.5%) but higher than the national average (3.1%). Over the period between April 2018 and March 2019, there was a total of 3,783 cardiology/vascular patients seen across GRH and CGH; 3,334 (88%) of these patients were seen at CGH. While there is insufficient data to ascertain whether there is a higher prevalence of cardiovascular patients living nearer to CGH compared to GRH; it can be denoted that the vast majority of cardiology patients are currently seen at CGH and proposed changes are most likely to impact this cohort.	**Long Term Impact** There are multiple risk factors for cardiovascular disease; these include old age, ethnicity, deprivation, gender, smoking, obesity etc.[32] The more deprived areas in both England and Wales experienced a higher number of deaths from leading causes including cardiovascular and other related conditions than less deprived areas.[33] Approx. 35,000 people, accounting for 72% of the population living in the most deprived areas, live closer to GRH; consolidating/moving services to CGH will impact on access to the right specialists to manage the care of those living in the most deprived areas who are at a higher risk of cardiovascular disease.	**Overall Impact: Neutral** **Consideration** On the basis that there is a higher proportion of the population in the Gloucester district who are living in deprivation (25%) and who suffer from cardiovascular disease (3.3%) there is a potential that patients who access the service from Gloucester may be the most impacted by a movement of some services to CGH. **Recommendations** It is recommended to use existing forums to engage with patients with long term conditions and to engage with representative organisations for long term conditions such as Cardiovascular disease.

[32] https://ada.com/cardiovascular-disease-risk-factors/
[33] https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/deaths/articles/howdoesdeprivationvarybyleadingcauseofdeath/2017-11-01

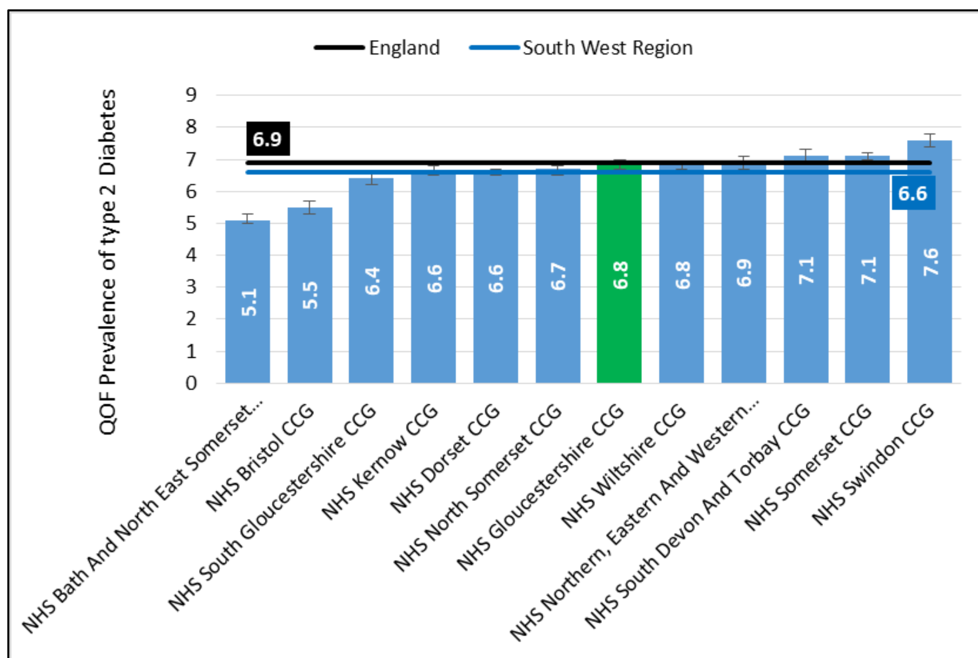
pathway.			

4.3 Diabetes Mellitus

Research suggests that those living in the most deprived areas within the UK are 2.5 time more likely to be suffering from Diabetes.[34] Those suffering from diabetes also have a high likelihood of coming from a BME background; Type 2 Diabetes is up to 6 times more likely in people of South Asian descent and 6 times more likely among Afro-Caribbean's.[35]

The prevalence of Type 2 Diabetes within the GP practice registered population within Gloucestershire is similar compared to the South West region and national average at 6.8%.

