Lung Function and Sleep Services – Solutions Appraisal materials

1. Description of current services

Lung Function and Sleep Services Overview

The Lung Function and Sleep Service provide investigation, monitoring and testing for respiratory diseases (problems with the upper airway, lungs, chest wall and the ventilatory control system); non-invasive ventilation (the use of breathing support administered through a full face or nasal mask) and identification and treatment for sleep disordered breathing conditions. In addition to this, the service delivers investigation, testing and assessment of the digestive or Gastrointestinal (GI) system.

Currently, the Lung Function and Sleep Service operate at both Gloucestershire Royal Hospital (GRH) and Cheltenham General Hospital (CGH), meaning that patients may visit either site for their appointment depending on what test they are having and therefore not necessarily the site closest to where they live, with patients often choosing the site with the shortest wait. However, the Gastrointestinal (G.I.) service is only available at CGH.

Most of the activity (care and treatment) carried out by the Lung Function and Sleep Service is for outpatients (approximately 90%), with 600 G.I. patients (8%). The remaining 2% is inpatient activity which supports patients under the care of a range of specialists, mostly focussing on tests for patients prior to them leaving hospital for home.

For the 12 months in our baseline year (pre-COVID-19: February 2019 - January 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 per patient). Of these 43% (3,2861) attended CGH and 57% (4,419) attended GRH. Within each outpatient appointment patients may have multiple procedures, with an average of 2.7 procedures per patient or 1.9 procedures per appointment.

[1] The sum of patients attending each site is greater than the total number of patients as some patients attend both sites.

2. Description of the proposed option to be compared with do nothing /status quo

Solution description reference #	**Hub and Spoke Model for Lung Function and Sleep Services**
Solution description	The preferred solution is to create a 'Hub' and 'Spoke' for Lung Function and Sleep Services, with the busier main outpatient 'Hub' in Cheltenham and the smaller 'Spoke' in Gloucester focussing mostly on inpatients. The 'Hub' would provide most outpatient diagnostic testing for patients attending a hospital appointment for Lung Function and Sleep Services and would also provide an inpatient service supporting other patients staying overnight at the hospital that also require Lung Function diagnostic testing. The 'Spoke' in Gloucester would provide diagnostic testing for patients staying overnight at the other hospital site and would also help to support the lung cancer patient pathway through accommodating these patients when they attend GRH for their EBUS investigation (Endobronchial Ultrasound - A procedure that allows the doctor to view the airways inside patients lungs). Our proposal also includes changes to sleep follow ups which will now primarily be conducted remotely. The preferred option is aligned with the strategic vision. The impact of this proposal would be to shift approximately 3,600 patients from GRH to CGH

3. How does this address the case for change?

Reason for change	How preferred option addresses this
Lack of available space to implement multi-disciplinary clinics for patients on the ventilation pathway, who currently visit the service up to every 3-4 months.	The establishment of a main hub at CGH where there is less spatial pressure on the site, will create the ability to develop and realise the benefits of multidisciplinary clinics
Requirement for patients to return to site multiple times to collect equipment needed for treatment.	The centralisation of staff and equipment onto a main hub will ensure that equipment needed for treatment is available at the time of a patient's appointment. The CGH site is likely to have more storage space available for equipment to be stored, due to fewer spatial pressures.
National shortage of G.I. Physiologists, meaning that some patients are required to wait 30 weeks for testing or travel to Bristol or Bath where waiting lists are shorter.	By centralising staff onto one main site, it will allow for in-house cross training to cover G.I., which could reduce the wait time between patients being referred to the service and being seen by a G.I. Physiologist.
Difficulties in fitting inpatient work required for discharges or surgery, due to lack of separation between outpatient and inpatient work and the thin distribution of staff across both sites.	By allowing for a spoke site, this will mean that there is a dedicated inpatient resource available to negate the need for inpatient travel between sites and reduce the risk of a delayed discharge or surgical treatment.
There is a limited capacity at present for the service to manage impromptu patient queries around their treatment, as a direct result of being too thinly distributed across both sites.	By introducing a main hub where majority of patients will be seen, this will in turn increase the service's capacity to respond impromptu patient queries in a timely manner.
Alignment of the service to the Centre of Excellence for Planned Care, as per the strategic vision for the Trust	The preferred options will enable the Lung Function and Sleep Service to centralise the majority of its elective outpatient activity to CGH which is the Centre of Excellence for Planned Care, whilst also allowing the service to support inpatients on the Centre of Excellence for Unplanned Care (GRH).
Enable the progression of the Image Guided Interventional Surgery (IGIS) Hub as part of the Trusts strategic objectives within Fit for the future	The preferred implementation option for the IGIS Hub would require Lung Function and Sleep to relocate from its current GRH footprint to allow for the establishment of an IGIS day-case recovery area. Therefore, the implementation of a main hub at CGH would ensure the benefits associated with the IGIS hub can be realised.

