

Learning from the COVID-19 pandemic – a Bradford Teaching Hospitals perspective

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Foreword

Since March 2020, Bradford Teaching Hospitals NHS Foundation Trust (BTHFT) has worked to ensure that its provision of high quality care continued throughout the COVID-19 pandemic. These have been unprecedented times. We feel it's important to chronicle the way we responded to the pandemic and, especially, the lessons we have learned.

So much has changed: the way we care for our patients, the restricted access to our premises, the protective equipment we wear and the extraordinary efforts we make to prevent and control infection. Many things which seemed strange at the start of the pandemic are now accepted as the new normal. Almost nothing is the same as it was before, except, of course, our determination to be an outstanding provider of healthcare, research and education, and a great place to work .

Our Trust values state that *"We are one team"* and throughout the response to COVID-19, the capability, resilience and compassion of our people have been tested to the limit.

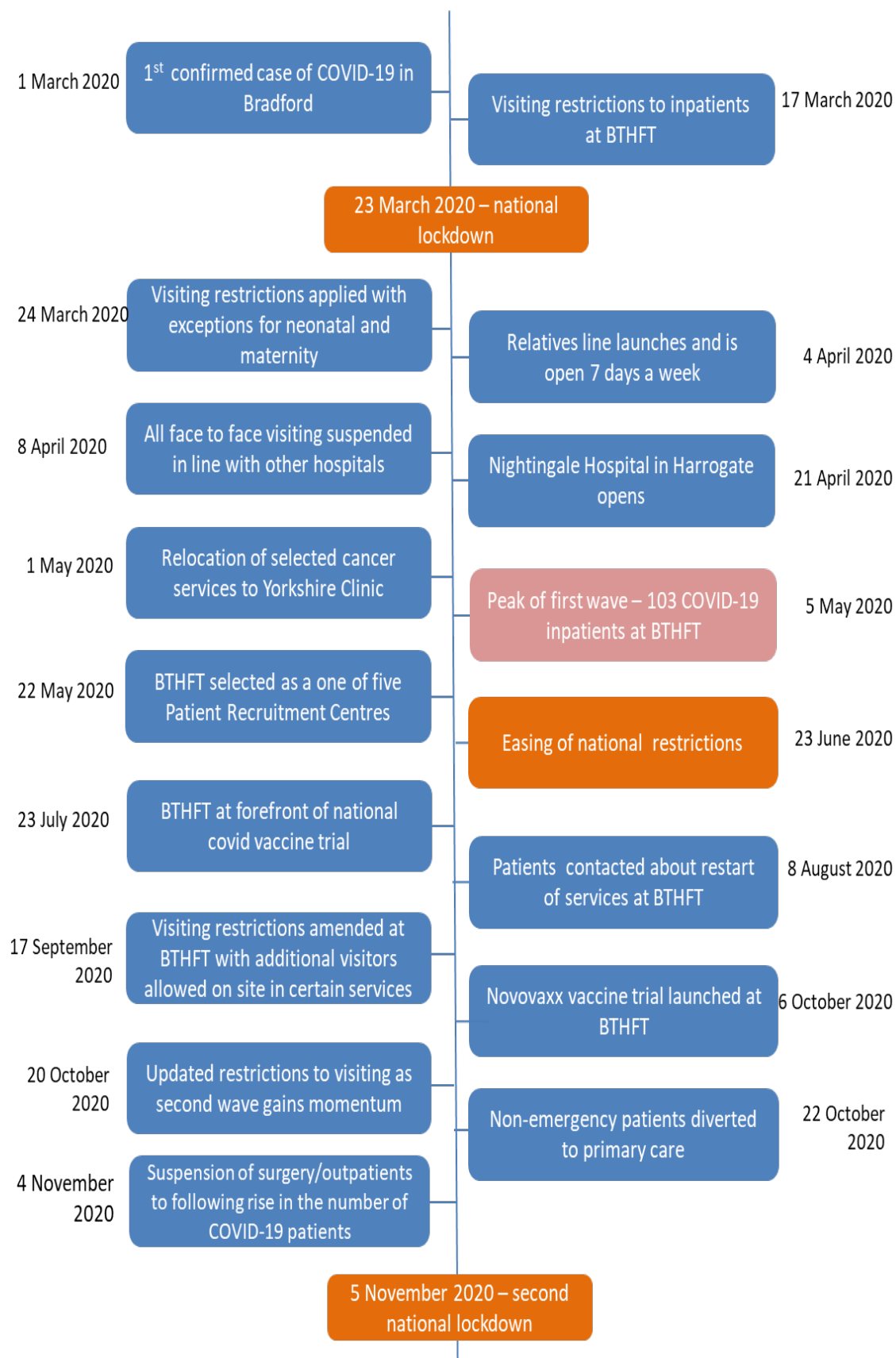
It's important to recognise that we're only one piece in the wider health and care system that serves a diverse community of over half a million people in the Bradford district, and we are also an active partner in the integrated care system that is transforming care right across West Yorkshire and Harrogate. We've collaborated with many organisations to help our community tackle the constantly changing demands of the pandemic response. And we have drawn on each other's strengths and supported each other where needed – an approach that will be just as vital as we restore and restart our services and we [Act As One](#).

We have received incredible support from our community, including the generous donations of food and toiletries, financial donations to *NHS Charities Together*, morale boosting applause and practical help when things got tough with heavy snow and difficult conditions.

