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COVID 19 OUTBREAK INVESTIGATION REPORT 2021

Published 17 November 2021

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Title	COVID 19 INVESTIGATION REPORT 2021/12835
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Summary: This report provides a detailed investigation into themes related to the acquisition of hospital-acquired COVID-19. It examines key lines of enquiry as recommended by regional guidance and summarises learning from structured judgement reviews undertaken on patients who died from COVID-19.

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EXECUTIVE SUMMARY

Every death is a tragedy, especially when a patient who has come to hospital to be treated dies as a result of an infection they acquired in the hospital environment. This report aims to explore the cases where this may have happened and discover any themes that will help us to understand and learn from such events and deaths so that we can eliminate similar risks in the future.

Over the last 18 months the NHS has faced one of our biggest tests in its history. At the onset, the COVID-19 infection was poorly understood and there was uncertainty about the best and most effective treatment. Also, whilst in the first wave of the pandemic most elective work was paused, allowing the NHS the space and time to battle COVID-19, in subsequent waves there was a need to maintain the 'business as usual' whilst continuing to provide the best care possible to significant numbers of patients with COVID-19.

Whilst we continually learned more about COVID-19 and effective treatments, we also faced a battle from two new variants which became progressively more infectious. The new delta variant is twice as infectious as the original COVID-19 and provides additional challenges in attempting to control hospital spread. Sadly, when COVID-19 is acquired by patients in hospital who are often elderly, frail and already unwell, it is associated with poor outcomes and 38% of patients who acquired COVID-19 in our hospitals subsequently died.

Whilst Pennine Lancashire as a community were one of the worst affected areas of the UK for COVID-19 community transmission and the health inequalities of our population led to higher death rates overall, this report shows that the hospital-acquired transmission rate at East Lancashire Hospitals NHS Trust (ELHT) was well below average with 14% of total hospital COVID-19 deaths due to hospital-acquired acquisition compared with 22% as a northwest average.

Understanding hospital-acquired (hospital acquired) transmission of COVID-19 involves examining several factors such as the patient's underlying health conditions and other vulnerabilities, compliance with PPE by staff, patients and visitors and the understanding of environment including the ventilation of inpatient areas. This report examines all these factors, documents actions taken by the teams in the Trust and seeks to identify future learning.

PART 1 – INTRODUCTION AND BACKGROUND

1.1 Introduction

The purpose of this report is to investigate whether any deaths connected with 37 reported outbreaks of COVID- 19 across the inpatient areas in the Trust was definitely or probably a result of a hospital acquired COVID-19 infection.

On 11 March, 2020, the World Health Organisation (WHO) officially declared the COVID-19 outbreak a pandemic due to the global spread and severity of the disease.

In addition to the changes to infection control procedures, the Trust, in line with the rest of the NHS underwent one of the biggest reconfigurations in its history to respond to the unprecedented challenge.

A significant amount of planned inpatient work was postponed with outpatient work having to be completely reconfigured. Our plans to implement remote consultations, including videoconferencing, were brought forward and implemented within weeks to provide ongoing care remotely. IT upgrades and developments to allow flexible working were introduced rapidly to give staff the tools they required to respond to the challenge.

Over the following months, the Trust embarked on an urgent programme to modify the hospital estate to be able to respond to the infection control challenges and worked with the independent sector to ensure that urgent surgery could still go ahead. The critical care unit doubled in size to accommodate the increased number of critically ill patients and many staff were redeployed from their usual jobs to either support patient care directly or to respond to the need for staff training, cleaning and a host of other support roles.

It must also be recognised that our knowledge of COVID-19 changed over time. As evidence became available, policies and protocols were constantly revised and updated. As such, all judgements regarding the clinical care provided to patients must be seen in this context.

1.2 Background

On 27 March, 2020 the Trust introduced changes to their infection control procedures with the introduction of a traffic light system for all wards, Green (no COVID infection), Amber (suspected COVID infection) and Red (COVID positive) in line with the risk classification guidance issued by Public Health England (PHE) and NHS Improvement on 14 March 2020. As well as the introduction of the traffic light system, the Trust has followed all national guidance when published regarding

Personal Protective Equipment (PPE) for staff, patients and visitors to clinical areas across the Trust.

On 9 June, 2020 NHS England/Improvement (NHSE/I) published guidance that all NHS Trusts must report any Hospital Associated COVID (hospital-acquired) outbreaks. The Trust reported its first outbreak on 23 September, 2020 and at the time of writing this report had reported 37 outbreaks in total from June 2020 to end of June 2021.