TABLE 26: Graph showing QOF prevalence of the registered population with a Diabetes Mellitus in local authorities in South West compared to regional and national averages, 2017/18



[34] https://www.diabetes.org.uk/about_us/news_landing_page/uks-poorest-twice-as-likely-to-have-diabetes-and-its-complications
[35] *Association of glycaemia with macrovascular and microvascular complications of Type 2 diabetes: prospective observational study* British Medical Journal 2000; 321: 405-412.

HIA summary for Diabetes Mellitus

Proposed Change	Scale of Potential impact	Evidence of Potential Impact and potential duration	Nature of potential impact and recommendations
A 'hub and spoke' model has been proposed for the Lung Function and Sleep service. The main hub (CGH) would be a consolidated service utilised for outpatient appointments and services; and the spoke site (GRH) would operate a dedicated inpatient service and support the Lung Cancer patient	**Small Scale Impact:** The prevalence of Type 2 Diabetes within the GP practice registered population within Gloucestershire is similar compared to the South West region and national average at 6.8%	**Long Term Impact** There is limited evidence regarding the impact to those who are Diabetics; however, evidence suggests that those living in the most deprived areas within the UK are 2.5 time more likely to be suffering from Diabetes.[36] Those suffering from diabetes also have a high likelihood of coming from a BME background; Type 2 Diabetes is up to 6 times more likely in people of South Asian descent and 6 times more likely among Afro-Caribbean's.[37] This cohort may face challenges and perceived challenges in access to services in general, especially those within BME background[38]	**Overall Impact: Neutral** **Consideration** On the basis that there is a higher proportion of the population in the Gloucester district who are living in deprivation (25%) and who suffer from Type 2 Diabetes (6.8%) there is a potential that patients who access the service from Gloucester may be the most impacted by a movement of services to CGH. **Recommendation** It is recommended to use existing forums to engage with patients with long term conditions and to engage with representative organisations for long term conditions such as diabetes.

[36] https://www.diabetes.org.uk/about_us/news_landing_page/uks-poorest-twice-as-likely-to-have-diabetes-and-its-complications
[37] *Association of glycaemia with macrovascular and microvascular complications of Type 2 diabetes: prospective observational study* British Medical Journal 2000; 321: 405-412.
[38] https://bmjopen.bmj.com/content/6/11/e012337

pathway			

4.4 Neurological Conditions

The number of people living with neurological conditions in England is rising and will continue to increase. This is due in part to advances in neonatal healthcare meaning more children with neurological conditions survive beyond birth and into adulthood. Public Health England's 2018 Neurology Mortality reports show that number of deaths in England relating to neurological disorders rose by 39% over 13 years, while deaths in the general population fell by 6% over the same period.[39]

According to the NHS & CQC 2017 Adult Inpatient Survey, Patients with neurological conditions reported poorer experiences for confidence and trust, respect and dignity, respect for patient-centred values and overall experience of care. In response to the NHS 2016 patient experience survey, just 41% (n=2,132) of patients described the health services they received for their neurological condition as 'good' or 'excellent'.[40]

The 2013-14 NHS England survey of patients of GP practices found that people with long-term neurological conditions have the lowest health-related quality of life of any long-term condition.[41]

The prevalence of neurological conditions among the registered population is similar in Gloucestershire compared with the South West Region and National rates at 8.8%.

The rate of hospital admissions for epilepsy among under 19s is 87.5 per 100,000; this is statistically similar to the South West regional average (71.5) but statistically higher than the national average (70.6) by a small margin.