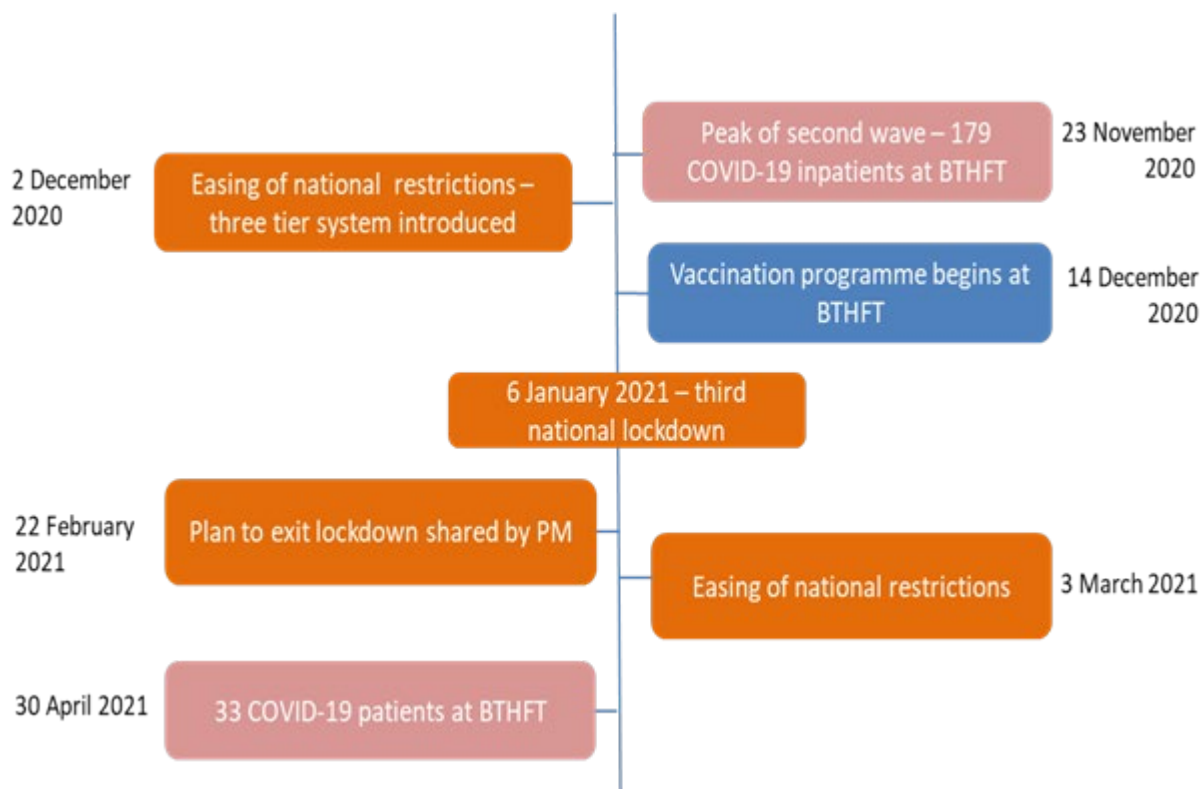
Sadly the journey has been arduous and like many NHS organisations we have lost some of our own friends and colleagues. The loss is deeper than the numbers alone can show. But we are on a journey and there has been progress. This is exemplified by the rollout of the COVID-19 vaccine, with our Trust taking a leading role in both the national vaccine trials and in organising and administering vaccines for our population. We are implementing our Restore and Restart programme to get our full range of healthcare services operating at pre-pandemic levels and to address the backlog of demand for care, as safely and quickly as possible.

Through this report we intend to highlight not just how we have responded to the pandemic, but also how our learning will help us "build-back better" and adapt our services for the benefit of our population. We hope this report does justice to the scale of the challenges experienced, and the compassion, skill and commitment of the people involved in delivering care. It has been my privilege to lead the organisation through this very difficult period, and I am immensely proud of all we have achieved, and all that we continue to do, working with our partners on health and care, to serve the population of Bradford and districts.

Timeline of events 1 March 2020 to 30 April 2021



Timeline continued



1. Overview of achievements

Throughout the pandemic our people have been constantly innovating, adapting and adopting new practices to meet the challenge of COVID-19. Some of our most remarkable initiatives included:

- Staff redeployment – a comprehensive programme of redeployment was established to overcome staffing challenges, with many colleagues being moved away from their normal roles to help meet the demands of a hospital working in unprecedented circumstances. Retired staff offered their services. In order to ensure we could redeploy staff effectively, training was rapidly arranged, ensuring that, above all, patient safety was prioritised. Our Education Department organised training courses to ensure that all who were redeployed were confident in their new roles. We built on this foundation from the first wave of COVID-19 to provide enhanced support during the especially challenging second wave towards the end of 2020 and through the winter.
- Relatives Line - BTHFT set up a new telephone information line to provide information to relatives concerned about their loved ones who were in hospital during the COVID-19 pandemic. This was in recognition of the fact that hospital visiting was almost entirely suspended, and the families would be anxious for information. At the same time we had to support our staff on the wards - many of them wearing full protective equipment - to care for patients without interruption. The Relatives' Line also enabled us to give COVID-19 test results to patients who had a swab taken, and to offer guidance if they were positive. Critically, this helped bridge the gap between the restrictions on visiting and communications with patients.
- Increased focus on inclusion and diversity – our communications and engagement aimed at staff, patients and the public was expanded and the approach we took to sharing information became more varied. This was necessary and COVID-19 was a catalyst in moving us forward at an accelerated pace. We launched our largest array of communications to inform communities in multiple languages and dialects (e.g. Urdu/Pahari/Slovak and many more) with much of the media presented by our own staff. The channels used included all the main social media (Facebook, YouTube and Twitter) and the Trust also engaged and participated in community-led groups, especially via WhatsApp, ensuring messages were spread and heard widely.
- Critical care without walls - a key component of preparing for COVID-19 was increasing intensive care capacity by opening additional ICU wards to meet demand as needed. A subset of this approach involved the implementation of 'critical care without walls' at BTHFT. COVID-19 patients were provided CPAP (continuous positive airway pressure) machines on respiratory wards to allow critical care to focus on the most acutely unwell patients.
- Expanding the implementation of telemedicine - the pandemic acted as a catalyst for the use of technology to support remote consultations, particularly within the paediatrics specialty. This resulted in a surge in demand within BTHFT for video consultation facilities to enable clinicians to safely contact and assess their patients whilst the lockdown was in place. The

pandemic consistently spurred the adoption of telemedicine and patients are now able to experience more of the benefits of their healthcare delivered at home. Rapidly changing the way of working through the creation of new clinical pathways and workflows was a challenging process but has probably accelerated a change which was bound to happen in time.

- As at 30th April 2021, 2,806 COVID-19 patients had been discharged from BTHFT back to their home or usual place of residence

2. Planning and Preparation

2.1 Bradford in context

Bradford's population, and particularly the communities in close proximity to our hospitals, are incredibly diverse, with more than 100 languages spoken across the district. Bradford has a set of circumstances that creates a disproportionate demand for health and care services. Additionally, a significant proportion of Bradford's population is of south Asian heritage. With a significant ethnically diverse population present a number of challenges unique to this population. The local population has high rates of comorbidity, particularly diabetes with the highest prevalence in the UK (10.8% vs UK 6.9%). All these factors are associated with worse COVID-19 outcomes.

2.2 Our site and visitors

As part of the NHS response to the coronavirus pandemic, BTHFT placed restrictions on visiting to protect patients, staff and visitors. Aligned with all hospitals across West Yorkshire, the Trust made the difficult decision to end all face-to-face visiting on its sites where patients required mechanical support for their breathing.

