Northern Health & Social Care Trust
Learning the Lessons from COVID-19 (Wave 1)
Final Report
28 August 2020

CONTENTS

1 CONTEXT, INTRODUCTION AND PURPOSE

1.1 Context and Introduction

As part of reset to 'new normal' post wave 1 COVID-19 it is necessary to learn lessons from the rapid changes/adaptations which have been deployed in preparedness and response. In particular to:

- Identify service/system changes/adaptions made and their associated learning and impact, and to assess the need to retain/cease/scale-up - informing prioritisation of services classified as 'retain or scale-up'
- Identify the routine aspects of service which have stopped or reduced, and the associated impact with a view to inform 'restart' or abandon.
- Share learning appropriately across the Northern Area and regionally across the HSC

1.2 Rapid Cycles of Change and Agile Learning

A large amount of change has taken place in a short period of time, which in many cases required innovative and previously untested solutions. This has required staff to develop solutions to problems - make predictions about what might work, quickly test ideas and adapt and modify them before implementing a solution. Even then with evolving science and new information on COVID-19 in many cases it has been a constant process of adaptation. This cycle of rapid testing, learning, adaptation and adoption is the very basis of the Model of Improvement (*P*lan, *D*o, *S*tudy, *A*ct - PDSA). On this basis, the Model for Improvement has been applied retrospectively to gather information on what has worked well and what has not worked well, as well as identifying other potential improvements to test. In total circa **120 PDSA templates** were completed by Divisions across the NHSCT. This along with some **42 stories** shared by staff inform the analysis contained in this report.

1.3 Purpose of this Document

In June 2020 the Senior Management Team of the NHSCT agreed a four-step model to gather and analyse learning from the first wave of preparedness and response to COVID-19 in the Northern Health and Social Care Trust area.
The four-steps are:

i. Application of the Model for Improvement and subsequent analysis of outcomes; categorising changes into 4 areas (i) Patient Care (ii) Operations (iii) Staff Support and Wellbeing and (iv) Workforce
ii. Impact Assessment to further draw out the impact of the changes identified through the Model of Improvement
iii. In-depth Human Factor and Ergonomics Assessment of ICU, ED and COVID wards
iv. Providing learning which can inform the Trust Reset Programme

This document summarises the findings of the analysis associated with the model and the associated next steps.

2 LEARNING THEMES

2.1 Summary of the Learning

There has not been one part of the NHSCT systems or workforce which has not been impacted by COVID-19. Every Division and service has taken up the challenge of rapid change and adaptation with the overall aim of responding to COVID-19, providing safe and appropriate services for patients, whilst keeping staff safe.

The driver diagram in **Figure 1** identifies the range of **interventions applied by Division.**

Figure 2 sets out the **types of interventions deployed** under the areas of:

- Virtual care;
- Processes;
- Environment;
- Keeping staff well and virtual working; and
- Workforce

Figure 1
NHSCT – COVID Learning
– over 120 intervention types

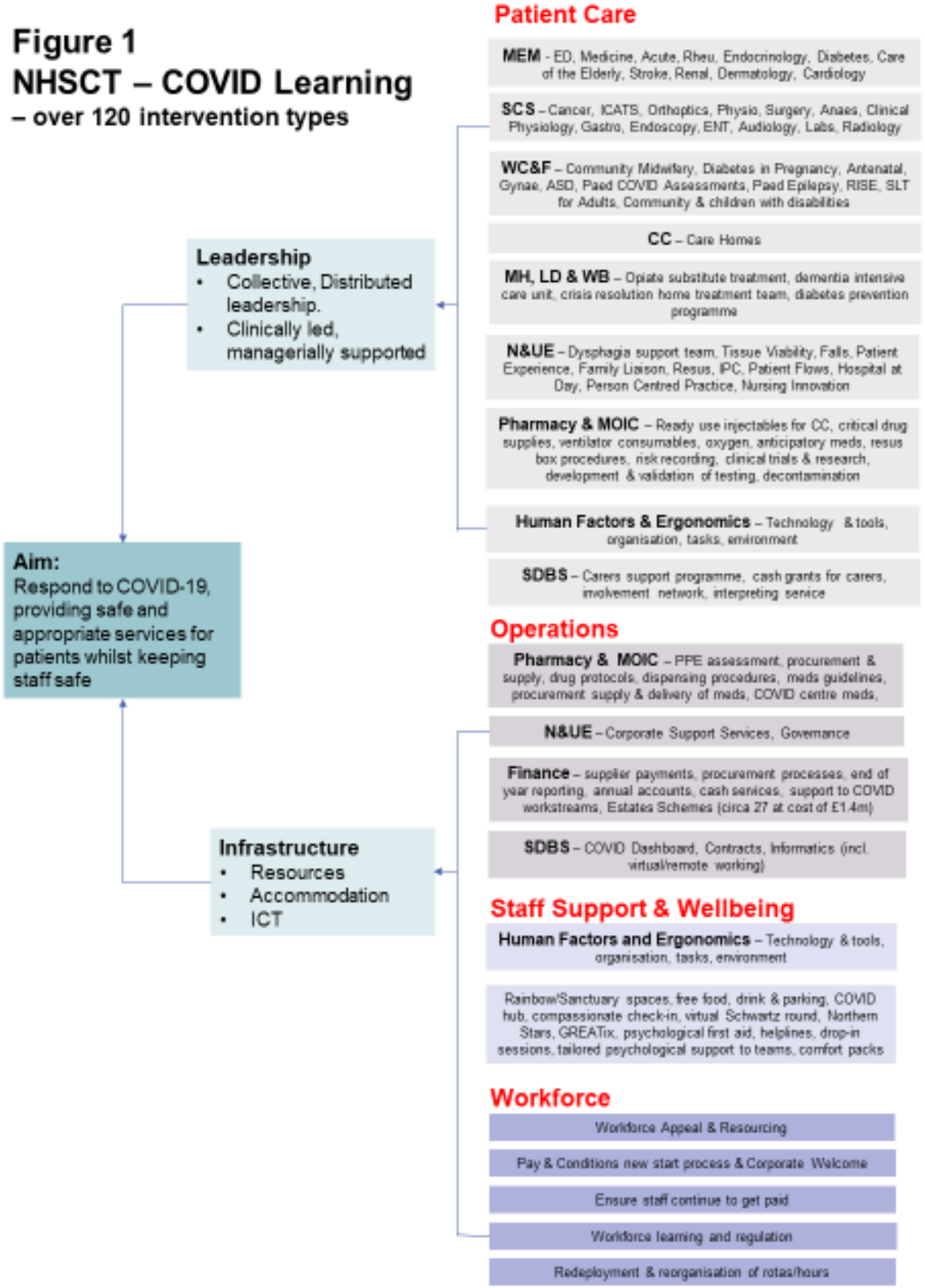
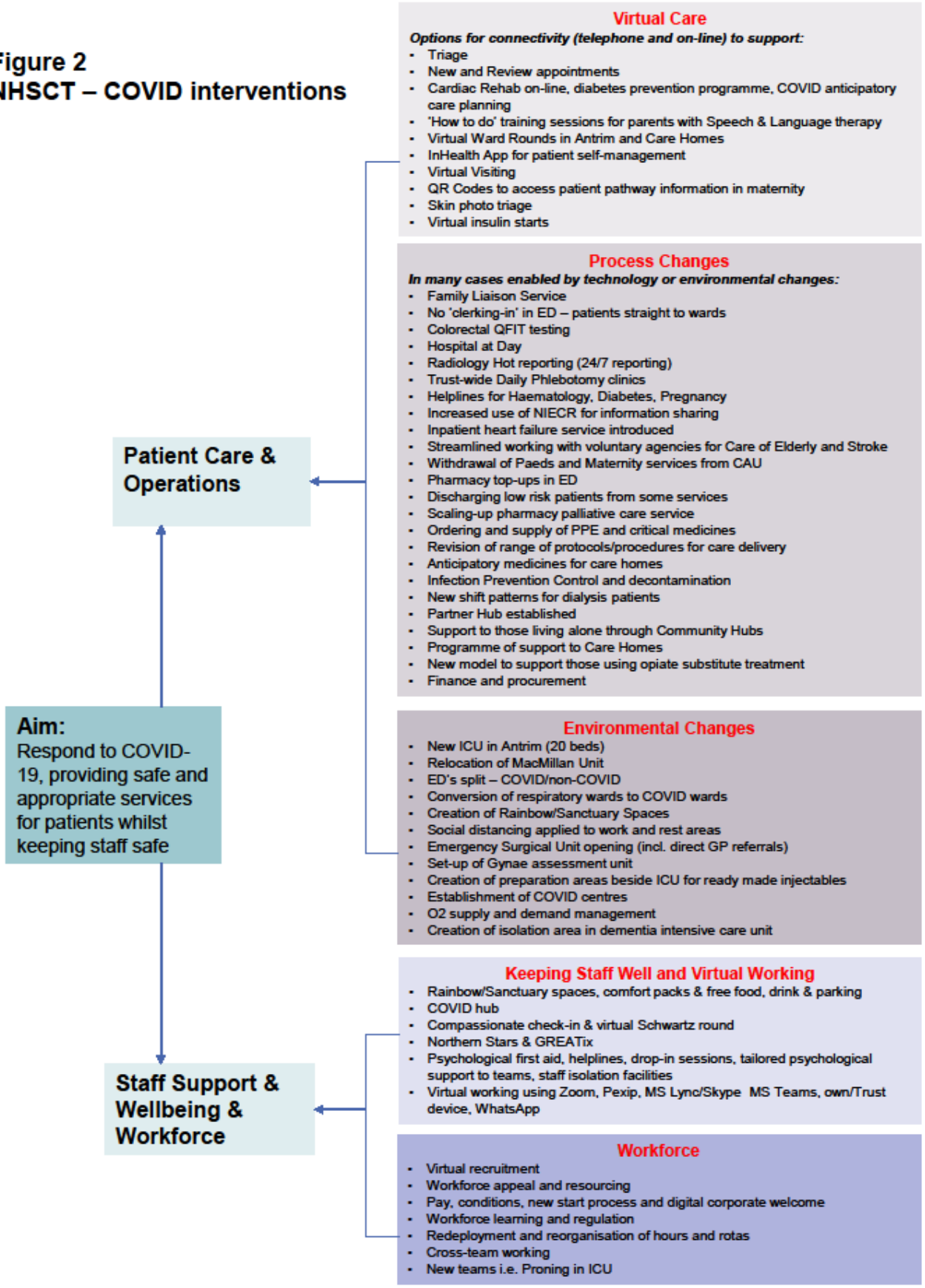