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[39] Public Health England (2018) Deaths associated with neurological conditions in England 2001 to 2014: Data analysis report. Available online at https://www.gov.uk/government/publications/deaths-associated-withneurological-conditions

[40] The Neurological Alliance (2017): Falling short: How has neurology patient experience changed since 2014? Available online at http://www.neural.org.uk/store/assets/files/668/original/Neurological_Alliance__Falling_Short_-_How_has_neurology_patient_experience_changed_since_2014.pdf

[41] The Neurological Alliance (2017): Falling short: How has neurology patient experience changed since 2014? Available online at http://www.neural.org.uk/store/assets/files/668/original/Neurological_Alliance__Falling_Short_-_How_has_neurology_patient_experience_changed_since_2014.pdf

TABLE 27: Graph showing prevalence neurological conditions among the registered population in local authorities in South West compared to regional and national averages, 2017/18

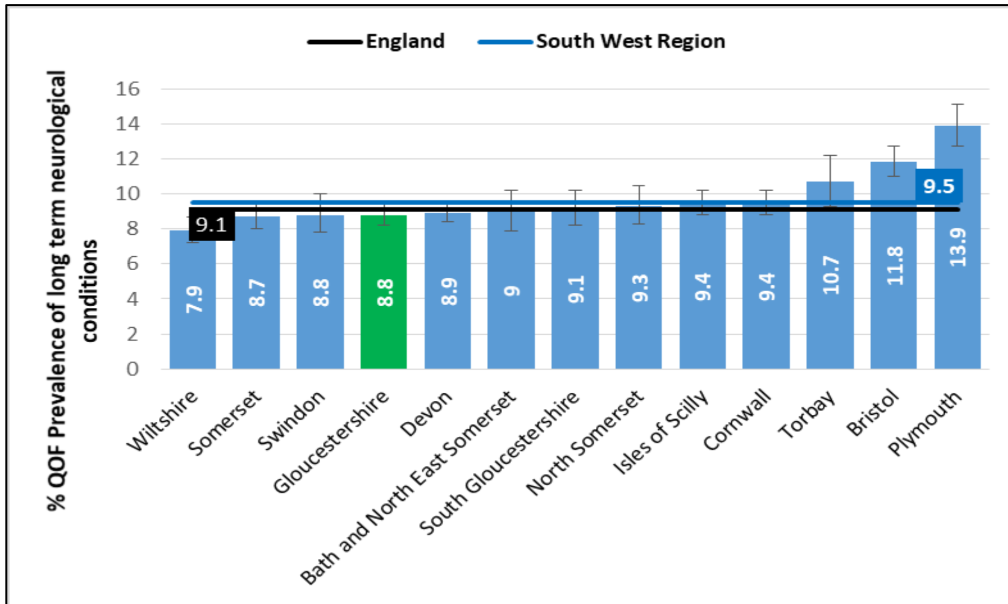
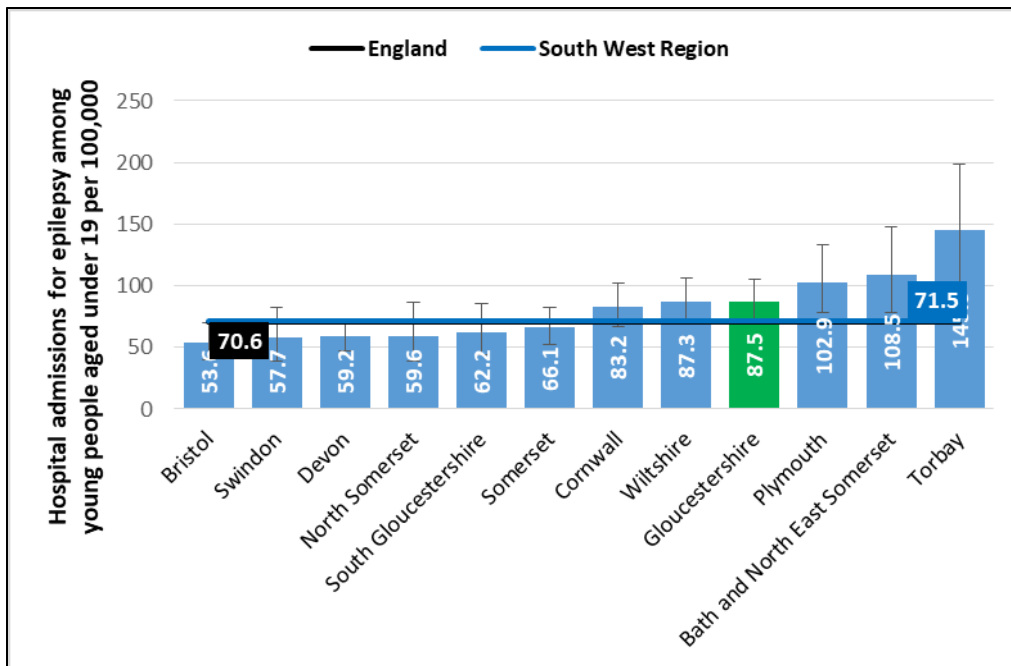