We took the decision to 'lockdown' our hospital sites to keep patients and staff safe and secure, reduce unnecessary footfall during this period and prevent any opportunistic crimes. In practical terms, this meant that staff were still able to use ID swipe-cards to access entrances that are locked down electronically, but the public had a very limited number of entry points, with extra security in place to help manage any issues. This also provided an opportunity to address and manage the following -

- enforcement of uniform policy (reduced risk of carrying infection to and from the trust);
- better management of patients "absconding" or leaving the building e.g. to smoke;
- reduced movement of people in communal/public areas (reduced risk of infection transmission)
- receipt of items for inpatients brought to the hospital by family members;
- enabling the deposit of used clinical scrubs from staff leaving, to support timely return to the laundry;
- greeting and escorting individuals attending pre-booked appointments and limiting the number of other people entering the building with them

- preventing unauthorised access.

At the start of the COVID-19 outbreak BTHFT implemented a partial lockdown of the BRI and SLH sites to limit the access and egress of patients, visitors and staff and therefore control the flow of individuals in and out of the buildings, 24 hours per day, 7 days per week. AED, Accessible Entrance (Smith Lane), Main Entrance Duckworth Lane, Duke of York, Maternity rear entrance and Horton Wing SLH were all staffed to enable managed access and egress.

Throughout the pandemic period the opening/closing times of these entrances has been monitored and changed to reflect national COVID-19 guidance changes relating to general restrictions including changes to visiting and hospital appointments.

A Safe Working Group was also established to help ensure a consistent approach to achieving a safe working environment. The group led the review of room occupancy across the Trust ensuring non-clinical areas complied with social distancing measures and were risk assessed to be COVID-19 secure. Signage was provided to manage the flow of people around the sites, corridors were split into single direction lanes where possible, room occupancy levels were reviewed and offices were reconfigured and even relocated where possible. The Trust published a comprehensive Home Working Policy to support staff to work from home where appropriate. There was also extensive engagement with the Trust involving patients and its many other stakeholders. Changes that would affect the population were communicated with many prominent parties including local MPs who were engaged by our Chief Executive, Bradford Council for Mosques to support the needs of the Muslim community and healthcare partners across the district.

Cardiology Drive Through

One of the ways in which we changed how our site was used was the introduction of the drive-through services for cardiac patients. Setup for those needing to pick up test devices, this service became the 'new normal' at St Luke's Hospital. Staff set up the innovative clinic for people who needed their heartbeats or breathing assessed at the height of the pandemic in a bid to reduce the risk to these vulnerable patients attending the hospital.

A portable cabin was installed at the entrance to the Horton Wing at St Luke's to support patients as the service became more popular. Key achievements included –

- 120 appointment slots a week
- 1950 appointments offered between 1st Sept – 31st Dec 2020
- 85% of the patients were likely or extremely likely to recommend the service to friends and family

2.3 Cancellation of non-urgent surgery and outpatient appointments

BTHFT suspended some non-urgent surgery and outpatient appointments in both the first and second waves to help create capacity to manage the high numbers of number of seriously unwell COVID-19 patients. We also saw an unwarranted reduction in Emergency Department attendances - for example for symptoms of stroke and heart attack – and we responded by issuing

communications to reinforce the message that BTHFT, along with health and care partners in Bradford, was #stillhereforyou.

2.4 Our learning

While difficult, our decision to restrict visitors was essential to help prevent and control the spread of infection. Discussion with community leaders and representatives, including MPs and faith leaders, helped to mitigate some of the concerns, but this was possibly the single most contentious action we had to take during the pandemic. We put a lot of emphasis on communicating the alternatives to face to face visiting and in supporting families to stay in touch through other methods. Communication of decisions was essential, and engaging stakeholders as early as possible was a key to success. This is something we'll endeavour to continue and improve. Although we hope to be able to allow increased visiting as the pandemic recedes, adopting a more systematic approach to visiting and having a clear and well explained position regarding site access has offered benefits in terms of the safe operation of our facilities, and we will keep this under review. Our approach to home working, and supporting staff to work flexibly in the office and at home, has evolved over time and will continue to be a part of our working model in future. Some of our colleagues really welcome the option, others find it difficult to work from home, so our approach will continue to embrace a blend of different working patterns.

3. Culture, Leadership and Behaviour

3.1 Decision making ability and agility across layers

From the outset, the Trust relied on the skill and experience of its clinical leadership to help deal with an unpredictable and escalating situation. A Command and Control structure was implemented. This involved the setting up of strategic, operational and tactical groups focusing on dealing with the pandemic. These were co-ordinated by a programme management team and at the peak of the pandemic, meetings were held multiple times a day to highlight and address issues.

The Trust's approach to empowering clinicians led to the creation and successful operation of the Clinical Reference Group (CRG) model. Indeed, the CRG has been so effective that we anticipate this approach will continue post-COVID-19 as one of the ways in which the Trust will look to involve clinical leadership.

During the pandemic, the previous governance processes which consisted of various reporting committees and the Board of Directors were suspended. Instead, a Regulation & Assurance Committee comprising all Board members was established to replace the business of all Board Committees. This change was instrumental in relieving some of the administrative burden from the leadership team whilst maintaining robust and transparent governance so that important decisions could be expedited. Meetings were held virtually using Webex (and subsequently Microsoft Teams).

3.2 Our leaders

The organisation benefited from some inspirational leadership during the pandemic. One clinical director was instrumental in arranging for the majority of anaesthetists and theatre staff - who do not normally work in ICU - to be integrated within the ICU team. Staff were 'buddied' along with other staff who routinely worked in ICU. This included consultants, junior doctors and nursing staff. The team was provided with training on new equipment, and staff felt supported and recognised.

This forward thinking complemented and completed the expansion for the second and third ICU to ensure there was capacity for the expected ICU demand.

3.3 What we learned

Leadership models can be changed and become more agile without compromising good governance; the newer streamlined processes provided a more flexible structure in which to operate. This was met with positive feedback from across the trust and has given us a strong evidence base to explore how our post-COVID-19 governance will work.

4. Procurement

4.1 A national challenge

The Government requisitioned all of our usual PPE supply channels at the outset of the pandemic in order to centrally manage the supply and distribution of PPE for the UK health & care system as a whole. Therefore, instead of 'pulling-in' supplies we required, we received supplies that were 'pushed-out' to us from the centre (a combination of Government departments and bodies including DHSC, Cabinet Office and NHSE/I who centrally managed the procurement and distribution of PPE).

Given the massive and sudden increase in worldwide demand for PPE, the availability of PPE was subject to significant supply side constraints, though the situation eased over the course of the year as manufacturing capacity increased to meet the additional demand.