Figure 2
NHSCT – COVID interventions



2.2 What has worked well/What do we wish to retain/scale-up?

The word cloud below summaries the themes which have presented as those most strongly associated with working well during the COVID response, and adaptations which staff would wish to see retained, and in some cases, scaled-up.

2.3 What did we do that could be improved upon?

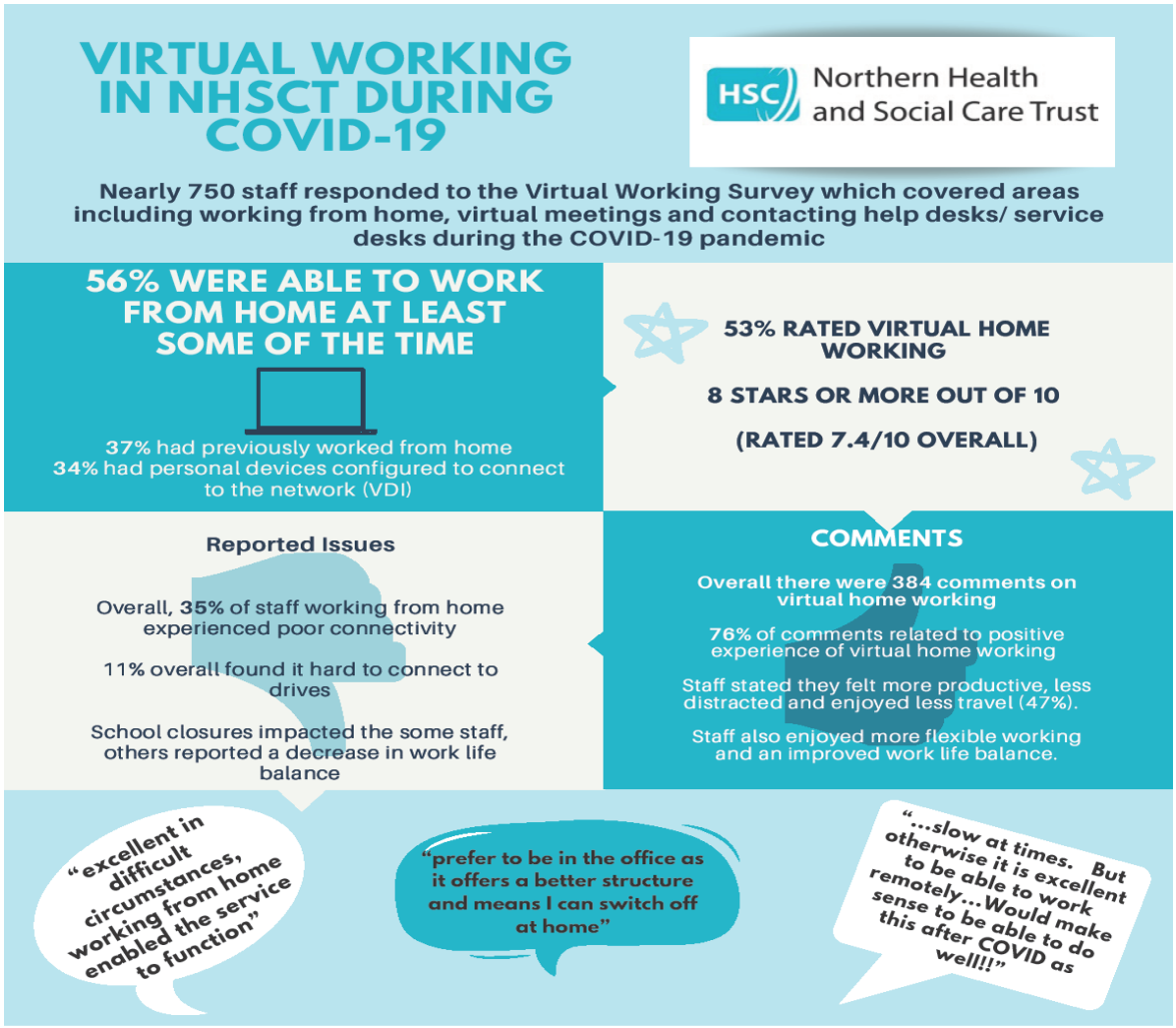
The word cloud below summarises the adaptations which would need improvement to be sustained or scaled-up.

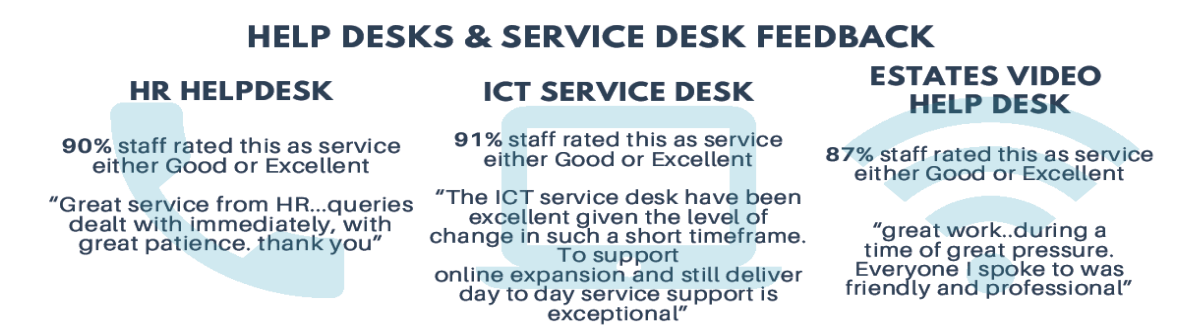
What can be seen from the analysis is the common threads of interventions that were adopted across services. In particular, **virtual care and virtual working have been very strong enablers to service delivery and maintaining staff safety and wellbeing.** Given the importance that virtual care/working has played in the COVID-19 response the Trust has undertaken specific in-depth analysis associated with, virtual working, virtual care (service user and staff perspectives) and virtual recruitment. The outcomes from this analysis is presented in section 3 of this report.

3 WORKING VIRTUALLY

As part of the COVID response the NHSCT established a range of methods to facilitate scale-up of virtual working for staff, virtual patient/service user consultations/contact, virtual visiting and virtual recruitment for social work. All of these process have been evaluated via survey feedback – the results of which are included in the sections which follow.

3.1 Virtual Working





Messages of Thanks

"Just want to say thanks to all the ICT staff who made a real big effort on all of our behalf to get systems in place to make working for home even possible"

"Thanks for setting this up and hopefully we will continue to use these platforms in future for future meetings and training etc."

"Really appreciate being able to work for home and the effort made by the Trust to accommodate this, thank you."

"Thank you for making these facilities available to so many of us at this difficult time"

Home Working

"Can't believe how good my experience has been and this way forward could save our NHS a lot of money...I know sometimes we need to attend meeting etc. in person but we don't need to be in an office the rest of the time."

"I have been pleasantly surprised at how I have been able to continue to provide a high level of service within my home environment...I am confident that I can ensure data security within my home. I feel that remote working would be something I would like to continue in the future."