4. What are the benefits including clinical outcomes?

Proposed Solution	Benefits
Implementation of a hub at CGH, where majority of the service's elective activity will take place and a spoke at GRH where the service can support inpatients.	• Enable to dedicated support for inpatients to ensure they are seen in a timelier manner, through a smaller spoke site. • Enhance the Lung Cancer patient pathway, through flexible spoke site allowing for multiple tests in one visit • Improve service resilience through centralising staff to improve management of rotas and staff cover for absences. • Ensure service sustainability through cross-training staff into all areas, facilitated through centralising staff onto one site. • CGH site would allow for an improved estate for the Lung Function and Sleep service due to spatial constraints on GRH site. A bigger estate will allow for the service to introduce multi-disciplinary clinics for the 'ventilation' or 'complex airways' clinics, negating these patients to navigate multiple departments in one-visit or attend multiple separate appointments. This would also reduce the risk of patients being exposed to infection by reducing the number of times they visit site. • Clinical adjacencies with Colorectal, Endoscopy and Oncology who are all based in CGH. • Negate the requirement for patients to return to site to pick up equipment for their treatment, as all equipment will be centralised. • Reduce the likelihood of Gloucestershire G.I. patients being referred to Bristol or Bath where there are shorter waiting times, by centralising staff to allow for G.I cross training in house. Clear definition in how clinical time is spent and planned by separation of inpatient and outpatient work • The centralisation of services to provide them in one place can benefit patients with co-morbidities, such as obesity, which is a risk factor for Sleep Apnoea, as it means that patients can access specialist services in one place. Alignment with strategic vision of 'Centres of Excellence', Lung Function and Sleep is a planned care service and is therefore better aligned to the planned care site.

Key impact on residents/service users
The vast majority of activity carried out by the Lung Function and Sleep Service is for outpatients (~ 90%), with 600 G.I. patients (8%) and the remaining 2% is inpatient activity. Currently, the majority of services are available at both GRH and CGH, other than G.I. services which are only offered at CGH. Service activity data has been utilised to understand the impact that a consolidation of a hub at CGH could have on patients with protected characteristics. Data from the 2011 Census has been utilised to inform whether there will be an impact upon those who experience health inequalities within Gloucestershire. The data suggests that patients who are obese, which is a risk factor for Obstructive Sleep Apnoea, and patients who live in the areas of highest deprivation may be most impacted by the centralisation of a main hub to CGH. However, for those with co-morbidities this may be advantageous by providing specialist services on one site. 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. The deprivation data from Gloucestershire Public Health 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 hub to CGH, especially if they are from a low socioeconomic background. According to the Gloucestershire Obesity Needs Assessment (2017), 23.5% of adults (18 years and older) in Gloucestershire are obese. Excess weight and obesity are risk factors for various health conditions, including type 2 diabetes, high blood pressure, cardiovascular disease, fatty liver disease, various cancers and kidney disease. 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 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 consolidation of the Lung Function and Sleep service to a hub at CGH will impact these patients. However, it must be noted that centralising 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.

Background information to aid participants to initially score the options (compared with do nothing) and to aid the subsequent group discussion, in order to agree a collective score for each of the questions listed below

Quality of care

#	Questions to test	What would be better than status quo?	What would be worse than status quo?	No better or worse than status quo
1.1	What is the likely effect of this solution on patients receiving equal or better outcomes of care?	Introduction of multidisciplinary clinics for ventilation and complex airway patients to receive care in one place at the main hub. Support for the Lung Cancer patient pathway for these patients to be seem by the spoke site in GRH. Cross training staff into G.I roles should reduce the waiting times for these patients Reduce the risk of delay in inpatient discharges with dedicated spoke site. With majority of staff on one site it will improve the level of support junior members of staff receive from senior members of staff.		
1.2	What is the likely effect of this solution on patients being treated by the right teams with the right skills and experience in the right place and at the right time?	Access to majority of Lung Function and Sleep service staff on the main hub at CGH with a consistent mix of skills and experience at all times. Access to dedicated inpatient staff on the spoke sites at GRH.		
1.3	What is the likely effect of this solution on continuity of care for patients?	It is likely to improve continuity of care for patients by having majority of staff centralised onto one site, rather than thinly distributed across both sites as per the status quo.		