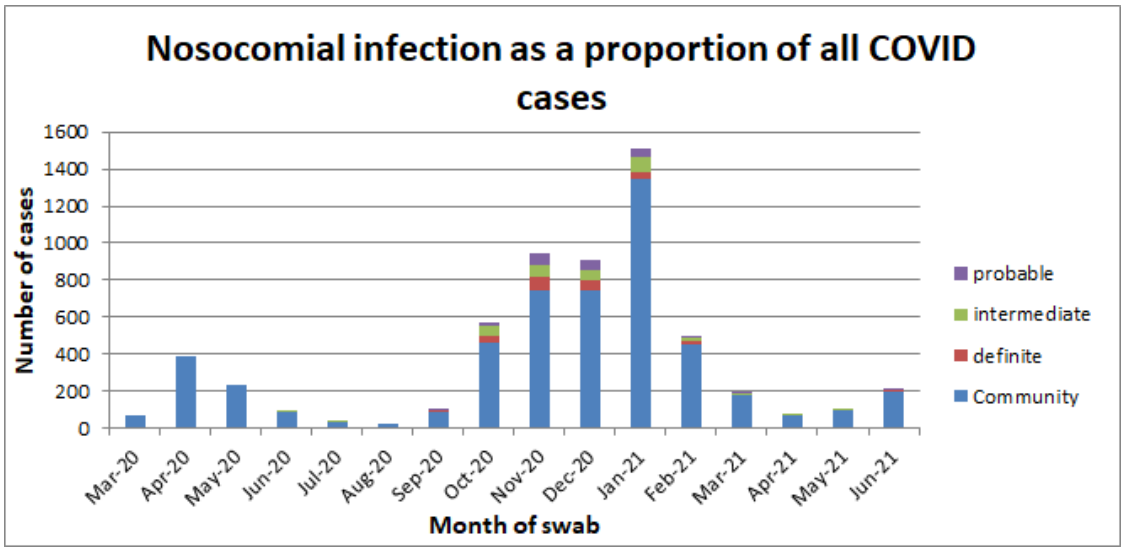
There are three categories for determining Hospital Onset COVID infections:

1. Hospital-Onset Indeterminate Healthcare-Associated (HO-iHA) – First positive specimen date 3-7 days after admission to Trust (this means that it is not possible to say whether the infection for caught prior to hospital admission or after)
2. Hospital-Onset Probable Healthcare-Associated (HO-pHA) – First positive specimen date 8-14 days after admission to Trust (this means that the infection was most probably acquired in hospital although community acquisition is also possible)
3. Hospital-Onset Definite Healthcare-Associated (HO-dHA) – First positive specimen date 15 or more days after admission to Trust (this means that the infection was definitely acquired whilst a patient in the hospital).

Regional guidance recommended Trusts investigate all definite onset cases

In order to maximise learning, our Trust agreed to also include probable on set cases in the scope of this investigation. As it cannot be determined whether indeterminate onset cases were acquired in the hospital(s) or community these have been excluded from the investigation in line with regional guidance. Numbers are included for information.

Chart 1:



Throughout this report, we have defined a patient dying with Hospital-acquired COVID-19 according to NHS guidance as follows:

- A patient who has a positive specimen result where the swab was taken within 28 days of death and/or COVID-19 is cited on either Part 1 or Part 2 of the death certificate (i.e., the death resulted from a COVID-19 clinically compatible illness with no period of complete recovery between the illness and death).

AND

- The COVID-19 infection linked to the death meets the definition of probable or definite hospital-onset healthcare associated infection (see above).

It is important to note therefore that whilst the patient acquired hospital-acquired COVID-19 in the 28 days prior to their death, this was not necessarily the primary cause of death.

Of the 137 patients meeting the definition above 115 had COVID-19 listed on part 1a or 1b of the death certificate meaning that COVID-19 was the primary cause of death or the underlying disease directly leading to death. In 11 cases COVID-19 was listed in part 2 of the death certificate meaning that whilst not the primary cause of death, in the view of the certifying doctor, COVID-19 directly contributed to the death. A cause of death was not available in six cases and a further five cases had been referred to the coroner.

1.3 Risk

Since the onset of COVID-19 pandemic, the Trust has used the risk register to identify any gaps in controls in patient and staff safety in the management of the

pandemic. In March 2020, an overarching risk (ID 8441) managed by the Director of Operations was placed on the risk register and initial scored 25 on the five-by-five risk matrix. This risk is monitored and updated monthly and assurance provided to the Trust Board regarding measures taken to control any gaps or weaknesses in controls. At the time of writing this report the risk was currently scoring 20.

In total there are 190 active risks on the risk register that are linked to COVID-19 pandemic and on-going management. The risks continue to be monitored across the Trust and all risks scoring 15 or above are reported and monitored through the Trust Quality Committee and Trust Board.

1.4 Other Harms to this Patient Group

As previously described, patients who acquire COVID-19 in hospital are medically complex, elderly and frail. The following details 339 incidents that occurred during the period June 2020 – June 2021 and involved a patient that died with Hospital-acquired COVID-19.