"I miss the social contact with my team, such as being able to physically turn round and ask advice immediately."

Working Experience

"Our patients have access to virtual uploads for glucose meters and although it has taken some time to get people set up, the families do appear to appreciate this aspect of their care"

"...I have had very positive conversations with the parents I work with...I have been able to provide tailored resources and information to the parents I am involved with. I have uploaded videos of myself demonstrating signs for parents to access."

"I don't think it would work with my client base who are all older- no access to technology, anxiety around using technology, preference for face to face- esp. with difficult diagnosis"

"...The experience has definitely highlighted better ways of providing clinical service and realisation that face-to-face consultations and traveling to numerous geographical areas within the trust to see clients not always necessary..."

Needs identified

"Need to find a way to print patient letters and options for posting letters to clients."

"Greater agreement within primary care to receive emails."

"The Trust does not have a uniform approach to home working...This has caused some resentment with staff."

"...we could use zoom in a confidential way - i.e. with the use of headsets...I am very conscious of other phone calls happening in the office and other staff hearing my assessment and personal details being discussed."

"Arranging interpreting services has been very difficult. As a therapeutic service we require that our clients have the same interpreter for all sessions. This was not possible as there was no contract arranged for the local interpreter service to provide telephone appointments...This is very disruptive for psychological therapy."

How much could virtual working save the Trust?

If **100 people**, claiming £1000 per annum each on travel move to online meetings this could reduce Trust travel costs by **£100,000** (equating to 175,438 miles)

These 100 people could collectively reclaim **3,508 hours** per annum of time spent on the road! A potential cost avoidance of **£70,160*** of time

*Cost based on Mid point of Band 5 travelling, on average, 50 mph

These 100 people would also reduce the carbon dioxide emissions by nearly **55,656 kg** (55.6 tonnes)**

That's the same amount of emissions used when charging **7,097,933 smart phones**. It also has the same impact as planting **920 tree saplings** over 10 years

**Based on 50% Petrol and 50% Diesel cars and fuel consumption set at 35mpg

That is a annual cost avoidance of **£170,460** for just 100 people, and **55,656 kgs <u>less</u> CO2** emissions...
Food for thought

58% WERE INVOLVED IN CLINICAL OR NON-CLINICAL VIRTUAL MEETINGS

Zoom was used for **64%** of all virtual meetings, Microsoft Lync/ Skype for Business for **29%** and Pexip **4%**

Other platforms used included WhatsApp, Trust Conferencing facilities, and Facetime

69% RATED VIRTUAL MEETINGS 7 STARS OR MORE OUT OF 10

(RATED 7.0/10 OVERALL)

Whilst Face to Face meetings are still preferred, many staff stated they would like virtual meetings to be an option following the COVID-19 pandemic

WHAT STAFF DISLIKED MOST

Of 432 negative comments

49% experienced technical difficulties.

Staff felt meetings were harder to chair, or contribute to, whilst others felt talked over (**12%**)

Others disliked the time limit (**6%**)or just preferred being face to face (**9%**).

WHAT STAFF LIKED MOST

Of 582 positive comments

27% stated they liked not travelling, and the time this saved.

It also helped staff to continue working and feel safe (**12%**)

Staff liked seeing who they were talking to (**12%**), and felt it improved communication (**8%**).

"...well done to Trust IT for enabling the numbers of staff to explore and utilise these new modes of working. We have all learned to adapt"

"Virtual meetings...should continue to be the way forward, cuts down on travel time, cost, emissions, too many people packed into small meetings rooms, reduces stress for staff. Please do not let the trust go back to bad habits and old ways of working"

"Feel face to face meeting is required for initial assessments with service users but then could do some follow up via phone (which we already did pre covid) or via video (could introduce more).

RECOMMENDATIONS

Many staff expressed that they would like to continue working from home as an option in the future - *Explore practicalities of this even on a part time basis, including help desk and service desk staff. May help facilitate staff on long term sick leave to return to work earlier, where appropriate.*

A number of staff stated that they were not given permission to access virtual home working - *Explore extending to other staff.*

Online meetings provide the Trust with an opportunity to make a number of savings associated with Travel costs - *Promote ongoing use of online meetings as an option to increase savings opportunities, or reallocation of funding back into the service.*

Some staff found online meetings challenging to manage or inappropriate for service users. - *Consider developing and issuing suggested virtual meeting guidance, including meeting etiquette tips, when to use which platform, Also, reissue guidance to reinforce appropriate use of email and promote POPI training.*

Some staff have identified areas for improvement for virtual working - *Review, scope and implement changes based on feedback*

3.1.1 Scaling Up Opportunities Presented by Virtual Working

The analysis presented above has been scaled-up to estimate the potential opportunity of scaling-up and making sustainable the model of virtual working applied by staff during COVID response. The methodology applied to this is:

- Based on results of virtual working survey (750 respondents)
- 58% of whom indicated that they would normally travel for meetings
- Application of 58% to all staff in Divisions Band 6 and above (equates to 2,107 staff)
- Assuming that each staff member claimed £1k mileage per annum

The scale of opportunity this presents per annum is:

- Cost avoidance = £1.2m
- Hours saved = 24,021
- Avoided CO2 emissions = 685,581- equivalent to:
    - ✓ 87.5m smart phone batteries being charged; *or*
    - ✓ 29k recycling bags of rubbish to landfill; *or*
    - ✓ Carbon sequestered by 11k tree seedlings grown for 10 years

There is no doubt that scaling and sustaining a virtual working approach for staff has the potential to yield significant benefits associated with cost avoidance, hours 'saved' (that could be more effectively applied elsewhere) and positive environmental impacts.

3.2 Virtual Care

This section of the report summaries the analysis of the experience of virtual care/consultations from the perspectives of service users and staff. It also sets out the process and impact of the implementation of virtual visiting.

3.2.1 Virtual Care – Patient Experience

Service user experience of virtual consultations was undertaken using Survey Monkey over the period 16 June-10 July 2020, with 235 respondents, 60% of whom were aged between 16-65 years. 39% of respondents were rural, 37% urban and 22% coastal, with 40% indicating disability – 8 of whom indicated that their disability required them to have some assistance with the virtual consultation. The summary of the analysis of responses is:

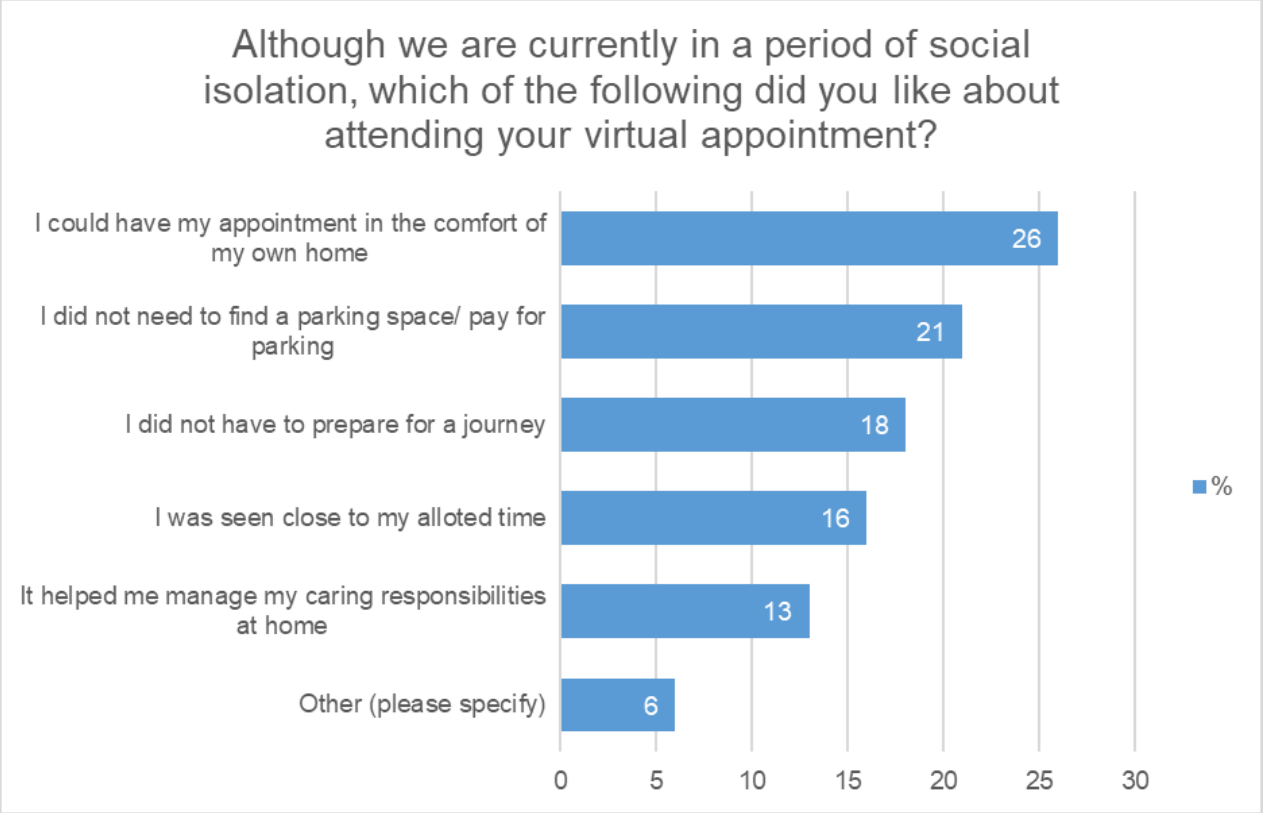
- 71% contact by phone
- 29% video – 89% Zoom, 8% FaceTime/WhatsApp, 3% Pexip
- 75% of video contacts found it 'easy to do'
- 18% indicating 'challenging' or 'needed help'
- Quality of sound rated 4.24 out of 5
- 5% of video contacts indicated they would have preferred phone contact
- 60% respondents prefer face-to-face, video 45% and telephone 43%