4.2 Our learning

While we never ran out of stock, in the early part of the pandemic, PPE supplies from national contingency stockpiles were not always predictable. In light of the international shortage of PPE and the fact that our normal supply routes were being managed centrally, ensuring that the Trust had a sufficiency of PPE was extremely difficult. A board was established comprising senior individuals from across the West Yorkshire Health & Care Partnership, to provide a forum for communication, escalation and resolution of common PPE related issues. A comprehensive list of our PPE experience is at appendix 1.

5. Digital Services

5.1 Enabling the workforce

At the beginning of the pandemic the Trust had an existing system in place which allowed staff to work from home however the capacity was very limited with less than a hundred staff in an organisation of 5,800 able to access the network to do so. National guidance to the general population mandated that people should work from home where possible. This created significant challenge in terms of the technical requirements and management of expectations, and led to one of the biggest cultural changes the Trust experienced.

Our Informatics team worked to increase the capacity of the existing infrastructure to allow increased numbers of staff to work flexibly. This presented multiple challenges, for example sourcing additional laptops was extremely difficult at a time in which the global demand for laptops made equipment scarce. The Trust was fortunate to have partners such as the Ministry of Defence loaning laptops to support the situation. In the end, many teams were able to begin working

flexibly, sharing time in the office and at home and this has continued as a core part of our working model well after the second wave.

In our efforts to keep all staff connected, all staff were also given the opportunity to access their emails from any device with a browser. This allowed staff to read the trust internal communications while they were off site.

5.2 Connecting patients with loved ones

Because of the visiting restrictions we relied on the use of electronic devices to help families keep in touch with their loved ones who were in hospital. We worked hard to find alternative solutions for patients unable to use smart devices or whose families did not have them, particularly during end-of-life care. As such, we set up tablets for relatives to use in the A&E Family Room and the Bereavement Meeting Room. Wards could connect to those units from their existing tablets using various services such as Skype. Patients with their own device were encouraged to use standard apps such as WhatsApp and FaceTime to connect with family and friends.

5.3 Video consultations

Prior to the pandemic, the vast majority of outpatient consultations were face to face; there had been only limited engagement with clinicians about the potential for remote video consultations. On 27th March 2020, NHS England/ Improvement issued a specialty guide regarding “Virtual Working and Coronavirus” and suggested virtual video consultations may be appropriate in certain scenarios such as when the clinician is self-isolating (or to protect the clinical workforce), or the patient is a known coronavirus case. BTHFT took the opportunity to work with clinical teams to pilot video appointments and then embed the approach more comprehensively.

The pandemic acted as a catalyst for video consultations at the trust particularly within the paediatrics specialty. This resulted in a surge in demand for video consultation facilities to enable clinicians to safely contact and assess their patients whilst the lockdown was in place. The pandemic has changed the way we view healthcare both as medical professionals and as patients. The pandemic has spurred the adoption and reception of telemedicine and patients now see many more of the benefits of their healthcare delivered at home. Changing the way of working clinically through the creation of new pathways and workflows was a challenging process. Patient experience and safety through risk mitigation and access to healthcare have been at the forefront of our pathway and workflow design.

5.4 What we learned

Pre-COVID, our Trust strived to ensure the working environment on site was optimal, and like many Trusts we continued to see patients in person and it was presumed (based on 70 years of history) that patients would always be allowed visits from loved ones. COVID-19 mandated changes. We now have multiple teams working from home where possible, a large amount of video consultations being delivered and technology in place to allow patients to remain connected with their families and loved ones.

6. Communications and Engagement

6.1 Our reputation

Our local, regional and national communications have adapted to meet the demands of the pandemic, with an enhanced profile for the Trust. BTHFT staff were involved in regular podcasts, blogs, articles and radio & TV features. [The Coronavirus Doctor's Diary](#) published by Professor John Wright began in March 2020, and as of April 2021 is now still publishing regular articles on the BBC website. The Trust's maternity unit was utilised for the filming of a BBC Panorama documentary, [Lockdown Babies](#), while Channel 4 created a series of clips highlighting our work during the second wave.

Our website and social media channels were frequently updated. External communications at the start of the first wave were predominantly focused on ensuring patients were informed of changes to visiting arrangements, dispelling fake news and reassuring the public that we were still 'open and here to help'. This messaging was repeated throughout the pandemic. Our communications also focused on system-wide changes, such as relaying messages on our social media channels about the services available from primary care, and devoting articles to share communications on behalf of the Carers Network. Our goal to provide the public and patients with relevant and up to date information through multiple channels was achieved.

However, the ban on hospital visiting at the peak of the pandemic led to some disconnect between patients, relatives and staff. The Relatives' Line helped bridge gaps in communication when family or relatives of patients were restricted in visiting. However we know that some sick patients refused to be admitted for fear of what the Trust would do to them, or fear of catching COVID-19.

Worryingly, the numbers of patients who were presenting at the Emergency Department with symptoms of serious illness, such as cardiac arrest and stroke, were below what we would normally expect. Fewer women were seeking help from the Maternity Unit - people were staying away from our hospitals.

This was fuelled by rumours in different communities, for example that we were deliberately harming patients, or that coronavirus was a government scheme to lure in people to repatriate them. With a significant ethnically diverse population and a large amount of misinformation already spread, this was a particularly challenging time for the Trust's communications team.

6.2 Our strategy

The Trust's communication strategy had two central strands. Internal communications to staff were critical as national guidance on subjects such as symptoms, self-isolation and PPE changed very quickly and often. We accelerated the launch of a new intranet with a dedicated COVID-19 site to act as central information hub for staff, which quickly became the authoritative repository for staff updates (e.g. an archive of daily bulletins) and SOPs. Secondly, our external communications became increasingly focused on the local population. Specifically, we had to ensure that our local communities were kept up to date on the changes at our hospitals. And we had to focus on dispelling the myths, conspiracy theories and fake news which was prevalent locally on social media.

The initiative focused on enhancing our existing communication channels by increasing their appeal, frequency and reach. The Trust worked on reaching hard to reach groups, particularly the ethnic

minority communities in close proximity to our hospital. One of the main channels we used was WhatsApp groups set up by the communities themselves. With the support of our own ethnic minority staff, and the help of Bradford Council and other system partners, the Trust was able to distribute its messages to over 30 local groups. These groups were used to share relevant information as it was published.

We engaged with local groups, formed to provide support in local communities, before and during the pandemic. For example, a WhatsApp group specific to Girdlington (Bradford Royal Infirmary's neighbouring area) included many community champions, and was used to share information from the Trust.

For staff, we issued daily email bulletins highlighting key local and national changes pertinent to the organisation. We also hugely increased the use of video in our communications. Staff were given weekly video updates by the Chief Executive while videos in multiple languages were developed by many staff and published on YouTube and shared widely through social media.