TABLE 28: Graph the rate of hospital admissions for epilepsy among under 19s per 100,000 in local authorities in South West compared to regional and national averages, 2016/17



HIA summary for Neurological Conditions

Proposed Change	Scale of Potential impact	Evidence of Potential Impact and potential duration	Nature of potential impact and recommendations
A ‘hub and spoke’ model has been proposed for the Lung Function and Sleep service. The main hub (CGH) would be a consolidated service utilised for outpatient appointments and services; and the spoke site (GRH) would operate a dedicated inpatient	**Moderate scale Impact:** The prevalence of neurological conditions among the registered population is similar in Gloucestershire compared with the South West Region and National rates at 8.8%. The rate of hospital admissions for epilepsy among under 19s is 87.5 per 100,000; this is statistically similar to the South West regional average (71.5) but statistically higher than the national average (70.6) by a small margin.	**Long Term Impact** According to the NHS & CQC 2017 Adult Inpatient Survey, Patients with neurological conditions reported poorer experiences for confidence and trust, respect and dignity, respect for patient-centred values and overall experience of care. In response to the NHS 2016 patient experience survey, just 41% (n=2,132) of patients described the health services they received for their neurological condition as ‘good’ or ‘excellent’.[42] The 2013-14 NHS England survey of patients of GP practices found that people with long-term neurological conditions have the lowest health-related quality of life of any long-term	**Overall Impact: Neutral** It is recommended to use existing forums to engage with patients with long term conditions and to engage with representative organisations for long term conditions such as Neurological conditions.

[42] The Neurological Alliance (2017): Falling short: How has neurology patient experience changed since 2014? Available online at http://www.neural.org.uk/store/assets/files/668/original/Neurological_Alliance__Falling_Short_-_How_has_neurology_patient_experience_changed_since_2014.pdf

service and support the Lung Cancer patient pathway.		condition.[43]	

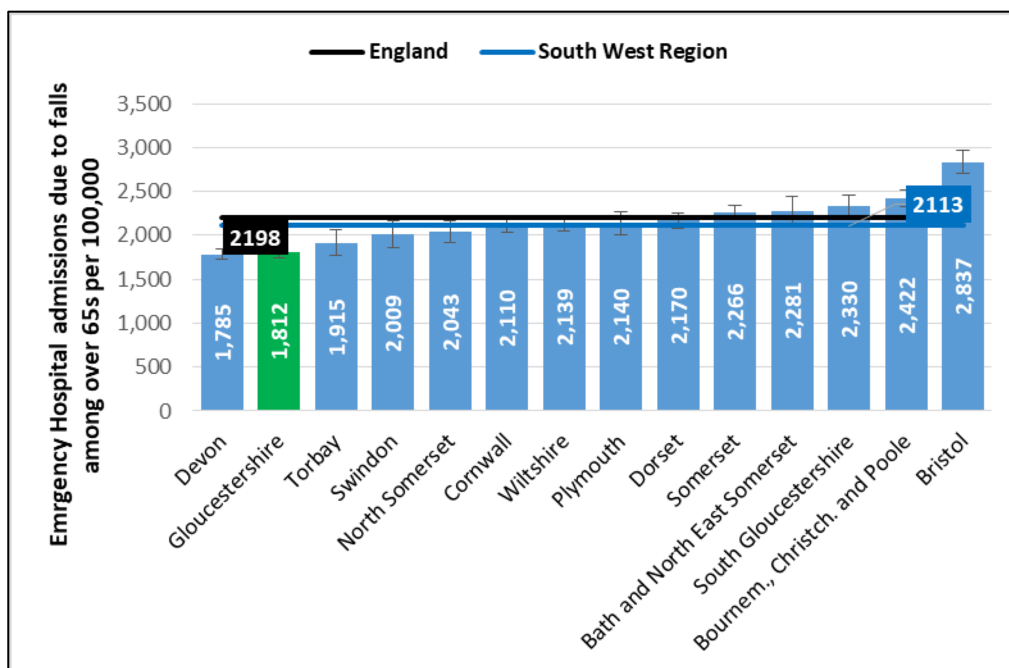
[43] The Neurological Alliance (2017): Falling short: How has neurology patient experience changed since 2014? Available online at http://www.neural.org.uk/store/assets/files/668/original/Neurological_Alliance__Falling_Short_-_How_has_neurology_patient_experience_changed_since_2014.pdf