169 Infection Control Incidents occurred, 137 of these were reported to record the Patients Hospital-acquired Infection and death, these are broken down as per below:

- Death - Hospital-acquired COVID-19 Death - HO-dHA – 72/137
- Death - Hospital-acquired COVID-19 Death - HO-pHA – 65/137
- Death - Hospital-acquired COVID-19 Death - HO-iHA – Not recorded

The remaining incidents are described in the table below.

Table 1: Other category of incidents recorded against patients with HO-dHA and HO-pHA

Category	Total	Percentage
Infection Control Incident	31	15.4%
Moisture Associated Skin Damage (MASD)	42	20.9%
Slips, trips and falls	39	29.4%
Pressure Ulcers	19	9.5%
Medication	13	6.5%
Personal Injury/Accident	12	6%

Discharge or transfer problem	9	4.5%
Communication problems	6	3%
Ill health	6	3%
Patient dignity	5	2.5%
Oral Nutrition & Hydration	4	2%
Treatment problem/issue	4	2%
Medical devices & equipment	2	1%
Problem with patient records/information	2	1%
Blood Products /Transfusion	1	0.5%
Diabetes related	1	0.5%
Enteral Nutrition	1	0.5%
Problems with appointments/admissions	1	0.5%
Return to theatre	1	0.5%
Staffing Issue	1	0.5%
Violence/abuse/harassment	1	0.5%
Grand Total	**201**	

1.5 Mortality rates for COVID-19 in East Lancashire

The population of Pennine Lancashire have been disproportionately affected by COVID-19. Cumulative incidence figures (to 29th September 2021) show that Blackburn with Darwen has the highest cumulative incidence in the UK at 18,971 per 100,000 population, followed by Burnley at 17,758. This compares with a UK average of 11,584 and a North West average of 14,234. Of the top 10 local authorities with the highest case rates, 4 (Blackburn with Darwen (BwD), Burnley, Hyndburn and Pendle) are in the top 10.

As may be expected deaths per 100,000 population are also higher than the national average of 238 (Burnley 363.8, BwD 331.9). This includes deaths in the community as well as hospital deaths.

1.6 Hospital-acquired COVID-19 rates at ELHT

Deaths:

Whilst individual Trust rates of hospital-acquired infection are not available, a North West review of mortality data carried out in March 2021 by the North West Structured Judgement Review (SJR) group suggested that all hospital-acquired deaths probable and definite (8 days or more after hospital admission) make up approximately 22% of the total COVID-19 hospital deaths in the North West. There is a 50/50 split between probable and definite cases. At ELHT there have been 137 deaths of patients from definite or probable Hospital-acquired COVID-19 out of a total of 1162 inpatient COVID-19 deaths. Our Hospital-acquired death rate of 11.7% is therefore considerably lower than the regional average.

Cases:

Of the 3921 (June 2020 to June 2021) cases of COVID 19 detected in staff and patients at ELHT, definite and probable hospital acquired cases make up 10.7% of cases.

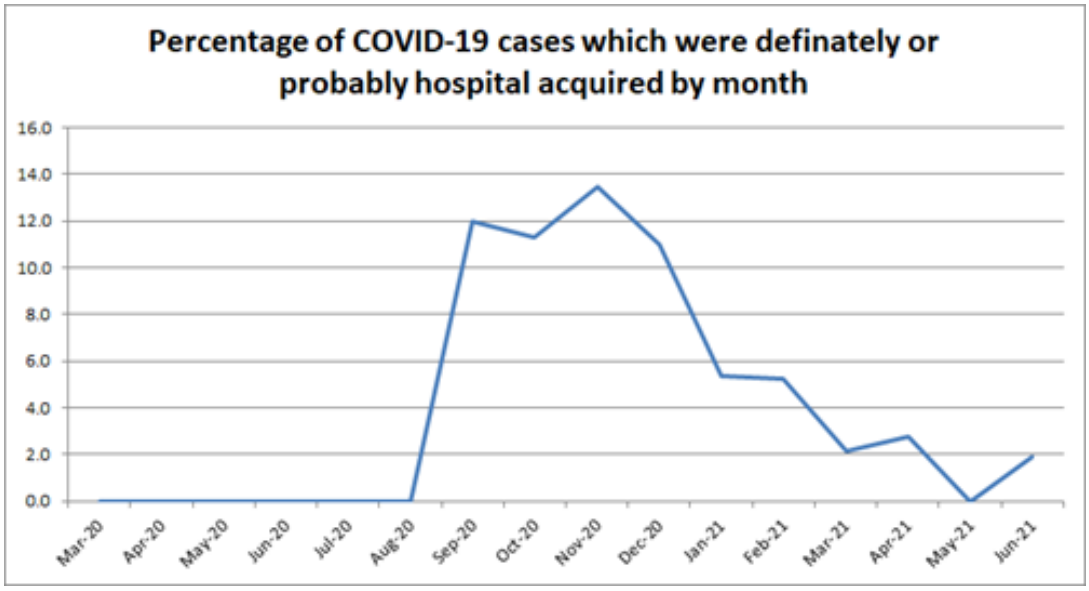
Table 2: Number of patients who have tested positive for COVID-19 in hospital where the source was possibly, probably, or definitely hospital acquired from June 2020 to June 2021 and number who died within the hospital within 28 days.