6.3 What we learned

The Trust took a very early decision to be open and transparent with the local community about numbers of COVID-19 patients in the hospital, discharged, and those who had died. This daily publication of factual numbers undoubtedly helped lessen some of the potential fear and suspicion, and offered reassurance on the quality of care and staff dedication, reporting the high numbers of patients discharged and a daily update on the numbers of deaths.

While we have made substantial progress in being transparent with our local community, the experience of the last year illustrates the ongoing need to be more agile in our engagement. We are also working to improve our reputation as an anchor institution within the local community.

7. Staff Health and Wellbeing

7.1 Expanding the options

The health and wellbeing of our staff was a high priority and our responsibility as an organisation was amplified during the pandemic. Fewer staff were opting to take annual leave during the peak of the pandemic increasing the very real risk of our staff potentially being exposed to physical and mental burnout.

Multiple avenues to help staff through this strenuous time were launched. A digital Wellbeing Hub was setup and made available to staff which provided hints and tips on mental and physical wellbeing; managing fatigue; Occupational Health information and staff benefits as well as useful contacts and links to other sites to support wellbeing. Promotion played an important role - this Hub as well as national initiatives such as the NHS and Samaritans launching a support service was communicated to staff. Within the Trust, our Clinical Psychology team also provided a confidential support helpline while our Chaplaincy service gave spiritual and emotional support where needed. The Trust launched Wellbeing Wednesdays – a Trust-wide communication focusing on health and wellbeing.

The unbelievably generous donations (food, hampers and ice cream) from communities and local organisations helped to divert away some pressure for staff. Additionally, 'wobble rooms' were

setup. Teams across the Trust, including Radiology and the Emergency Department, embraced an idea to set up 'wobble rooms'. In essence, these are private rooms where staff can take a break, have a hot drink, and think about something different. The idea, thought up by one of our consultants, went viral on Twitter.

Physical wellbeing was a focus with staff setting up an exercise group on Strava for staff to join. Whether it's for fun or a bit of healthy competition, you can support each other via BTHFiT – sign up today. Free bicycle loans to NHS staff and to anybody supporting them through the COVID-19 outbreak were made available through local organisations.

7.2 Our learning

The Trust placed a significant emphasis on health and wellbeing of staff prior to the pandemic, however, COVID-19 ensured staff were at the centre of the Trust's focus. The focus on staff will undoubtedly continue as they are the core of the organisation. We anticipate this support will develop further as we move towards a post-COVID-19 environment and make the Trust a great place to work.

8. Research

8.1 Our contribution to the national picture

The National Institute for Health Research (NIHR) launched five new national patient recruitment centres (NPRCs) in November 2020 to enable more late-phase commercial clinical research to be delivered within the NHS and make it easier for people to take part in studies. The Bradford centre is one of five regionally based NPRCs funded through a £7 million investment as part of the Government's Life Sciences Industrial Strategy and Sector Deal 2 – a series of measures to strengthen the UK environment for clinical research.

The centre is managed by and funded through the NIHR and run locally by Bradford Teaching Hospitals NHS Foundation Trust. The centres are the first NIHR-funded research infrastructure wholly dedicated to delivering commercial research.

The NPRCs specialise in recruiting non-hospitalised patients with common chronic health conditions – such as asthma, irritable bowel syndrome (IBS), type 2 diabetes, and cardiovascular disease – conditions commonly managed by primary and community health services and all are conditions especially prevalent in Bradford.

The centres also played a pivotal role in delivering and helping people take part in vital COVID-19 vaccine studies. The Novavax Phase 3 COVID-19 vaccine trial was carried out at Patient Recruitment Centre: Bradford.

8.2 Our learning

As a Trust we are fortunate to have a robust research component which includes a PRC and an institute. As such, the Trust supported the Novavax COVID-19 vaccine trial, delivered locally by the NIHR Patient Recruitment Centre: Bradford which involved over 700 volunteers from in and around the city.

The trial completed recruitment in record time and is the largest double blind, placebo-controlled COVID-19 vaccine trial to be undertaken in the UK to date. A total of 726 volunteers took part in the trial in Bradford and we're confident of our ability to replicate this work should it be required in the future.

9. Innovations

9.1 Innovating during COVID-19

Our clinical approach to the management of COVID-19 was developed by a multidisciplinary team comprising doctors from critical care and respiratory, acute and emergency medicine, together with nursing staff and, critically, the physiotherapy department. It comprised several elements including awake proning, escalation planning, and usual ICU therapies. However, the core intervention was the use of early CPAP in moderate or severe respiratory failure due to COVID-19, which was led by our respiratory physiotherapists. This approach has led to the initiative being shortlisted in the prestigious Health Service Journal Patient Safety Awards 2021 and contributed to the lead consultant being awarded, for his efforts during the pandemic, an MBE.

Shortly before the pandemic, BTHFT became the first provider in the UK to partner with TytoCare - an all-in-one modular device and AI-powered telehealth platform for on-demand, remote medical examinations to provide healthcare to some of our most vulnerable children and young people (CYP). Tyto Care supported our paediatric respiratory team to provide multidisciplinary team healthcare to some of our extremely vulnerable CYP with chronic respiratory conditions like primary ciliary dyskinesia and cystic fibrosis. CYP with these chronic conditions require significant input from a variety of team members to improve their quality of life and reduce the burden of these debilitating conditions.

These CYP were also particularly vulnerable during the current COVID-19 pandemic so shifting their care from the hospital to their homes has been a vital part of protecting them. The pilot was recognised nationally receiving a 'Highly Commended' award in the Health Tech Newspaper awards in 2020.

The passion of our staff made [national news](#). Our stocks at the start of the pandemic of surgical masks were good, but supplies of more effective PPE masks and eye-protection visors began to run low. Our consultant's ingenuity led to him visiting a hardware and building supplies company to buy industrial masks, and his expertise led to finding a way of attaching medical filters to them ensuring they were medically fit to use. The latter aspect involving the filters was completed using a 3D printer at the consultant's home. This dedication and passion to look for new and innovative ways of providing care and protecting staff is remarkable but also typifies the approach throughout the Trust.

It has been exceptionally difficult for both clinical teams and infection prevention and control teams to ensure the tracking of hospital acquired COVID-19 cases, robust surveillance systems and prevention of outbreaks. The challenge of capturing dynamic and rapidly changing individual patient pathways and establish real-time pragmatic surveillance was urgently required.

At BTHFT a small multi-disciplinary task and finish group was formed which included medical, nursing, business informatics, patient safety, Health & Safety to investigate methods for improving

the surveillance of COVID-19 cases on a daily basis but also to provide essential visual alert systems to wards or departments who were reporting increases in confirmed cases and thus highlighting potential clusters or outbreaks outside the recognised cohorting patients areas.