4.5 Falls among the elderly

A rapidly ageing population means that doctors in all specialties are likely to encounter older people with falls. Falls in the elderly are common and associated with major morbidity and mortality. Falls cause injuries, fractures, loss of confidence and independence, depression and death. Recurrent falls and fear of falling are the most common reasons for an older person to require nursing home care. An initial fall may be a manifestation of an acute illness and may be the only presenting feature. However, it is known that an index fall is a risk for future falls and approximately half of those who fall once are likely to do so again.[44]

The rate of emergency hospital admissions due to falls among those aged over 65 per 100,000 in Gloucestershire is among the lowest in the South West region; a rate of 1,812 per 100,000 at Gloucestershire makes it significantly lower than both regional and national averages.

TABLE 29: Graph the rate of emergency hospital admissions due to falls among over 65s per 100,000 in local authorities in South West compared to regional and national averages, 2018/19



[44] https://www.rcpe.ac.uk/sites/default/files/anderson.pdf

HIA summary for falls among the elderly

Proposed Change	Scale of Potential impact	Evidence of Potential Impact and potential duration	Nature of potential impact and recommendations
A ‘hub and spoke’ model has been proposed for the Lung Function and Sleep service. The main hub (CGH) would be a consolidated service utilised for outpatient appointments and services; and the spoke site (GRH) would operate a dedicated inpatient service and support the Lung Cancer patient pathway.	**Large Scale Impact:** The rate of emergency hospital admissions due to falls among those aged over 65 per 100,000 in Gloucestershire is among the lowest in the South West region; a rate of 1,812 per 100,000 at Gloucestershire makes it significantly lower than both regional and national averages.	**Long Term Impact** Falls cause injuries, fractures, loss of confidence and independence, depression and death. Recurrent falls and fear of falling are the most common reasons for an older person to require nursing home care. An initial fall may be a manifestation of an acute illness and may be the only presenting feature. However, it is known that an index fall is a risk for future falls and approximately half of those who fall once are likely to do so again.[45] This cohort focuses on those aged over 65; see “Age” section of the EQIA (pages 5-10). Although it is to be noted that this cohort is a particularly vulnerable subset of the elderly population, hence more provision of care needs to be given.	**Overall Impact: Neutral** It is recommended to engage through existing forums with patients or via representative organisations for frailty and falls.

[45] https://www.rcpe.ac.uk/sites/default/files/anderson.pdf

4.6 Overweight or Obese

Excess weight and obesity is a risk factor for various health conditions, including type 2 diabetes, high blood pressure, cardiovascular disease, fatty liver disease, various cancers and kidney disease.[46] Furthermore obesity is also considered to be a risk factor for obstructive sleep apnoea (OSA), with an estimated 40% of people with obesity suffering from sleep apnoea. The prevalence of overweight or obesity in Gloucestershire if 61.4%; this is similar to both regional and national rates. Of this number it is estimated that 23.6% of the total Gloucestershire population are obese. The British Lung Function Foundation has suggested that within Gloucestershire, there is a mid OSA risk band compared to the rest of the UK for the prevalence of risk factors for OSA. In addition to obesity, the risk factors considered by British Lung Function Foundation research include the prevalence of Hypertension, Diabetes, being male and being over 50 years old.