	Total number who contracted COVID	Total number of deaths within 28 days
HO-iHA (first positive 3-7 days after admission)	272	92
HO-pHA (first positive 8-14 days after admission)	171	65
HO-dHA (first positive 15 or more days after admission)	195	72

Changes in Hospital-acquired rates over time:

The table below demonstrates the proportion of hospital cases which were due to hospital-acquired infection. Showing the first definite or probable cases identified in September 2020. This demonstrates that the rate fell over time after an initial increase. The most significant drop was in January 2021 which is when point of care testing for admissions was introduced, however this is multifactorial. Further detail is included in the key lines of enquiry below.

Chart: 2



PART 2 - Review of Key lines of enquiry (KLOE).

In March 2021 the North West SJR group published guidance on key lines of enquiry to be considered in the investigation of Hospital-acquired COVID-19. The following section considers each of these key lines of enquiry and provides information and evidence of actions taken by the Trust in each of these areas. Several sources have been used to collate this information including the outcomes of root cause analyses undertaken following each ward outbreak, outputs from review sessions involving members of the Infection Prevention and Control (IPC) team who were monitoring clinical areas during the pandemic and SJR of patients who died with COVID-19. Further information on the SJR findings is provided in Part 3 of this report.

KLOE 1 - ARE STAFF COMPLIANT WITH HAND HYGENE?

What we know:

At the onset of the pandemic, there was a need to change several key IPC practices around hand hygiene. Whilst hand hygiene was embedded in ward practices as shown by regular audits pre-pandemic, new guidance particularly around putting on and taking off PPE had to be rapidly communicated. This involved the decontamination of hands at specific points which was a new routine for staff to learn.

Gels went missing from areas on wards when put out for patients and staff to use, this was an issue with other forms of PPE particularly at times when public supplies of gel and PPE were difficult to obtain.

As the demand for hand gel increased rapidly, some gel which was procured did not have the right percentage of alcohol and could not be used.

Gel had to be removed from bedside dispensers due to limited stock and a risk of ingestion by patients in certain ward areas. This risk was increased as the increased need for gel meant that different types of more liquid sanitiser being used. This was also contained within bottles which were easier to ingest than standard wall mounted dispensers.

What we did:

- Leadership team

  All wards on which outbreaks of COVID-19 occurred were subject to weekly hand hygiene audits. These audits showed that overall, 96% of staff were compliant with hand hygiene.

  PHE guidance around IPC practices was rapidly cascaded to staff and reinforced through staff briefings and COVID-19 bulletins.

- IPC team:

  The IPC team conducted walk rounds to identify issues and educate staff about new practices, troubleshooting along the way. Issues identified were:

  - A small number of staff failed to gel hands after removing PPE
  - Staff unconsciously touching areas when talking to patients and forgetting to gel hands.
  - Issues with accessing alcohol gel.

  Supplies were replaced where necessary, monitored and checked at regular intervals. The Infection Control Team also identified areas which hand hygiene could be managed with the use of soap and water i.e., outpatient clients and redistributed stock to key areas

- Wards and departments:

The procurement team worked to maintain levels of stock in line with the increased demand and arranged for new stock meeting national guidance to replace with gels which were not meeting national guidance.

What we have learned:

Communication is key when introducing rapid changes at speed. Easy to access materials in a variety of formats with regular reinforcement and 'on the floor' trouble shooting are required to embed new routines rapidly.

What we are doing for the future:

Regular ward level audit of hand hygiene incorporating new practices is continuing to ensure that compliance with hand hygiene remains at high levels.

KLOE 2 - DO STAFF WEAR THE RIGHT LEVEL OF PPE WHEN IN CLINICAL SETTINGS, INCLUDING USE OF FACE MASKS IN NON-CLINICAL SETTINGS?

What we know:

As a novel infection our understanding of how to protect our patients and staff through personal protective equipment has changed through the pandemic. Whilst initially PPE was only used for patients with confirmed or suspected COVID-19, guidance changed as the understanding around transmission and the role of asymptomatic carriage evolved. National guidance requiring use of masks by staff, patients and visitors in all areas of the hospital was published on 4 June, 2020 and was immediately implemented as required on 15 June, 2020.

There was a considerable logistical challenge as staff working in areas where aerosol generating procedures were being performed required a particular type of mask, FFP3 which required individual fitting to ensure that it provided the correct protection. Supplies of these masks changed and due to different makes of FFP 3 mask being procured, many staff needed repeated fit testing to ensure that they could use the different types of mask.