- 33% did not identify the service to which the consultation related. For those that did:
  - Dietetics 15%
  - Paed. Dietetics 8%
  - Physio 5%
  - Speech & Language 4%
  - Gastro 3%

**80% of above were all review appointments*

- 43% were able to select an appointment time, with 2.5% selecting before 9am and the rest 'in hours'
- 82% rated the quality of information received before the appointment as 'good'; 4% 'poor'
- 56% indicated that the virtual appointment 'met their needs'; 12% rating it as either 'excellent' or 'great'
- Overall 22% suggested the format needed to be considered, either in the method being used (12%), or timeslots provided or chosen (10%). A further 10% stated that their appointment was either not on time, or no one was at their appointment.

Service User Perceived Benefits of Virtual Appointment



Qualitative Feedback from Service Users

- *"Appointment was 17 April at height of covid 19 crisis doing this remotely gave peace of mind, reassurance and confidence in how we were doing things."*
- *"We only got 2 days notice for the appointment"*

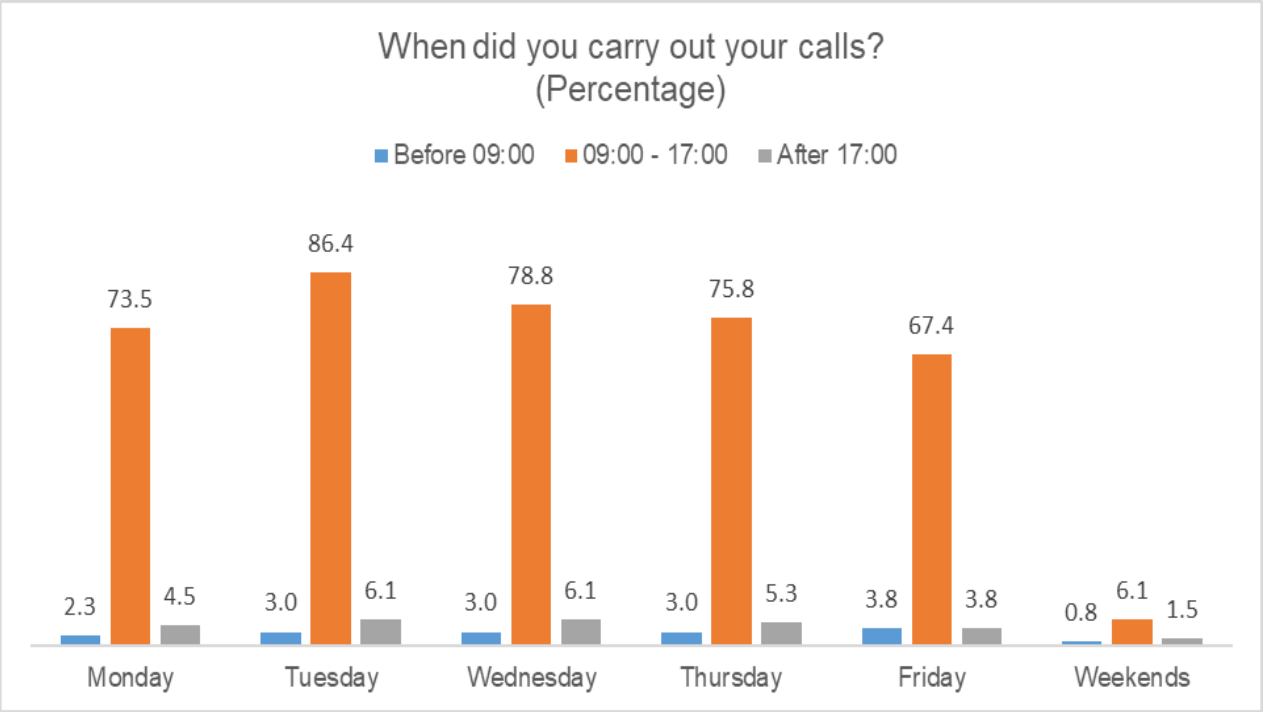
- *"From the letter I received to tell me about the appointment I wasn't sure who I would be talking to whether medical or admin staff to relay my messages"*
- *"Letter should have specified at least a 2 hour time slot. Very inconvenient whilst at work".*

Key Learning Points from Service User Experience of Virtual Consultations

- Respondents liked virtual clinics, but this is not suitable for everyone – a blend of contact is needed. Whilst virtual sessions worked well for many, there are a number of times where responses indicated a different approach would be welcome. In particular where: Specifically when:
  - two working or separated parents need/wish to attend an appointment together in relation to their child,
  - someone has a disability or other cognitive impairment and needs another family member/ carer to support them
  - the service user is hard of hearing and struggles to hear on the call
  - a service user suffers from anxiety either on the phone or video call
  - technology is not available or limited due to geographic location
  - the service user needs to show the clinician something, such as a skin lesion or movement issues.
- Communication key to virtual consultations working well. Respondents are in favour of text messaging or leaflets in advance of their appointment
- There is no overwhelming appetite for video appointments. In total only 17% would have preferred a video call. Alternatively 5% of those who had a video appointment, stated they would have liked a telephone appointment.
- Service users prefer to remain in the comfort of their home
- A 1hr timeslot for the appointment is preferred

3.2.2 Virtual Care – Staff Experience

- 132 respondents
- Platform – 59% phone, 39% Zoom, 1% Pexip/WhatsApp
- 92% reviews, 63% first appointments, 22% triage
- Ease of connectivity rated 4 out of 5 by 76%
- Most commonly cited problem – connectivity
- 65% indicated virtual clinics helped them work more flexibly
- Service users didn't always pick up calls -'unknown caller' effect
- Incomplete or old numbers are an issue
- There is no dedicated space for virtual clinics – privacy can be an issue
- Limitations of virtual clinics for some clients, particularly those with mental health issues or those who require a comprehensive assessment
- Building a rapport with a service user can be more difficult virtually
- 50.8% of respondents stated they would like to continue use of virtual clinics, 28.8% stated that this would only be appropriate for a number of service users, or appointment type, such as initial assessments. 5.3% of staff stated that it would be useful to use alongside face to face clinics, whilst a total of 15.1% felt that this would not be suitable beyond the pandemic.
- 35% of respondents indicated that virtual clinics had reduced DNA rates



Qualitative Feedback from Staff

- *"It can be difficult when a service user's mental state has significantly deteriorated or they are in crisis."*
- *"Quality not good enough for reliable transcription of speech errors"*
- *"As a physio, it is useful as part of assessment process when client is sitting. However it has limited use regarding assessing muscle tone and is risky if client stands and loses balance, which is a possibility post-stroke."*
- *"…not being able to "see" clients or observe interactions and markers of development, parenting styles etc. leaves gaps in our usual information gathering and treatment planning."*
- *"A number of families have not responded to telephone contact which is a concern for vulnerable children."*
- *"It's also not helpful in identifying safeguarding issues or compliance with advice."*
- *"Concern around being unable to fully assess the patient's problems and relying on subjective information from the patient - therefore increased risk of missing vital information. Also, concern around getting misinformation from patients e.g. 'strong and silent types' underreporting their signs and symptoms versus patients who are catastrophizing"*