#	Questions to test	What would be better than status quo?	What would be worse than status quo?	No better or worse than status quo
1.4	What is the likely effect of this solution on the opportunity to link with other teams and agencies to support patients holistically?		Cardiology and Respiratory departments are based at GRH; however, it is unlikely this will have a negative impact upon service delivery or the success of delivering this solution.	Spoke site at GRH will enable access to any inpatient specialties required and main hub at CGH will allow for access to G.I. and Colorectal, Endoscopy and Oncology.
1.5	What is the likely effect of this solution on the quality of the care environment?	The main hub will be an improvement of the care environment as it will enable greater patient privacy within the department, as currently in GRH patient spaces are only separated with curtains.	Location for the interim and permanent GRH spoke has not been identified yet.	
1.6	What is the likely effect of this solution on encouraging patients and carers to manage self-care appropriately?	The GRH spoke site will enable better management of impromptu patient queries around patient treatment equipment, which can currently take a number of days to respond to due to staff being thinly distributes across both sites.		
1.7	What is the likely effect of this solution on patient safety risks?	Improvement through better management of staff rotas and standardised care with majority of service staff on one site.		

Access to care

#	Questions to test	What would be better?	What would be worse?	No better or worse
2.1	What is the likelihood of this solution impacting patient choice?		Patients will have less choice of location	NHS patient choice relates to a choice of provider so no change
2.2	What is the likely effect of this solution on simplifying the offer to patients?	Clear separation of inpatient and outpatient services for each site.	Potential initial confusion for outpatients as service will move site.	
2.3	What is the likely effect of this solution on the travel burden for patients?	Some G.I. patients currently travel out of county	34% of patients it will have a negative impact.	For 66% of patients it will have a neutral impact
2.4	What is the likely effect of this solution on patients' waiting time to access services?	Cross training staff into G.I roles should reduce the waiting times for these patients. More responsive to impromptu patient queries.		Majority of patients same as status quo.
2.5	What is the likely effect of this solution on the travel burden for carers and families?	Some G.I. patients currently travel out of county. Reduce the risk of a delayed discharge for Inpatients	34% of patients it will have a negative impact.	For 66% of patients it will have a neutral impact
2.6	What is the likelihood of this solution supporting the use of new technology to improve access?	Increase the accessibility of the service to respond to patient queries (via telephone or email), improving the support provided and reducing the need for attendance at hospital. Changes to sleep follow ups which will now primarily be conducted remotely		
2.7	What is the likelihood of this solution improving or maintaining service operating hours?	There is scope from the service to extend current opening hours to improve access for patients, however detail tbc.		Same as status quo.

#	Questions to test	What would be better?	What would be worse?	No better or worse
2.8	What is the likelihood of this solution improving or maintaining service operating locations?		Outpatient services will only be provided at a main hub at CGH.	
2.9	What is the likelihood of this solution having a positive impact on equality and health inequalities?	For patients with co-morbidities such as obesity, which is a risk factor for sleep apnoea, this may be advantageous by providing specialist services on one site.	Increased travel from areas of highest deprivation.	
2.10	What is the likelihood of this solution accounting for future changes in population size and demographics?	Given the requirement for additional space is delivered Hub @ CGH, this does create an opportunity to respond to any future demand requirements.		

Deliverability

#	Questions to test	What would be better?	What would be worse?	No better or worse
3.1	What is the likelihood of this solution being delivered within the agreed timescale?	The status quo is no longer an option with development of IGIS hub.	Subject to identification of an interim and permanent spoke site location at GRH.	
3.2	What is the likely effect of this solution on access to the required staffing capacity and capability to be successfully implemented?			There is sufficient staffing capacity and capability for this solution to be successfully implemented.
3.3	What is the likelihood of this solution having access to the required support services to be successfully implemented?			No change
3.4	What is the likelihood of this solution having access to the required premises/estates to be successfully implemented?	The footprint for the main hub at CGH has been located on the existing service footprint with additional estate capacity provided, works are expected to start in September 2022.	The location for an interim and permanent spoke site at GRH is yet to be identified.	
3.5	Does this solution rely on other models of care / provision being put in place and if so, are they deliverable within the timeframe?			Works are expected to start for the IGIS Hub at GRH in December 2021. At which point LF and SS will be required to vacate their current footprint in GRH. At this time the service will move to an interim solution, with a temporary location for the service's GRH spoke (location to be agreed) and a minor expansion of the service's footprint at CGH (agreement in place). Following the establishment of the new catheter labs at GRH (part of the IGIS Hub) work can begin on the expansion of the LF and SS hub in CGH into the vacated Hartpury Suite.