As a result of Gloucestershire being in the mid risk band for prevalence of comorbidities associated with sleep apnoea, it is likely that the hub and spoke model of the Lung Function and Sleep service will impact these patients. However, it must be noted that consolidating the service and the movement of other services will benefit these patients through providing specialist service in one place, as such meaning better care for patients with comorbidities.

Overweight and obese individuals are less likely to access healthcare and are less likely to receive evidence-based and bias-free healthcare when they do engage according to various studies.[47][48][49]

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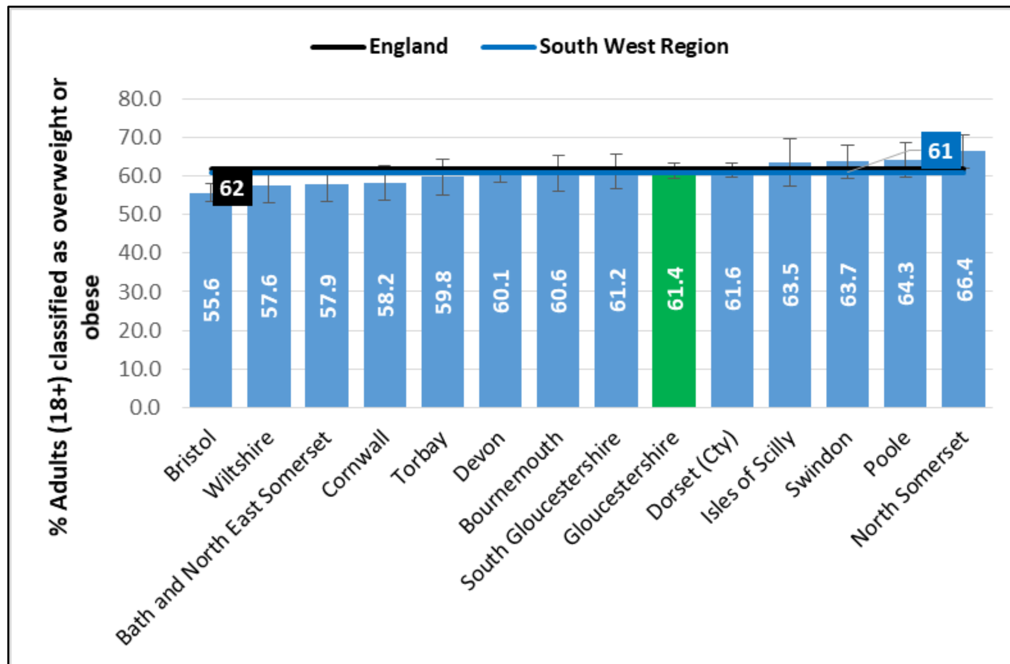
[46] https://www.niddk.nih.gov/health-information/weight-management/health-risks-overweight

[47] Aldrich T., Hackley B. (2010). The impact of obesity on gynecologic cancer screening: an integrative literature review. J Midwifery Womens Health 55, 344–356. 10.1016/j.jmwh.2009.10.001 [PubMed] [CrossRef] [Google Scholar]

[48] Forhan M., Salas X. R. (2013). Inequities in healthcare: a review of bias and discrimination in obesity treatment. Can. J. Diabetes 37, 205–209. 10.1016/j.jcjd.2013.03.362 [PubMed] [CrossRef] [Google Scholar]

[49] Phelan S. M., Burgess D. J., Yeazel M. W., Hellerstedt W. L., Griffin J. M., van Ryn M. (2015). Impact of weight bias and stigma on quality of care and outcomes for patients with obesity. Obes. Rev. 16, 319–326. 10.1111/obr.12266 [PMC free article] [PubMed] [CrossRef] [Google Scholar]