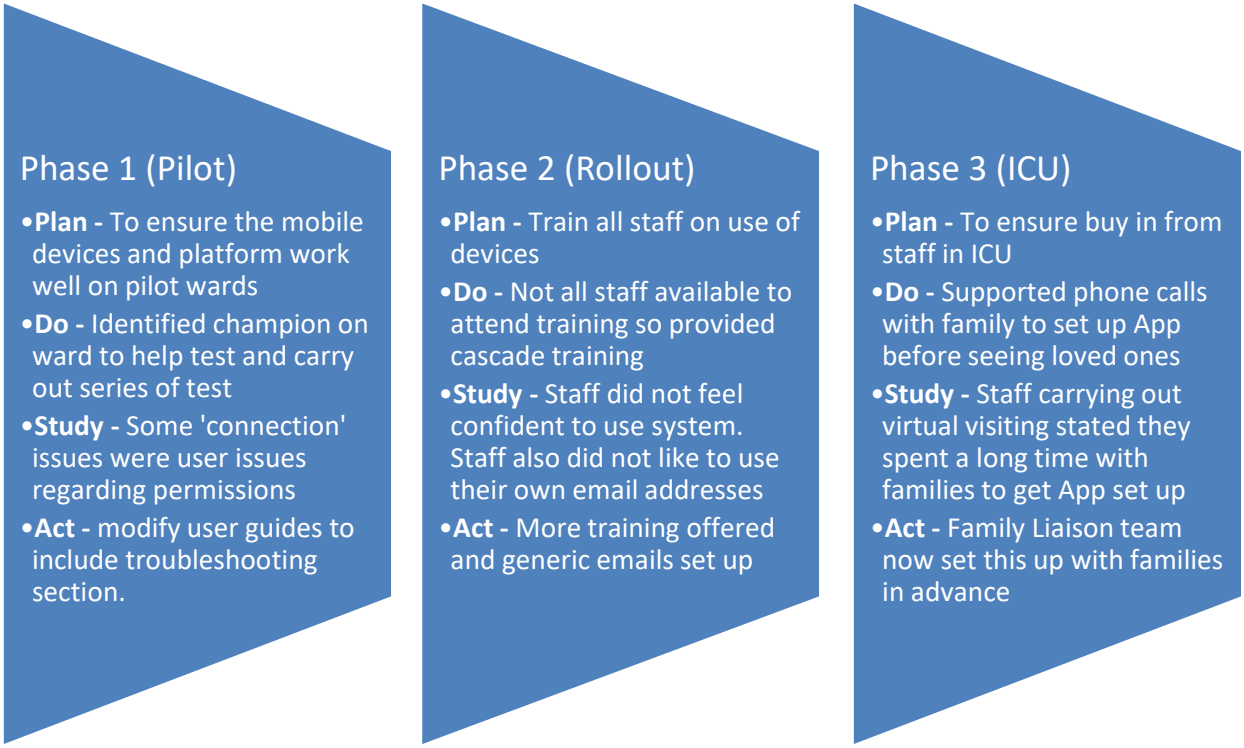
3.2.3 Virtual Visiting

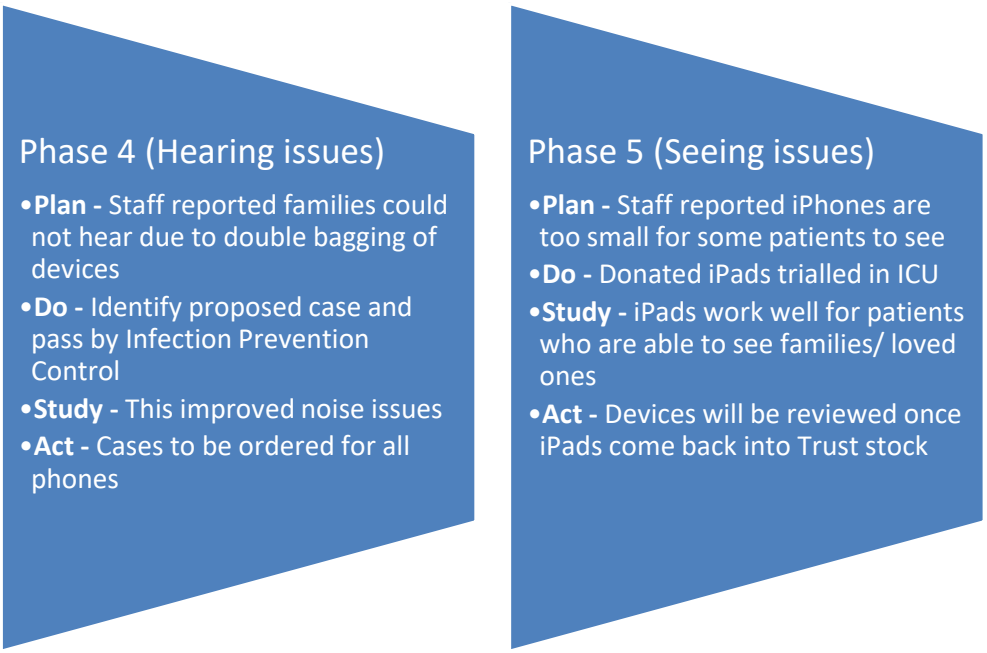
Prior to COVID19 there were very few restrictions on relatives visiting loved ones, particularly during the actively dying phase. This not only offered comfort and support to the patients but also to the loved ones. Once Northern Ireland was

impacted by lock down and subsequent restrictions placed on visiting, this meant that loved ones had no contact with the patient, nor were they offered the opportunity to say goodbye either before or after the patient passed away.

In the NHSCT virtual visiting was deployed onto the wards in hospitals impacted by COVID19 using iPhones. The virtual visiting platform, Pexip, was chosen to allow staff to not only promote virtual visiting but also to allow clinical conversations to take place in a secure environment. Unlike other platforms, the Northern Trust have control over all aspects of Pexip, therefore removing the risk of third parties storing any sensitive data.

Virtual Visiting was tested and implemented using the Model for Improvement, over 5 PDSA cycles (work associated with phases 4 and 5 is still ongoing):





During the rollout of virtual visiting, an estimated 153 calls and over 12.5 hours of conversations took place using this method of contact.

Hospital	Total number of calls	Total time
Antrim Hospital	129	06:40:03
Causeway Hospital	14	3:27:33
Holywell Hospital	10	2:29:37
Trust Total	153	12:37:13

Qualitative feedback from staff and families has been positive:

"Family extremely pleased that during their outside visit they were able to speak to their Dad and he could hear their voice…it was a great comfort to the family as they could say goodbye."

"Lovely to see mum with our own eyes"

"It was a lovely experience for the family as you could see they were so pleased to see a face at the hospital were there loved one is being cared for. The virtual app was important for this family as it allowed a feeling of being here."

"It was great to see the relatives' faces on screen to put a face to the voices we talk to every day and really helped build the nurse - relative relationship."

3.3 Virtual Recruitment for Social Workers

During the course of COVID, along with all other face to face activities, interviews were stood down across the region. To support those on the front line, the NHSCT carried out interviews to recruit Social Workers virtually. As this process continued,

it extended to recruit these posts regionally, interviewing over 230 candidates. This was the largest recruitment drive of this kind to be conducted virtually within the organisation. Interviews were modified, with only 2 panel members asking questions; the reduction in panel members meant that they could socially distance and still conduct the interview in a shared space. Interviews took place using the App Pexip, an App chosen by the Bronze group to be used for clinical or sensitive conversations. Prior to the interviews taking place, the candidate received a test call to ensure that the App would work well during their interview, with interviews being conducted out of hours, to ensure that this did not impact on others using the platform.

Those who were involved recognised the need for an alternative way to interview and appreciated the efforts to recruit Social Workers during a pandemic. Whilst a number of candidates experienced connectivity issues and had to revert to an alternative means to complete the interview, many felt that it helped them to relax into an otherwise stressful situation, being able to complete interviews in their own home. Panel members and Chairs also saw the benefits to this when it worked well but equally found it challenging when the connectivity failed. As Project Reset now examines how these alternative practices worked, it is clear that when virtual interviews worked, they were very well received, and while face to face is still the preferred option for Panel members and Candidates alike, the preference between virtual and face to face is closing for the latter party. An independent analysis has been developed to look at the interview process and will help decision makers chose the best way forward based on this recent experience.

4 HUMAN FACTORS AND ERGONOMICS

There is extensive learning to be harvested in respect to how we can better support the physical, cognitive and organisational work of health and social care staff in the COVID-19 crisis; and on this basis a more in-depth analysis of human factors and ergonomic adaptations was undertaken, through the application of the SEIPS Model (Systems Engineering Initiative for Patient Safety). SEIPS puts the person at the centre of the analysis and looks at the Technology and Tools, Tasks, Organisation and Environment which surrounds them.

During June 2020 the SEIPS framework was applied in-situ in ICU in Causeway and Antrim Hospitals and ED in Causeway. It was also applied to analysis of the COVID wards in Antrim.

4.1 What have we learned about Human Factors and Ergonomics?

Figure 3 below summarises the learning from the detailed SEIPS analysis, which should feed into any future response to a COVID-19 wave/peak (and in the case of ICU in Antrim the design of the reallocated area and ultimately the new unit).