Early in the pandemic there were considerable worries regarding the supply of appropriate PPE. The Trust was a victim of thefts of PPE from hospital stores. At no point however did the Trust run out of appropriate PPE supplies.

The level of PPE required was not something staff were routinely trained to use. Guidance and training needed to be rapidly disseminated to clinical and non-clinical staff to ensure they were adequately protected.

National guidance was changing frequently – this made it hard for staff to keep updated. Introduction of guidance was also a significant challenge, as it was not pre-circulated to Trust before becoming publicly accessible on internet.

In outbreak areas PPE compliance was closely audited. Overall staff compliance with PPE was 91%.

What we did:

- Leadership team

Regular briefings were provided by the communications team to highlight latest guidance and this was disseminated through ward meetings and by direct visits to ward by senior team members, including the medical director and the director of nursing. Access to videos providing training in correct use of PPE was enabled.

The Trust incident command centre and Integrated Care System (ICS) PPE groups worked together to keep supplies going through mutual aid across Lancashire and South Cumbria.

The Trust took steps to commission PPE supplies from local suppliers including reusable gowns to counter the potential shortages of PPE which were of considerable concern in the early stages of the pandemic.

The Trust invested heavily in a 'well team' to support staff, particularly those in high intensity areas where patient care was both physically and emotionally exhausting.

Staff were seconded from less busy areas of the Trust and non-clinical roles and trained in fit testing for large numbers of staff to be rapidly fit tested for FFP3 masks.

- IPC team

The IPC team by being visible on the ward were able to support and train staff in the correct use of PPE, deal with issues where masks were being used incorrectly.

When patients were categorised as green or category 1 (essentially negative COVID-19 and low risk of infectivity) the use of FFP3 masks and long-sleeved water-repellent gowns was not necessary for use in aerosol generating procedures. On occasion, it was noted that the patients who were deemed as green/cat 1 were not being categorised daily as was part of the expectation for this system. It is therefore possible that the incorrect PPE may have been used as the patient had not been assessed in a timely manner and may have no longer been meeting the requirements which negated their use. On occasions where this was identified, the IPC Team gave extensive education and reiterated the use of the PPE table of requirements to the ward managers for them to cascade accordingly. (see appendix 2 for hospital COVID-19 categories)

- Wards and departments

Estates and Human resources teams: In non-clinical areas where guidance changed through the pandemic, national guidance was adopted and additional measures such as the use of Perspex screens in offices and agile working were employed.

What we have learned:

Appropriate PPE was always available in the Trust however rapid changes in supplies and the look of PPE meant that frequent communication to staff was required.

Very careful stock management of PPE was required to protect against theft and ensure that the right supplies were needed in the right areas.

PPE can be very challenging for staff and patients to wear. As well as being uncomfortable it can inhibit effective communication and this can cause challenges particularly in patients in vulnerable groups, children and patients with a hearing impairment (Clear masks can only be used as face coverings and not as full protection which caused issues for people who are hard of hearing).

At the beginning of the pandemic all guidance was moved onto a share-point site. This had advantages such as allowing guidance to be accessed on mobile devices or at home, however the volume of new guidance in the initial phases of the pandemic meant that the most up to date guidance could be difficult to find with ease.

Our plans:

Our procurement teams are working to ensure resilience in the supply chain for PPE.

The national fit test team are working with the Trust to ensure that all appropriate staff have access to at least 2 types of fit tested FFP3 mask to protect against supply issues in the future

KLOE 3 - DID PATIENTS HAVE MULTIPLE WARD MOVES?

What we know:

In the first wave due to a reduction in non-elective work and reduction in non-coronavirus illness dropped significantly in all areas and there was as a result minimal pressure on beds. Known hospital-acquired transmission in this period was minimal.

During the second and subsequent waves there was a need to continue to run elective work including surgical work as the reduced levels of elective activity during

the first wave were clearly going to create long-term impacts with respect to other conditions, including cancer diagnosis and treatment. This meant that the hospital was once again working at full capacity. In this situation, moves of patients are a normal process of being treated to make sure the patient is looked after by the most appropriate team as the situation changes.

In the pandemic, this process was given added complexity due to the need to place patients according to their coronavirus status which was normally unknown at the time of presentation. The need therefore to classify patients by symptoms had 2 possible consequences:

- Patients showing symptoms consistent with COVID-19, but whose symptoms were not due to this might be cohorted with patients later confirmed to have COVID-19.
- Patients who had no symptoms but who were incubating COVID-19 would be cohorted with patients who did not have this, risking exposure of the non-infection group to COVID-19.

It is for this reason that additional protections such as facemasks and social distancing were in place even on ‘green’ wards, although this guidance was not issued until later in the pandemic.