The aim was to identify a visual simple surveillance tool which would aid both the Infection Prevention Team and Clinical Teams to see when and where individual hospital acquired infections and potential clusters were occurring in real time. This has reduced the number of bed days utilised in ICU and provided significant savings for the trust.

9.2 Our learning

Innovation as part of the work ethic and culture at BTHFT resulted in multiple improvements to the care of our patients. As we return to “normal” it is important that we consider how the governance framework in which the trust operated, and which was so conducive to innovation, can be maintained in a post-COVID-19 environment: how to maintain good governance alongside a more agile and responsive approach to patient care in which clinical leadership is empowered.

9. Education

10.1 Staffing and skills

During the pandemic, our hospitals have needed to rapidly seek new ways of working to cope with the challenges COVID-19 has brought, including changes in the way hospitals operate and the roles of staff. Three key areas were identified to ensure the Trust’s staffing needs were met – staff were educated in the use of resuscitation, an increase of support staff in the form of healthcare assistants and training staff to be knowledgeable in an Intensive Care setting.

10.2 Responding rapidly

COVID-19 resulted in a considerable change to practice for respiratory treatment. It was acknowledged there was a need for staff to have the opportunity to practice these changes. Simple deteriorating patient scenarios leading to a shockable cardiac arrest were arranged in clinical areas around the hospital for staff to simulate. Following the success of this programme it has been recommended that when a significant change to clinical practice is made this is reinforced with an in-situ simulation programme.

A four day programme was designed during the first wave of the pandemic to train staff and give them the opportunity to shadow on the wards – 72 redeployed staff members were trained in this way. Additional training was provided for staff joining the NHS again after retirement.

A significant benefit and strength of this education programme was its rapid deployment. Utilising existing resources and key staff members from across the organisation, the training for the ICU and healthcare assistants was *deployed within 48 hours* from its approval.

10.3 Benefits of our approach

The benefits of the training programme were numerous –

- Staff were trained up and educated to work with COVID-19 patients to provide better outcomes for the people of Bradford.

- Patient safety was improved due to the increased numbers of nursing staff available for COVID-19 patients.
- Renewed interest working within ICU was a key benefit. Following the training and experience working within ICU, some staff have completely changed roles to continue in this field helping address the national shortage.
- Each staff member was required to complete the non-critical care staff skills checklist and orientation checklist in the emergency induction document and was supervised and assessed by the ICU nurse accompanying them. This allowed the dissemination of knowledge to be highly efficient as it's being shared by specialist ICU nursing staff.

10.4 Our learning and improved resilience

The Trust is privileged to have a knowledgeable, skilled and willing staff base whereby training of such complexity and importance can be deployed swiftly. BTHFT's training programme produced good results demonstrated by the comparatively low mortality rate despite our population having high levels of co-morbidity and ethnicities associated with poor outcomes. In particular, staff trained for the first wave supported us during the second wave in the winter. Additionally, some of these staff had significant experience on ICU by the second wave, therefore, we are able to grow in confidence and support with more advanced/complex ICU skills as they had become settled, familiar and supported in the critical care environment.

10. Partnership working

11.1 System wide working and support

The Trust already worked closely with partners across Bradford District & Craven prior to the pandemic, for example through the Act as One programme, which was established to help achieve integrated working on behalf of all local healthcare partners. This programme is split into seven transformation programmes focused on population health issues, and an overarching Access to Care programme. Despite the onset of the pandemic, partners agreed to maintain the Act as One programme, whilst also establishing a series of local groups to provide strategic leadership (for example Gold Command and the District Outbreak Board). This approach was mirrored at West Yorkshire level with existing collaboration and governance groups adopting a new focus on COVID-19 specific issues such as PPE supply and ICU capacity to ensure a collaborative approach.

The University of Bradford's Working Academy provided extensive support in particular for digital communications. This partnership started prior to COVID-19 whereby the Working Academy helped to rebuild the Trust website and intranet. During the pandemic the Working Academy supported digital communications at the Trust (such as YouTube videos being created for internal and external use). Video communications became an increasingly important channel of communication with the introduction of the Chief Executive's round-up of key developments at the Trust.

BTHFT became a Hospital COVID-19 Vaccination Hub with effect from 14 December 2020, as part of the National Vaccination Programme. The vaccine programme (with the exception of Primary Care Networks and Pharmacy Hub) has been rolled out using a lead provider model – for Bradford, BTHFT was the lead provider. The Trust's main Lecture Theatre was initially configured as a staff

vaccination hub, but at the point it became operational the national requirement changed and for the first two weeks, appointments were prioritised for people over 80 and care home staff. Appointments have continued to be offered in line with the JCVI prioritisation and guidance issued nationally. We have continued to work with partners across Bradford districts in the rollout of the vaccine; from May 2021 the hub has paused the administration of vaccines with responsibility now entrusted to community hubs. We aim to have the population of Bradford vaccinated by summer 2021.

11.2 Learning

Bradford Teaching Hospitals remains an integral part of a wider health system. Having taken on lead and support roles within the system during the pandemic, we found partnership working has taken significant leaps into becoming the standard way of working. Progress has been made by all partners as the Act As One programme has become further embedded and channels for working together have been established - a foundation which we're intent on building upon.

QR Plaster Codes

Our Bradford Plaster Room has used paper based advice for many years. We found that there was a pattern where patients were either not understanding or not reading the information on these leaflets. This resulted in patients having to seek help or attend hospital for issues that were easily preventable, and stretched the services' capacity to its limits. The introduction of Quick Response (QR) codes on Plaster Room patients provided an improve experience, easier access to information using smartphones and a lower demand on the service post treatment.

The aim was to utilise smartphones as the majority of patients own a device, allowing instant access to information 24/7, removing the risk of paper information being lost and reducing dependency on the service post cast application/treatment. With the wealth of information available online, we wanted to create content patients will find easy to access and understand.

The Plaster Room worked with Bradford University Working Academy to design a website which aimed to redirect patients using QR codes that were specific to the type of cast applied to the individual patient; easily accessed time and time again by scanning the code attached to the cast. These provided straight forward and easily understandable information with links to other material – for example, videos on- cast removal – physio exercises – and care of the cast. Key achievements included –

- Reduction of appointments from 30 down to an average of 5 appointments booked per week.

Time invested by staff and patients has been reduced

- Reduced number of hospital appointments, casts and use of transport contributing to our carbon reduction strategy. Less printing of information material as it's now available online.