Figure 3 – Learning from SEIPS Analysis

PERSON
• Staff can be redeployed to ICU and COVID wards and upskilled to become integrated members of the team • Pairing experienced staff with those redeployed works well – allowing new staff to gain confidence and acquire skills before they can become more autonomous, though depending on the area, redeployed staff may never become fully autonomous i.e. all new staff to ICU would continue to be paired with an experienced nurse when allocated to a patient • The classification of nursing roles (A,B &C) in ICU by experience and expertise was helpful in role identity and skills deployment • Some skills are more easily transferable than others i.e. AHPs became well adapted as Proning Team members in ICU • Integration of pharmacy staff into the ICU team, as well as the antimicrobial stewardship input from pharmacy into ward rounds was viewed as a success factor in COVID response • There were some visible signs of anxiety and panic with staff at the outset of the surge – very much a product of the fear of the unknown. Anxiety and panic abated once staff become more confident in the situation and in access to and use of PPE • Use of ED staff in Causeway to create donning and doffing videos helped staff learning (modelling behaviour) • Access to Psychology services by ICU staff was most utilised in Antrim mid-surge, and more latterly in the response – with staff accessing services feeling ‘burnt out’ or as result of effects of PTSD • FFP3 masks are uncomfortable and staff developed pressure sores and blisters as result of wearing PPE

- Heightened awareness amongst staff of the need to protect self first before giving care to others
- Slow for the staff to see patient outcomes, which was difficult for staff – given the level of intervention and treatment. Better understanding now that is the nature of the disease and recovery in ICU is slow. Motivating for staff to see patient recovery and be discharged

ORGANISATION

- Very visible team working – with some reporting that the COVID response further strengthened team working
- High levels of communication between team members – even outside formal setting through the use of WhatsApp, text groups, email, COVID folders with all relevant information etc.
- Just-in-time training for PPE and IPC was a successful model –with staff feeling more confident as a result, increasing the understanding of the IPC role, and improving understanding of aerosol precautions and removal of any complacency about use of appropriate PPE i.e. for intubation
- Creation of new roles such as housekeeper to maintain stocks in ICU in Antrim and 'runners' to supply PPE, clean shoes etc. seen as integral to team
- Portering and support services integral to smooth running of operations
- Identification of team members was challenging in PPE, and human factor interventions were deployed using a coloured sticker system to identify roles and first names. This was well received by the team.
- Pre-prepared IV infusions made up by pharmacy staff in preparation room (created just outside entrance to ICU) made more efficient use of nursing time (a single med prep. can take 15 mins). In addition, there are safety benefits associated with stricter aseptic production in a controlled unit and reduction in use of PPE (as product handling was all conducted in closed unit). These processes also mitigate against risk of infusion preparation error by staff less familiar with critical care meds. Collection and delivery of products into donning areas supplied by covid IV prep area as necessary throughout the day was also beneficial (and supported appropriate use of PPE as above).
- Preparation of information for non-specialist ICU nurses and the use of common IV drug Infusion and Antimicrobial posters was viewed as very helpful and helped reduce cognitive load
- New shift patterns, deferment of annual leave and 7-day working for pharmacy in ICU was seen as essential to manage response
- Flexibility in break times for staff, informed by the staff themselves as opposed to managerially mandated, was viewed as essential given the challenges of working in PPE and the intensity of the work

TOOLS/TECHNOLOGIES

- Communication into the bays in Antrim ICU was improved by the presence of a workstation in each clean room (before entry to the bay) and skype capability into the bay – though additional speakers were

required in bays to combat noise of equipment and hearing restrictions with PPE
- White boards in all rooms in ED in Causeway were used as effective means of communication from staff in bays to staff outside
- Antrim ICU staff benefited from increased access to workstations by nursing staff in new ICU facility, as medical staff had their own office space with workstations for their use. Causeway ICU could benefit from more workstation access, as would A3 & A4 as designated COVID wards in Antrim
- Use of virtual visiting in Antrim ICU and COVID wards and the support of the Family Liaison Team worked well after an initial bedding in period
- Significant number of new tasks undertaken by pharmacists and pharmacy technicians in ICU to support critical care

TASK

- Proning Team established in ICU in Antrim – seen as key to response
- Theatre nurses took on task of intubating patients to release capacity of ICU nurses in Antrim
- Action cards deployed for key tasks in ICU in Antrim and all key tasks from patient entry to ED in Causeway – single, simple, easy reference cards which reduced cognitive load
- Resus Trolley set-up in ICU in Antrim - template for location of all instruments/devices placed on top of trolley so staff are familiar with location and all devices returned to same location – reducing cognitive load
- Range of COVID specific guidance developed and approved quickly
- Co-production of NIAS pathway to ensure appropriate patient placement within ED in Causeway was successful in ensuring timely turnaround of NIAS crews

COVID Wards - Antrim

- Time to undertake ward rounds doubled due to need for Donning and Doffing and patient notes not in the ward areas as part of IPC measures
- Telephone reviews were adopted where possible and other ad-hoc virtual reviews where undertaken as required
- Escalation protocol for treatment of every COVID patient was undertaken – successful in supporting appropriate referrals to ICU
- Ward proforma for ward round reviews successfully adapted for COVID patients

ENVIRONMENT

Antrim ICU

- ICU benefitted from the move to new facility in A1, with capacity from 7 beds to 20 (15 only utilised)
- Positive engagement on planning work with Estates to configure layout of new ICU facility
- All bays, beds and pharmacy storage facility set up to same configuration to reduce variation and cognitive load
- Extra-large tank of oxygen at each bed as contingency for oxygen supply
- Airway trolley outside each bay for ready access

- Defibrillator on separate trolley outside bay from crash trolley for IPC reasons
- Drug trolley set up in each bay, with additional storage on trollies for essential, frequently used items
- PPE equipment supplied by pharmacy and separate PPE storage area established in unit, with porter assigned to deliver PPE to the unit daily
- Donning area set up with PPE in sequence of donning activity (reducing cognitive load) and replenished by designated person for clean room
- Staff access in locker room to showering facilities and then door to exit ICU directly out of changing room, reducing footfall
- Area for disposal of dirty scrubs and clogs in changing room and system for collection for clog cleaning and scrubs to laundry established
- Clear posters with donning and doffing technique highly visible

Causeway

- Limited storage facilities meant a refocussing of appropriate and efficient storage of supplies
- Creation of donning and doffing space in unit with construction of new facility
- Sensitive management of negative pressure required in Unit and worked with Estates on this – also needed to educate staff on management of same and provide reassurance the environment was safe
- ICU capacity 5 beds plus 1 isolation room
- Additional storage space created outside unit for pharmacy

Causeway ED

- Challenging footprint which could not be increased so significant adaptations made to the unit to separate into 2 areas – COVID and non-COVID (i.e. 2 Resus areas). Loss of space for paeds. waiting room, assessment area and ambulatory care area. Does present challenges for department in reset as number of non-COVID attendees increase

COVID Wards - Antrim

- Accommodation for medical staff and changing areas for staff are an issue with social distancing
- Initial concerns that oxygen supply could be restricted due to capacity issues on the site to supply oxygen (given the high number of patients and demand). Oxygen supply subsequently upgraded in A3 & A4
- Donning and Doffing outside rooms in corridors in wards – no specific ward environment created for this

General

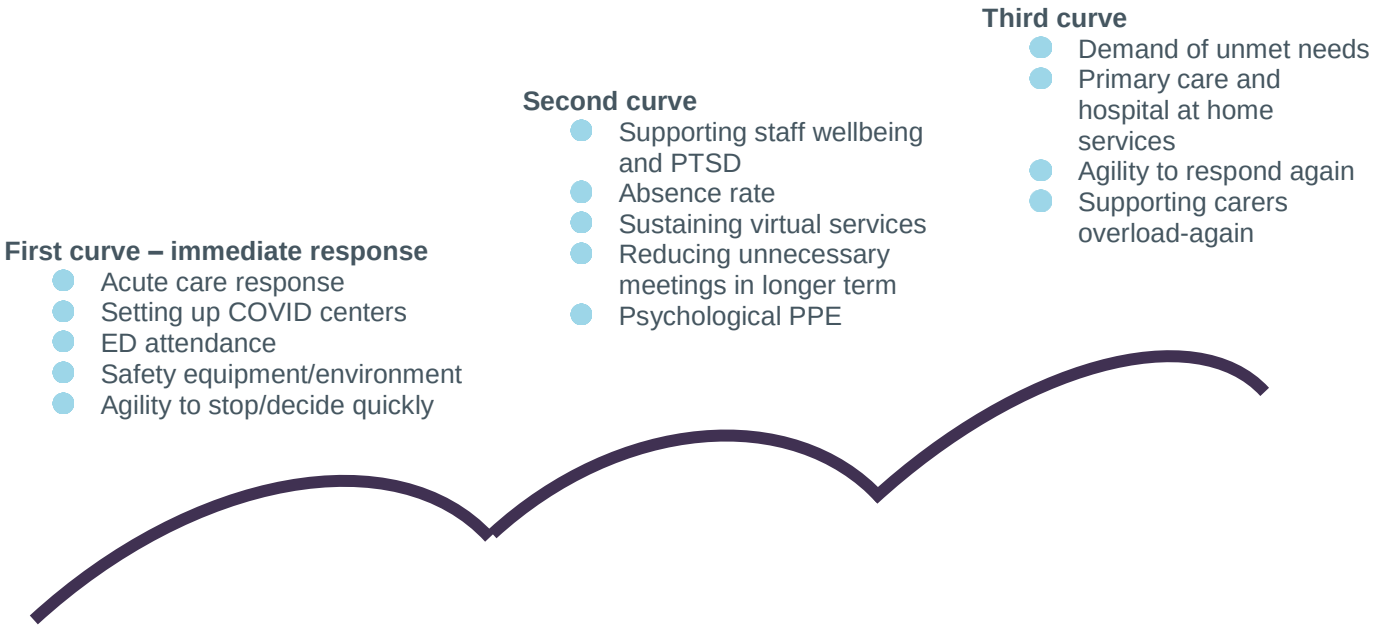
- Some generic general practices and processes established for pharmacy along with site-specific ones as appropriate
- Difficulty at times being able to hear properly whilst in PPE
- Increased noise levels do affect concentration and cognition
- Temperature moderation not possible in Antrim ICU (heating had to be turned off)