Categorisation of the patients COVID-19 status was complex and changed over time (depending for instance on whether a patient in a bay subsequently tested positive for COVID-19). This meant that their categorisation could change. This led to a possibility of an increased number of ward moves, which would increase the potential for hospital transmission.

What we did:

- Leadership team:

Senior leadership involvement with a careful focus on flow was stepped up and senior leaders were on site 7 days per week to provide oversight and support around clinical flow.

- IPC team:

A member of the IPC team was in close liaison with the clinical flow team daily to ensure that patients followed the correct pathway. Through this close working the number of bed moves was minimised wherever possible.

Within the hospital, a detailed contact tracing process was implemented and patients were isolated as appropriate.

A daily report was introduced highlighting patients who needed their categorisation reviewing and the IPC team conducted walk rounds to encourage the correct categorisation to be documented in the patient notes. The SJR review of 75 COVID-19 cases cited inappropriate ward transfer in 1 case, and an inappropriate ward for the patients care in a further case. (see appendix 2 for Hospital COVID-19 Categories)

- Wards and departments:

Wards were asked to re-categorise all patients daily to ensure they were in the appropriate bed and that the appropriate PPE was being used.

What we learned:

Close liaison between the clinical flow team and the IPC team is vital in ensuring that ward moves are appropriate and the IPC ramifications of the move are considered.

Placing patients in beds according to infection status can create a conflict between the patient being in a specialist bed for their needs and an appropriate bed to manage their COVID-19 status.

Our plans:

Close attention to infection status is important and the lessons learned can be used to ensure best practice in minimising other causes of hospital acquired infection.

KLOE 4 - WAS SOCIAL DISTANCING POSSIBLE FOR PATIENTS AND STAFF AND WERE PATIENTS AND STAFF ABLE TO COMPLY?

What we know:

Social distancing for staff and patients is a key Infection control measure, however hospitals were not designed to ensure that all patients and staff are able to be always 2-metres apart.

There were several key areas of the Trust such as corridors but also non-clinical areas such as offices and staff rooms where maintaining social distancing was challenging.

Staff needed to complete confidential work or needed access to computers to review information which at times led to staff being in a space without the 2m social distancing in place due to the computers being in fixed locations. In addition, there is limited office space which makes social distancing hard within some areas and many offices are small on ward areas.

Due to limited space at nurses' stations, at times staff found it very difficult to keep 2 metres apart. Large number of staff are also involved in ward rounds, safety huddles and handover meetings to ensure all staff are fully informed of patient care plans.

Masks and visors meant that staff struggled to communicate whilst distanced and were tempted to work in closer proximity to overcome this.

A review of the root case analyses of the 37 outbreaks was undertaken, which included ability of the patients to comply with social distancing and PPE:

In 55% of RCAs patient compliance with social distancing was identified as a possible contributory factor'. This may have 'ranged from non-compliance on the ward, through to meeting relatives in hospital grounds and car parks. Non-compliance by patients with social distancing or mask wearing was found to be the root cause in 2 outbreaks.

42% of the outbreaks involved visitors. These included:

i) Wards who were involved in the pilot visiting scheme in September 2020
ii) Visitors for patients under the exceptional circumstances guidance
iii) Some unauthorised visitors. It was also highlighted that several visitors were not compliant with social distancing and PPE.

Non-compliance by visitors to the ward was found to be the root cause of outbreaks in 3 cases.

What we did:

- Leadership team:

Early in the pandemic the Trust established a social distancing group chaired by the Director of Operations with input from estates, human resources, IPC and union representatives to encourage staff to highlight areas where social distancing was challenging and to oversee wider Trust measures and risk assessment.

One-way systems were implemented in key areas with known pinch points such as the hospital canteen.

Line managers were supported in risk assessments to ensure that all areas of the Trust were COVID-19 secure and appropriate mitigations were in place.

Face to face meetings were stood down and the Trust rapidly moved to Microsoft teams to support virtual meetings.

Sadly, given the high number of outbreaks involving visitors to the wards, the leadership team made the difficult decision to suspend the pilot visiting scheme.

- IPC team:

All ward areas were visited regularly by the IPC team and measures such as transparent screens were implemented in areas where 2 metre separation was not possible. All wards were risk assessed to ensure that inflection control standards regarding physical distancing could be met. Enhanced cleaning measures were also implemented in line with national guidance throughout the pandemic.

Regular audits were undertaken in outbreak areas. These showed that 87% of staff were able to adhere to social distancing measures

Some ward areas required removal of additional beds to maintain social distancing.

The IPC team produced a patient information leaflet to explain why the measures were in place to improve patient compliance.

- Estates team:

Signage and floor stickers were erected on all hospital sites to encourage social distancing. Signage was created by the communications team to be highly visual and dementia friendly. This was highlighted by external inspections as an area of good practice.