- Reduction of risk from unnecessary attendance in hospital and complications regarding casts

11. Communities

12.1 Embracing diversity

At the point of discharge we interviewed many COVID-19 patients, from all backgrounds and ethnicities, to give a real-time picture of the severity of COVID-19 (to encourage communities to practise infection prevention and social distancing). We conducted these interviews in the most common languages of the local community – English, Urdu, Pahari / Punjabi, Polish, Czech / Slovak, British Sign Language (BSL), using our multi-lingual Trust staff, including the chaplaincy and our medical teams.

With the pandemic shining a light on diversity and inclusion, there has been renewed focus from our colleagues on equality and diversity. The Trust has responded and an Equality and Diversity Council (EDC) has been established. The purpose of the EDC is to enable the Trust Board to address and fulfil its responsibilities for Diversity and Inclusion and provide strategic direction, leadership and support for promoting and maintaining equality, diversity and inclusion across the Trust.

Health inequalities experienced in deprived communities has also made headlines. Our Trust has sharpened its focus by becoming more integrated with the wider system to ensure that changes are made on an appropriate scale. The Trust recognises the scale of change required is far beyond anything a single organisation can achieve.

12.2 Laying the groundwork

Our Well Bradford programme activity focused on maintaining engagement with partners and connecting the Trust to the community. Well Bradford sought opportunities for collaboration between partners enabling them to support one another with their COVID-19 related efforts.

Our patient and public involvement work continued to engage our members, patients on wards, visitors and communities across Bradford. The Together Girlington partnership forum (focusing on the environment, business and health) formed during the pandemic has been held bi-weekly since September 2020. The forum has a wide spectrum of representatives stretching across schools, the local authority, community groups, residents and local businesses.

12.3 What we learned

The pandemic reaffirmed the importance our communities and their diversity has on the delivery of our operations in particular how we effectively keep them informed. We now have an increased focus on patient and public involvement whereby workstreams linked to community engagement from around the trust are reconciling to deliver a cohesive approach to community focused communications. We often hear back from patients or family members who want to 'give back' to the hospital after treatment. The communities' donations have humbled us - we'll continue to provide high quality care and to engage better with them.

We realise the extent of the health inequalities and the time it will take to address these. However, we're committed to the long journey and looking forward to with the partners, staff and communities in ensuring health inequalities are reduced.

12. Capital, Estates and Facilities

13.1 Safe working

During the pandemic we had to ensure that both our clinical and non-clinical staff were working safely and following national guidelines on social distancing. Clinical best practice as overseen by the Clinical Reference Group went a long way to ensuring that clinical staff were protected as far as possible.

However for non-clinical staff, a Safe Working Group (SWG) was set up to ensure social distancing and safe working in non-clinical areas. As the work of the SWG progressed joint working with clinical areas and operational management became more common.

Self-assessments specifically for clinical and non-clinical areas were developed with input from specialist staff and were issued to the relevant Clinical Business Unit General Managers and delegated Corporate Leads with a comprehensive guidance pack in June 2020. Completed assessments were received at a central point, collated and quality checked. Where areas were self-assessed as COVID-19 secure a safe working certificate was issued. A programme of spot checks was then used to verify the rigour with which self-assessments had been undertaken.

At the beginning of the COVID-19 pandemic, it quickly became apparent that the requirement for social distancing would drastically reduce our Trust-wide office capacity. This was confirmed by a high level review undertaken in March 2020 which suggested that COVID-19 could reduce our capacity by as much as half.

The immediate impact of this reduction in capacity was mitigated by many members of staff either working from home or undertaking alternative, non-office-based, roles across the Trust. An example of this was seen in the administrative offices at Daisy Bank where a significant number of staff in corporate functions worked remotely, either attending the Trust on a rota basis or in some cases not at all. For example, in the first wave this allowed a significant number of Dietetics staff to be relocated out of accommodation in clinical areas into the space vacated by Finance team members.

This is an arrangement that is still in place over 12 months later and has recently been extended to allow staff in unfit accommodation to be relocated.

Alternative ways of working have been developed and implemented. Further work is underway to develop these methods of remote working and hot desking and to explore adopting them on a more permanent basis.

13.2 Oxygen considerations

Before the pandemic, the use of oxygen was defined and limited to a subset of services. Due to COVID-19 the use of oxygen changed significantly. One of the issues the Trust experienced is that while beds have oxygen next to them, they have never needed such a large flow of oxygen on the ward which was not possible at the start. Certainly, the situation for oxygen was mirrored across the country with one hospital declaring a serious incident as it approached the point when it would have been unable to provide oxygen to patients who needed it.

Moreover, there was a realisation that the diameter of the pipes coming into the hospital had to be considered for the flow of oxygen evenly across the site. Oxygen understandably became a large concern to the extent emergency works were carried out to increase the capacity on site which was predominantly to add a second oxygen supply cylinder to increase the capacity on site.

13.2 Working with partners to increase operational capacity

Selected cancer services at BTHFT were temporarily relocated to our local independent sector provider, Ramsay Yorkshire Clinic, to protect high-risk patients during the COVID-19 crisis and continue delivery of timely diagnosis and intervention. Haematology and Medical Oncology cancer services from Ward 16 at Bradford Royal Infirmary operated as normal from the Yorkshire Clinic site and the transfer of all Breast Surgery and elements Head and Neck Surgery, Gynaecology, Urology and Plastic surgery were invaluable. In addition transfer of endoscopy to Westcliffe and the Yorkshire Clinic provided BTHFT with the internal to focus on Cancer diagnosis when capacity was limited.

In addition to cancer care a collaborative relationship with Airedale, independent sector partners and the CCG has allowed used access additional capacity in the independent sector for clinical priority cases throughout the pandemic and now as we recover the same relationship will help us to deliver care for patients that have been waiting the longest for surgery.

Chemotherapy delivery and the Phlebotomy service (blood) for Haematology and Oncology patients, as well as Haemophilia services also relocated to the clinic. Haematology and Medical Oncology outpatients who required face-to-face are being triaged to the site. Transfusion delivery, however, remains at Bradford Royal Infirmary.

13.3 What we learned

The complexity and age of our estate provided many challenges in ensuring patients and staff were safe. Ultimately, many tasks were carried out in parallel - offices swaps, enabling provision of working from home, restricting access and providing services off site. While the BTHFT sites could be improved in terms of structure and layout, our estate utilisation is anticipated to be more efficient in the future following the changes we've made during the pandemic.

Our partners' commitment to treating patients helped in ensuring vulnerable patients continued with their treatment throughout the pandemic. Further opportunities to maximise our existing estate by working with partners across the district are being explored which can be seen with sites such as Westcliffe Healthcare in Eccleshill where selected cancer work will be delivered from over the coming months.