5 EXNOVATE TO INNOVATE

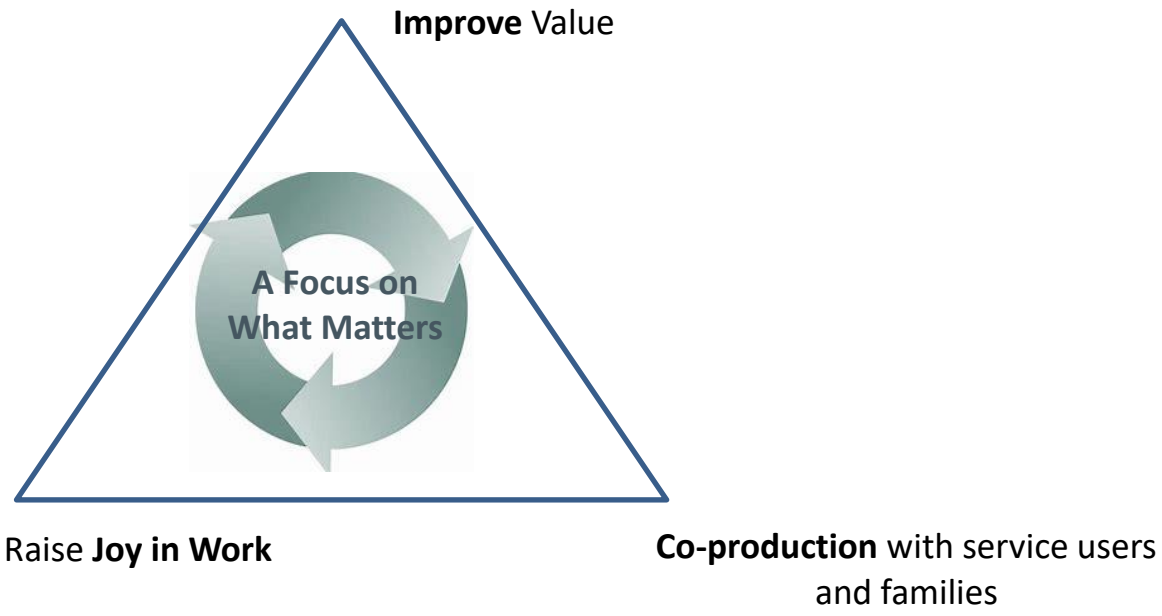
5.1 The Trajectory of COVID Response

In response to COVID-19 what we have seen is rapid cycles of change to adapt to new challenges and provide the appropriate response to changing circumstances. This process and the learning gathered as part of this report raises the question *"Is there a trajectory of COVID response?"* as illustrated in Figure 4. If so how does this relate to reducing waste and driving forward innovation?

Figure 4 – Trajectory of COVID Response (Source: IHI)



As part of our response, one of the unintended consequences is that 'waste' has been removed from how we deliver some services and work as a system. Looking critically at where such changes have occurred presents us with an opportunity to identify areas in which we may have opportunity to exnovate in order to innovate (i.e. stop doing some tasks/delivering services, or doing tasks in a certain way to allow space to innovate and deliver tasks/services differently). It also gives us the opportunity to focus on what really matters – strategically targeting waste reduction, whilst focussing on improving value – achieving the 'golden triangle' – as illustrated below.



Traditionally in the healthcare community, there is a "change layer" in which visionary ideas about transformation reside, and a "reality layer"; the place where most care is delivered. Both are necessary, but until COVID-19 there was little mixing of both. Our own modest investments in digital care and transformation are now paying off – and it is important that we complete the swing and do not allow a return to way things were. The best of the innovations that have surfaced during the COVID response period need to be hardwired for the future beyond this pandemic.

COVID-19 has proved we were more ready to adopt change than we ever acknowledged – and indeed forced the mixing of the change and reality layers. Moving forward everyone in the change layer has an obligation to make change impactful in the long run, adopting a new pace of change that we now know to be possible. Such an approach will facilitate greater diffusion of innovation – which no longer should be viewed as the domain of few but rather as the responsibility of many.

5.2 Exnovation Opportunities

The exnovation opportunities identified in the analysis of learning from COVID have been classified into four areas and is illustrated in Figure 5. The areas are:

- those associated with virtual working;
- communications and technology enabling change;
- predictive data to drive decision making; and
- new services models that are working well.

EXNOVATE TO INNOVATE

VIRTUAL WORKING FREES UP.....

Office space, travel, staff time, reduces Co2 omissions, reduces DNA's, save patients time, reduces issues of childcare/time out of work

COMMUNICATIONS & TECHNOLOGY HELP US TO.....

Improve contact with families, reduce interruptions on ward, reduce paper (NIECR), promote self-care (InHealth), empower parents, access info (QR codes), access training, remote triage (dermatology), support tissue viability team

PREDICTIVE DATA LETS US.....

Model medicines for critical care, palliative care & respiratory, O2 usage, fluids, identify the appropriate form of respiratory support (Airvo, CPAP), PPE usage

NEW MODELS OF SERVICES WHICH ARE WORKING WELL.....

Hospital at Day, EMSU (inc. direct access for GPs), Gynae assessment unit, Radiology hot reporting, reduction in duplication of tests, improved triage (supporting discharge from waiting list), EQiP, on-line rehab (cardiac), insulin shots in pregnancy, digital corporate welcome, removal of cash counting

"There is no power for change greater than a community discovering what it cares about"
(Meg Wheatley, Leadership & the New Science)

The challenge now is to quantify the scale of opportunity presented by examples such as those above. An illustration of this is presented in respect of using data to support critical care drug requirements.

- The creation of a new model to support production of IV Infusions;
- Pharmacy Palliative Care Team; and
- Using data to support critical care drug requirements across N. Ireland

5.2.1 Using Data to support Critical Care Drug Requirements

Medicines are a clinical priority to support patients and front-line clinical staff in dealing with the COVID19 virus. As a result, there has been an unprecedented global demand on supportive medicines, particularly in critical care. Assuring the availability of critical medicines at the point of need during a pandemic is complex - as demand escalates, organisations may order excess stock to maintain supply, placing further pressure on already constrained medicines and the supply chain. Given that COVID-19 is a new virus, the existing evidence base to inform and predict critical care drug requirements was limited.

A regional model was developed to estimate critical care drug requirements, in the ICU setting, to robustly inform procurement planning and preparedness in response to the COVID-19 pandemic.

The Benefits

The model has been utilised regionally to map critical care drug requirements to available stock in both Trusts and wholesalers/suppliers. This has enabled the identification of treatment capacity for these medicines regionally and has provided assurance to the DoH, Health & Social Care Board, Trusts and staff. This approach can also inform discussions to promote the consistent use of a particular agent first line in individual Trusts to minimise the risk of using various alternative agents at short notice as a consequence of supply constraints.

The Approach

A collaborative approach was key to development of the model, including regional ICU pharmacists, procurement leads, CCaNNI and the Regional Pharmaceutical Procurement Service.

Where we are Now?

Measures are now being introduced to gather further real world data to refine the model assumptions to inform the requirements for any potential future surges. Work is currently underway to explore a non-COVID model and the potential to develop a similar model to estimate critical care drug requirements in the Theatre setting. It

is anticipated that real world data will also inform discussions on variations in drug utilisation and the potential to standardise going forward.