- IT team:

The IT team provided computers on wheels and laptops to provide greater flexibility for staff to be able to spread out and set up socially distanced working spaces on wards.
The team also rapidly improved the hospital IT infrastructure both in terms of hardware and an upgrade to Microsoft 365 allowing use of SharePoint. They invested in IT equipment to allow staff to work from home if not physically required to be on site.

- HR team

The HR team created an agile working policy to support home working.

- Ward teams:

Where possible handovers were facilitated using Microsoft Teams or were moved to areas where social distancing was possible. Only essential staff were present for huddles.
Clinical teams worked with patients to encourage cooperation and understanding of the reasons behind the guidance on social distancing and PPE.

What we have learned:

It is possible to have effective meetings in a virtual space. This was particularly helpful where rapid decision making was required and teams were based on different sites.

Through careful assessment and innovation, the hospital estate can be adapted to support social distancing in most cases.

Supporting patients and visitors to follow advice is a significant challenge, particularly when patients are already unwell, in many cases have dementia or confusion and are in an unfamiliar environment – significant additional support for such patients is required.

Hospital visiting was a significant source of hospital-acquired infection.

Plans:

It is recognised that patients receiving visitors is a vital part of their hospital care both for good communication and for patients own health and wellbeing. The Trust has recommenced hospital visiting which has been made possible with the widespread uptake of vaccination in the population.

Agile working has benefits for utilisation of hospital estate, traffic to and from the hospital, and the health and wellbeing of staff. Many virtual IT solutions are also helpful for staff working across multiple hospital sites to work efficiently. The agile working policy will continue to be reviewed and enhanced.

KLOE 5 - WAS ADDITIONAL TOUCHPOINT CLEANING IN PLACE IN THE WARD / DEPARTMENTS?

What we know:

Cleaning was increased following the guidance issued on 21 May, 2020 and additional guidance on touchpoint cleaning was implemented following publication in July 2020.

Opportunities for cleaning of frequently touched surfaces multiple times (more than twice a day wherever possible) should be taken, including for example:

- surfaces such as medical equipment, door/toilet handles and locker tops, patient call bells, over bed tables and bed rails must be cleaned at least twice daily, and when known to be contaminated with secretions, excretions, or body fluids.
- touch points in public areas such as lifts and corridor handrails and
- electronic equipment, including mobile phones, desk phones and other communication devices, tablets, desktops, and keyboards (particularly where

these are used by many people), should be decontaminated at least twice daily with 70% ethyl alcohol or product as specified by the manufacturer.

The additional requirements for cleaning required amendment of ward cleaning regimes, training of staff in appropriate cleaning materials and introduction of cleaning regimes to non-clinical areas of the Trust who did not previously have a requirement for specific cleaning regimes.

The requirement for additional cleaning of cubicles when patients left the area, known as 'terminal cleans' placed additional barriers to appropriate flow of patients through the hospital by increasing the time lag between an area being able to be re used for patient care.

What we did:

- Leadership team:

Enabled rapid recruitment and training of additional patient services assistants to enable the enhanced cleaning regimes to be implemented. To support this, the trust employed the support of three agencies to provide additional cleaning operatives for the public domain - ensuring doors, banisters, lifts, corridors and toilets received multiple cleans per day, the exact number depending on the hospital site in question.

The communications team together with the IPC team produced posters and other materials to assist staff with the correct choice of cleaning products for the different clinical and non-clinical areas.

Information was supported through the COVID-19 bulletins and use of the COVID-19 SharePoint site.

- IT team:

The team developed an app to allow requests for terminal cleans to be made rapidly and for a specifically formed terminal clean team to be able to deploy effectively to those areas with greatest need to improve patient flow.

What we learned:

We were, with the help of additional staff, able to rapidly implement guidance to increase touchpoint cleaning, however this is most effective as part of a suite of measures rather than a measure on its own. Staff, patients and visitors observing hand hygiene is also essential.

Our plans:

Following an external inspection, it was recommended that ELHT should further develop the systematic use of Hydrogen Peroxide Vapour decontamination, which would disinfect all accessible surfaces in an area. This has already been used in all outbreak areas of the Trust at the closure of an outbreak.

KLOE 6 - WAS COVID TESTING FOR THE PATIENTS COMPLIANT WITH THE NATIONAL GUIDANCE?

What we know:

Access to accurate and repeated testing for COVID-19 with results available in a timely manner is key to the prevention of hospital-acquired COVID-19.

Whilst testing was always carried out in line with national guidance, at the beginning of the pandemic testing capacity was very restricted with initial samples required to be sent to PHE Colindale for analysis. There were delays in the timely receipt of test results particularly in the early phases of the pandemic. Subsequently, tests were sent to Manchester and then Preston with a result taking several days to be received.

On 24 April, national guidance was published requiring all hospital admissions both symptomatic and asymptomatic to be swabbed for the presence of COVID-19, however with results taking several days, cohorting based on symptoms was still key to infection prevention.