Installation of additional dialysis machines

Towards the peak of the pandemic, our Renal team oversaw the installation of eight new dialysis stations at BRI. The Renal Technicians worked diligently to install additional haemodialysis therapy machines and the reverse osmosis water treatment units that go with them.

These ensure kidney dialysis patients on COVID-19 and non-COVID-19 wards are able to receive the dialysis treatment they need. Although a job of this size would normally take months to schedule, begin and complete, the new machines had been installed in little more than a fortnight – a massive benefit for the Renal patients at BRI.

13. Building-back better

14.1 Virtual services

Virtual services can include anything from e-consults and telephone appointments to virtual wards – in short, how secondary care services are delivered in alternative settings when compared to traditional face to face appointments and hospital attendance/admission. Prior to the pandemic, we had some virtual ways of working but COVID-19 has very much accelerated their development and use. The environment dictated by COVID-19 has sparked ideas across the Trust that are either completely new or previously may have needed a catalyst to progression. This will be an important part of our refreshed Corporate Strategy later in 2021.

14.2 Alternatives to our estate

Our estate has served the Bradford population since being built in 1936 and joining the NHS in 1948. However, as times, demands and needs have changed so has the requirement of our estate. As a Trust we've aimed to provide high quality care at all times. The pandemic has highlighted that this won't always be possible from our current estate.

As we take steps into the next phase, efficient utilisation of our estate is a key priority of the Trust. Plans are being developed to explore how services can best utilise our estate through adoption of virtual services, reconfiguration of pathways and delivering services from sites across Bradford.

14.3 Supporting the reduction in health inequalities

Combined with the focus on Population Health Management by our commissioners, the Trust is committed to supporting the reduction in health inequalities in Bradford. Utilising our Equality, Diversity and Inclusion team and network, we'll continue to identify areas for local action on health inequalities, based on the evidence as part of the Reducing Inequalities in City Programme (RIC) and provide leadership to promote effective partnership working to reduce health inequalities. Equally importantly, we have a commitment to staff and patients - to ensure diversity and inclusion considerations are embedded in the day to day activity of the Trust, whether in terms of service design and delivery, patient care or workforce matters.

14.4 Restore and restart

Like many other trusts, BTHFT is working on restarting many of the services that were cancelled due to COVID-19. For sustainable change, all plans we create need to be based on a system wide response which includes all health and care partners including the independent sector who will be equal partners in developing and agreeing new pathways/new ways of working.

Many factors are being considered including safe working environments, protection of staff and home working options to provide remote appointments. We will prioritise digital innovation – expand and embed the use of digital platforms for patient care/home working and identify opportunities for expansion of the use of home monitoring devices (already used for cardiac patients and paediatrics).

Our teams are busy exploring the options and the safest way to restart the services aligned to our capacity and demand modelling.

14.5 In summary

TO COMPLETE FOLLOWING FINALISATION OF THE ABOVE

Appendices

Appendix 1 – PPE

The Successes

- SUFFICIENCY – we have had sufficient supplies of PPE to meet our needs at all times.
- MUTUAL AID – early in the Pandemic we established a regional system of sharing PPE across the secondary care sector which has helped to ensure sufficiency of supplies.
- REGIONAL STORE – The establishment of a regional store of supplies has supported the provision of Mutual Aid and also provided a regional contingency of PPE.
- PARALLEL SOURCING – Procurement have been able to parallel source PPE supplies where national supplies have not been available. This has been done on a strictly as need basis and without engaging in large scale direct purchasing from suppliers or intermediaries unknown to the Trust and/ or on materially unfavourable terms. The Trust's strategic relationship with Bunzl has been very helpful in this regard.
- DEDICATED STAFF – Procurement colleagues have shown remarkable dedication and flexibility.
- PPE HUB – very early into the Pandemic, a physical hub and an electronic system for the management of our stock (counting-in, counting-out, storage, distribution and recording) and the monitoring of our usage was established. We share this data at both regional and national levels.
- PPE PROGRAMME BOARD – We have established a board comprised of senior individuals from across the ICS to provide a forum for communication, escalation and resolution of common PPE related issues.
- CLINICAL REFERENCE GROUP – We have established this ICS wide grouping of senior clinicians to ensure a more consistent approach to PPE.
- NON PPE PROCUREMENT – Throughout the Pandemic Procurement have continued to source non-PPE related kit and supplies of clinical and non-clinical consumables, despite supply chain disruptions. We have therefore continued to carry out the majority of our business as usual activities in addition to the significant efforts to ensure the Trust has a sufficiency of appropriate PPE at all times.

The Challenges

- CONTINGENCY STOCKS – In light of the international shortage of PPE, ensuring that the Trust had a sufficiency of PPE was extremely difficult.
- FORWARD VISIBILITY OF SUPPLIES – In the first few months of the Pandemic we had neither visibility of what had been ordered by the centre nor any certainty as to what we could

expect to receive from the PPE Push which made the task of ensuring we had a sufficient supply of PPE very difficult.

- **COLLABORATION WAS SLOW** – In the first 3 months of the pandemic (February – April 2020) there was little or no system wide management or sharing of PPE. In the face of PPE shortages and resource constraints, Trust Procurement Leads became focussed on the needs of their individual Trusts rather than the needs of the ‘system’ as a whole. This led to Trusts effectively competing for the same products and in some cases making independent decisions to purchase PPE in bulk. However, we managed through this period without resorting to large scale direct purchasing from suppliers or intermediaries unknown to the Trust and/ or on materially unfavourable terms.
- **AD-HOC DISTRIBUTION** – In the early part of the Pandemic the distribution of PPE by the centre was sub-optimal. At one point every Trust, no matter their size and need, was receiving the same volumes of PPE supplies. Generally, the supplies of PPE from the Push did not align with the needs of the Trust. The situation improved gradually after first, the Army and then, Clipper took over the logistics from NHS Supply Chain. However, from October last year, we have had a system which takes into account the specific needs and requirements of individual Trusts.
- **QUALITY OF SUPPLIES** – The quality of the PPE we have received has been variable. The situation has, however, improved over time.
- **RESOURCING** – Dealing with the Pandemic has placed considerable additional burden on the Procurement function at the Trust. We have relied heavily on the massive effort and goodwill of colleagues to get through this period. Looking forward, we need to ensure that the team has greater capacity so as to be better prepared to respond future challenges.
- **STORAGE** – We are using significantly greater volumes of PPE than we did prior to the outbreak of the Pandemic. As availability of supplies has improved we have had difficulties in finding suitable storage space. Looking forward, we need to build more storage capacity to allow us to better manage our stocks and to better mitigate against the risk of shortages.