Related Work

A regional database for ventilators and corresponding consumables was also developed to estimate potential consumables requirements during a surge in the pandemic. Data including the number and type of ventilator models for each HSC Trust was gathered along with consumables information and estimated daily requirements per patient. This centralised information is a useful resource to identify regional ventilator capacity and also identify the type and quantity of ventilators which would be affected by consumables supply issues. This approach was also used to develop a regional database for CRRT machines and corresponding consumables (including fluids). The Critical Care Network for Northern Ireland (CCaNNI) co-ordinated and assisted in the CRRT data collection from individual HSC Trusts. This enables figures to be calculated on potential max/min requirement should all machines be in use.

6 SENSE MAKING AND NEXT STEPS

6.1 Collective Sense Making

The learning summarised in this report, along with the suggestions of opportunities of exnovate to innovate can support a process of collective sense making. Firstly, determining those things which we did in response to COVID which were crisis response, or that we discovered during response are no longer fit for purpose – in both instances we should challenge ourselves to cease doing these things. Secondly, new practices which we have tried and adopted in response which show some signs of promise for the future; and thirdly, things we had to stop to focus on the crisis but they need to be picked up in some form. The 4x4 matrix in Figure 5 provides some illustrations of this in practice based on this learning exercise.

Figure 5 – Response Measures

	Started	
	END • Restrictions on elective work • Closure of day-care facilities • Total ban on hospital visiting • Closure of DAU in Causeway • No clerking-in of patients in ED • Haematology clinics twice weekly in Antrim • Closure of discharge lounges • Cessation of supervised opiate substitute treatment in community pharmacies	**AMPLIFY** • Virtual Working • Virtual Care • Family Liaison Service • On-line staff training • On-line self-care provision • Reduction in paper transactions • Using data to drive decisions • Partnership working with primary care, independent and community sectors • Flexible working and cross-team working • New models of care working well • Trust-wide Phlebotomy service
Stopped	**LET GO** • Face-to-Face consultations as the norm • Culture of face-to-face meetings • Protracted decision making processes • Risk aversion (appropriate level of risk mgt. and governance required) • Silo working • Unnecessary footfall through ED • Community Stoma Care Nurses following-up patients post discharge • Paper forms for contrast consent in Radiology • Reviewing every single patient with a diagnostic result	**RESTART** • Face-to-Face consultations for some groups of patients (i.e. first appointments cancer) • Elective work • Hospital visiting (in controlled way) • Wider support options for carers (including respite) • Live 'take' for Acute • Elective surgery in Antrim • Breast screening programme • Reinstate MacMillan Volunteer drivers • Paed and Maternity services in Causeway
	Stopped	Started

New Practice →

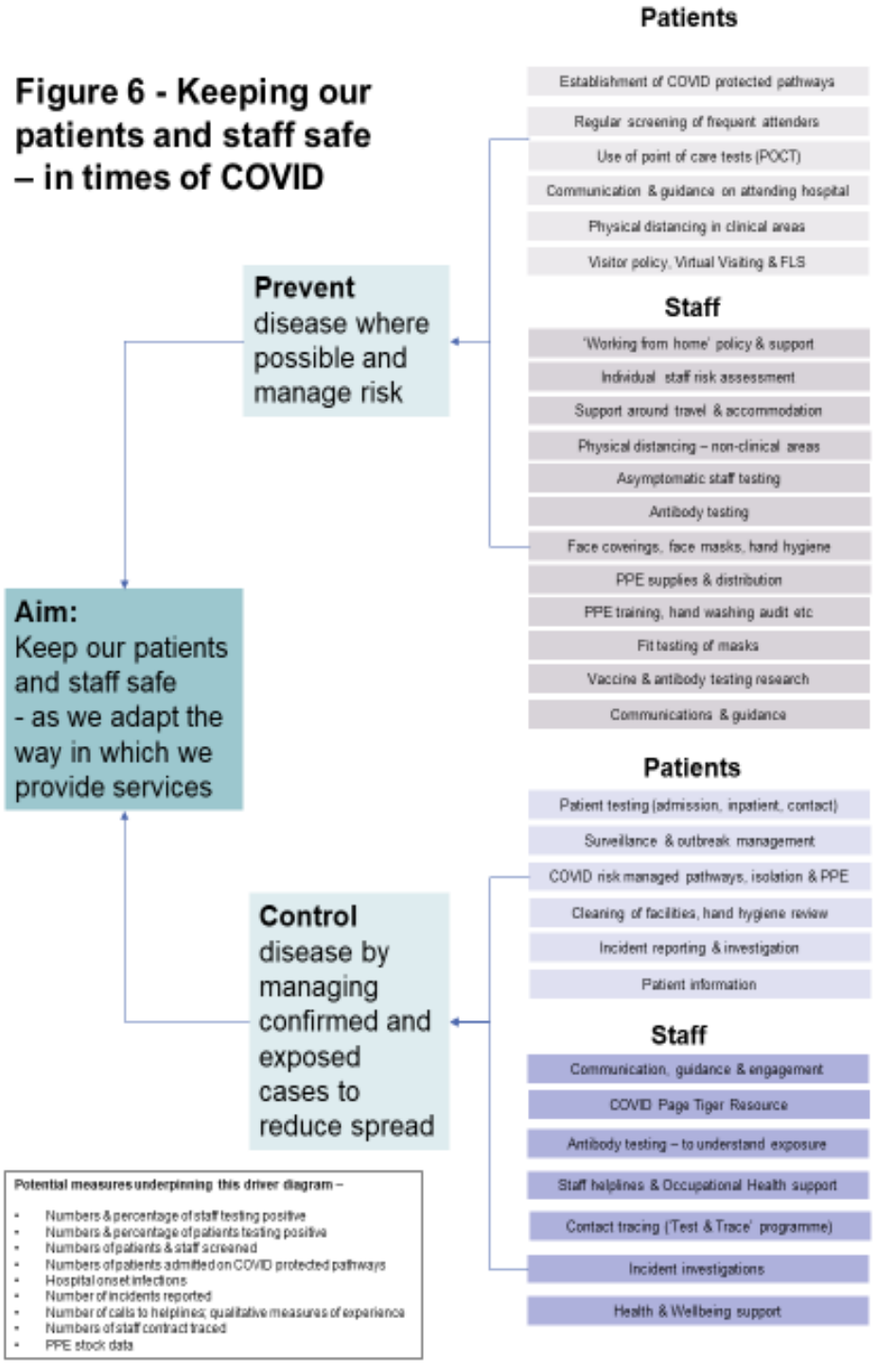
Old Practice →

6.2 Keeping our Staff and Patients/Service Users Safe

A key challenge in resetting services in ensuring that staff and patients/service users feel safe and confident in their work or in accessing services.

The driver diagram in Figure 6 sets out a proposed method to illustrate the measures which are in place to support staff and patient/service user safety and recommends the sharing of regular data related to same to provide ongoing confidence in safety.

Figure 6 - Keeping our patients and staff safe – in times of COVID



6.3 Next Steps

6.3.1 In Summary

The earlier sections of this report set out the range of interventions implemented in response to COVID-19, along with the common themes across those interventions and a summary of what has worked well and what we can improve upon; including highlighting opportunities for exnovation and innovation. It also provided a summary of the in-situ SEIPS analysis – setting out the human factor and ergonomics adaptations made and what we have learned from same.

This section of the report brought some sense making to all the proceeding analysis by suggesting which response measures we should now end/let go of, measures we should amplify and those services which we ceased which we now need to restart. In addition, an approach to provide reassurance of safety to staff and patients/service users is also suggested.

6.3.2 What Next

Based on the above the following next steps and leads for same are recommend:

Action	Lead Responsibility	By When
Sharing the COVID-19 learning report	1. Chief Executive with the HSCQI Alliance DoH priorities 2. IQI Lead with HSCQI and IHI (to feed into global learning) and NI Simulation and Human Factors Network with regard to SEIPS 3. Divisional Directors with teams 4. Director HR with TU's and via PLD 5. Head of Corporate Comms – with appropriate messaging aimed at staff and the public	July/Aug July/Aug Sep Sep Sep
Adopting the learning into Reset	1. Reset Project Group and Programme Board 2. Project Reset Technology & Innovation Work stream 3. Divisions	July-Sep July-Sep July-Sep
Scaling up suggested opportunities for exnovation at a Divisional level	1. Divisions and Finance 2. Project Reset Technology and Innovation Work stream	July-Sep July/Aug
Adopting and sharing measures to 'keep staff and service users safe' (see Fig. 6)	1. Divisions 2. Head of Corporate Comms 3. Safer Workplaces Task and Finish Group	Sep Sep July-Sep
Integration of COVID learning report outcomes with the regional report on *Review of Pharmacy Services in response to COVID* to avoid duplication and synergise learning/opportunities	1. Medical Director, Head of Pharmacy, Director of MOIC, IQI Lead	July-Sep