TABLE 30: Prevalence of overweight and obese among the population aged 18 and over in local authorities in South West compared to regional and national averages, 2018/19



HIA summary for Overweight and Obesity

Proposed Change	Scale of Potential impact	Evidence of Potential Impact and potential duration	Nature of potential impact and recommendations
A 'hub and spoke' model has been proposed for the Lung Function and Sleep service. The main hub (CGH) would be a consolidated service utilised for outpatient appointments and services; and the spoke site (GRH) would operate a dedicated inpatient	**Large Scale Impact:** The prevalence of overweight and obesity in Gloucestershire is 61.4%; this is similar to both regional and national rates.	**Long Term Impact** Research suggests statistically significant associations for overweight with the incidence of type II diabetes, cancer, cardiovascular diseases asthma, gallbladder disease, osteoarthritis and chronic back pain[50]. Obesity is also considered to be a risk factor for obstructive sleep apnoea (OSA), with an estimated 40% of people with obesity suffering from sleep apnoea. The British Lung Function Foundation has suggested that within Gloucestershire, there is a mid OSA risk band compared to the rest of the UK for the prevalence of risk factors for OSA Overweight and obese individuals are	**Overall Impact: Positive** **Large Positive Impact** Obesity is often linked to a large number of co-morbidities which mean obese patients are more likely to be impacted by the proposed changes. The movement of services could result in specialist care being provided in one place leading to a better quality of care. It is estimated that 23.6% of the total Gloucestershire population are obese, which is a risk factor for Obstructive Sleep Apnoea. As a result of this we would expect this group to be more impacted by the proposed changes. However, it must be noted that consolidating the service and the movement of other services will benefit these patients through providing specialist services in one place, as such meaning better care for

[50] Guh, D.P., Zhang, W., Bansback, N. *et al.* The incidence of co-morbidities related to obesity and overweight: A systematic review and meta-analysis. *BMC Public Health* **9,** 88 (2009). https://doi.org/10.1186/1471-2458-9-88

service and support the Lung Cancer patient pathway.		less likely to access healthcare and are less likely to receive evidence-based and bias-free healthcare when they do engage according to studies.[51][52][53] Evidence suggests that this cohort may face challenges and perceived challenges in access to services in general and are at a higher risk of mobility related barriers.[54]	patients with comorbidities. **Moderate Negative Impact** On the basis that there is a higher proportion of the population in the Gloucester district who are living in deprivation (25%) and who suffer from adulthood obesity (29%), there is a potential that patients who access the service from Gloucester may be the most impacted by the movement of services to CGH. The data would suggest that patients who utilise the service and live in Gloucester city district would be most impacted by a centralisation to CGH in respect of travel costs and time. However, there are mitigations in place such as the Pullmans 99 Bus which runs between the two hospital sites. **Recommendations** It is recommended to engage through existing forums with patients or via representative organisations.

[51] Aldrich T., Hackley B. (2010). The impact of obesity on gynaecologic cancer screening: an integrative literature review. J Midwifery Women's Health 55, 344–356. 10.1016/j.jmwh.2009.10.001 [PubMed] [CrossRef] [Google Scholar]

[52] Forhan M., Salas X. R. (2013). Inequities in healthcare: a review of bias and discrimination in obesity treatment. Can. J. Diabetes 37, 205–209. 10.1016/j.jcjd.2013.03.362 [PubMed] [CrossRef] [Google Scholar]

[53] Phelan S. M., Burgess D. J., Yeazel M. W., Hellerstedt W. L., Griffin J. M., van Ryn M. (2015). Impact of weight bias and stigma on quality of care and outcomes for patients with obesity. Obes. Rev. 16, 319–326. 10.1111/obr.12266 [PMC free article] [PubMed] [CrossRef] [Google Scholar]

[54] https://www.ncbi.nlm.nih.gov/pubmed/20059707