Workforce

#	Questions to test	What would be better? (show how this would be evidenced)	What would be worse? (show how this would be evidenced)	No better or worse (show how this is evidenced)
4.1	What is the likely effect of this solution on improving workforce capacity resilience and reducing the risk of temporary service changes?	Improve capacity and resilience for Lung Function and Sleep services through centralising all staff onto one site. Would allow for in-house cross training of Respiratory Clinical Physiologists into G.I. roles which will increase future resilience of the G.I. service within the Trust, especially as there is a national shortage of G.I. Physiologists.		
4.2	What is the likely effect of this solution on optimising the efficient and effective use of clinical staff?	Improved management of staffing and rotas by centralising majority of staff as opposed to diluted across two sites.		
4.3	What is the likely effect of this solution on supporting cross-organisational working across the patient pathway?	Improved as additional space and staffing on one site would allow for introduction of multidisciplinary clinics (a range of health and care professionals working together)/'one-stop shop' clinics)		
4.4	What is the likely effect of this solution on supporting the flexible deployment of staff and the development of innovative staffing models?	Ability to implement changes around work schedules, job planning and increased working from home opportunities within individual staff job plans to ensure that all rooms onsite could be utilised for patient appointments, the benefits of such changes have been difficult to realise when diluted across two sites, as issues around lone working and distribution of staff mean that these changes are unmanageable.		

#	Questions to test	What would be better? (show how this would be evidenced)	What would be worse? (show how this would be evidenced)	No better or worse (show how this is evidenced)
4.5	What is the likely effect of this solution on supporting staff health and wellbeing and their ability to self-care?	Increase staff morale and a sense of team by enabling staff members to fully support each other through being on the same site, which in turn will have a positive impact upon staff recruitment and retention.	There will be an increase in travel times for some members of staff who live in the west of the county.	
4.6	What is the likely effect of this solution on improving the recruitment and retention of permanent staff with the right skills, values and competencies?	Cross training in house of staff into G.I. roles will add to the appeal of any future posts advertised within the service, whilst also upskilling current members of staff.		
4.7	What is the likely effect of this solution on retaining trainee allocations, providing opportunities to develop staff with the right skills, values and competencies?	A consistent mix of staffing levels on one site would enable continuous learning and development opportunities for the team; this in turn improves the service and care that patients receive. See 4.6		
4.8	What is the likely effect of this solution on maintaining or improving the availability of trainers and supporting them to fulfil their training role?	See 4.7 and 4.6		
4.9	What is the likely effect of this solution on enabling staff to maintain or enhance their capabilities/ competencies?	See 4.7 and 4.6		

#	Questions to test	What would be better? (show how this would be evidenced)	What would be worse? (show how this would be evidenced)	No better or worse (show how this is evidenced)
4.10	What is the likely effect of this solution on enabling staff to fulfil their capability, utilising all of their skills, and develop within their role?	See 4.7 and 4.6		
4.11	What is the likely effect of this solution on the travel burden for staff?		The travel burden will increase for staff members living on the west of the county.	Status quo for staff living in the east of Gloucester, Tewkesbury, the Cotswolds or Stroud.
4.12	What is the likely effect of this solution on maintaining clinical supervision support to staff?	Improved as better skill mix with junior and senior staff on one site, rather than relying on telephone and email communications for support.		

Strategic Fit

#	Questions to test	What would be better? (show how this would be evidenced)	What would be worse? (show how this would be evidenced)	No better or worse (show how this is evidenced)
5.1	What is the likelihood of this solution being compatible with the One Gloucestershire ICS vision? e.g. Provide joined up care and support, pursue excellence in hospital services, develop a sustainable local health and care workforce, make the most of new technology to improve and join up care, delivers a greater separation of emergency and planned care, enables Gloucestershire patients to be treated in Gloucestershire	Alignment of the service to the Centre of Excellence for Planned Care at CGH, as per the strategic vision for the Trust. Reduce the likelihood of Gloucestershire G.I. patients being referred to Bristol or Bath. Support sustainable local health and care workforce		

Acceptability

#	Questions to test	What would be better? (show how this would be evidenced)	What would be worse? (show how this would be evidenced)	No better or worse (show how this is evidenced)
6.1	What is the likelihood that this solution has satisfactorily taken into consideration and responded to the output of engagement?	The period of public engagement is currently ongoing, the interim findings will be provided at the session for this domain to be scored.		

Finance/ value for money

#	Questions to test	What would be better?	What would be worse?	No better or worse
7.1	What is the likelihood of this solution being within the current cost envelope?			There is no anticipated revenue impact, as no additional staff will be required as a direct result of this proposal
7.2	What is the likelihood of this solution increasing net revenue to the system?			No change
7.3	What is the likelihood of significant capital costs?			There have been no requests for additional equipment by the service to enable to implementation of this proposal, however there will be a non-recurring one-off capital costs to cover transition costs. This funding will be identified through the IGIS programme
7.4	What is likelihood that this solutions' transition, implementation, double-running or stranded costs cannot be funded?			See 7.4