In May 2020, the Trust was able to implement rapid testing on site for a limited number of patients, such as those requiring urgent surgery, but this was limited to 20 per day.

In June 2020 prior to the first hospital-acquired outbreak in ELHT and in recognition of the possibility of community acquired infection being present in hospitals in asymptomatic patients, repeat swabbing of patients on day 5 was recommended and this was immediately implemented by the Trust. A further update replacing this guidance with swabbing on Day 4 and day 6 was issued in December 2020 and was again implemented. Systems were put in place to track patients and ensure that swabs were taken in a timely manner.

In two outbreaks, delay in receipt of swab results was found to be the root cause of the outbreaks as this resulted in delays to the isolation of asymptomatic patients.

Point of care testing (tests which can deliver a result in around 15 minutes without having to be sent to the lab) was introduced in the emergency department in January 2021 and involved the setting up on an on-site outreach laboratory in the emergency department to allow samples to be processed 24 hours per day. National and international shortages of the correct point of care equipment meant that

despite timely ordering and close working with procurement teams, significant lead times were encountered delaying implementation of this new equipment.

What we did:

- Leadership team

The team ensured that all national guidance was implemented when published.

Liaison took place regularly between peripheral labs with support also given to try to speed up the process of testing and acquisition of results. This resulted in improvements in the lag time from sending a swab to this being received.

Considerable effort was also placed into both the acquisition of rapid tests which could be administered at the point of admission to allow better categorisation of patients at this point, and to improving the turnaround of PCR tests to minimise the time that patients with unknown status were present on a ward with other patients. A subgroup was established with support from procurement to progress several schemes simultaneously given the international challenge of a shortage of testing equipment.

A notification system was introduced to ensure that all patients were being swabbed in line with guidance in place at the time.

- IPC team:

The team worked closely with wards to ensure that positive results were rapidly acted upon and that appropriate isolation of both the patient and contacts was carried out.

- Laboratory team:

The point of care testing team worked on procurement of point of care testing equipment and worked to introduce a satellite laboratory in the emergency department staffed by trained lab staff to process point of care tests rapidly ensuring that clinical staff were freed up for clinical care.

What we learned:

Delays in receipt of test results on COVID swabs were both a contributory factor and a root cause in hospital-acquired COVID-19 outbreaks.

Delays in procurement of rapid testing were a national and international challenge.

Access to point of care testing in the emergency department is likely to have been a significant factor in the reduction in hospital-acquired COVID-19 infection seen in January 2021.

Plans:

Going forwards it will be important to maintain access to rapid point of care testing for COVID-19.

KLOE 7 - HOW ARE PATIENTS TRIAGED AND MANAGED IN ED & UCC?

What we know:

To prevent patients acquiring COVID-19 in hospital, isolation of possible carriers of COVID-19 from the point of first entry into hospital is important. To achieve this, the processes in Emergency Department (ED) were changed significantly at the beginning of the pandemic.

The process was facilitated by a significant reduction in attendances to ED during the first lockdown in April 2020. This allowed all patients to be appropriately segregated and social distancing to be maintained.

As the pandemic has progressed, attendances increased back to baseline and more recently in keeping with the national picture attendances are now significantly above baseline. This makes adherence to social distancing and maintenance of red and green pathways very challenging.

What we did:

- Leadership team:

The team coordinated widespread changes throughout the Trust to fundamentally alter the flow of patients. This included utilising fracture clinic as a green urgent care centre and setting up a temporary paediatric Emergency Department in the surgical day case unit.

- Emergency Department team:

Patients were classified as either red (possible or definite COVID infection) or green (non COVID infection)

All ‘walk in’ patients were rapidly triaged at reception.

- For suspected / confirmed COVID-19 adults, the patients were given a surgical mask and escorted to the appropriate red area where a second full triage was conducted.
- For non-suspected COVID-19, the patients were booked in and redirected to fracture clinic around the outside of the hospital with an appropriately qualified staff member where required.
- For patients arriving by ambulance, separate entrances were utilised depending on the categorisation of the patient as red or green by the ambulance crew.

- The department was configured to create both red and green resuscitation areas.

What we learned:

Systems worked well with the reduced footfall through the department seen in the first lockdown

Managing pathways in the face of significant pressure due to increased attendances is challenging.

Plans:

Managing attendances and ensuring that patients are not waiting for excessive amounts of time in the Emergency Department is key to reducing the risk of hospital-acquired COVID-19. We will work with community partners to progress plans for managing patients out of hospital to prevent unnecessary attendances and maintaining flow by ensuring patients are discharged when appropriate to do so.

KLOE 8 - WERE THERE ISSUES FOR PATIENTS WITH MENTAL HEALTH PROBLEMS OR DEMENTIA?

What we know:

It is recognised that hospital admission for patients with dementia or mental health issues was particularly challenging with a combination of requirements for PPE which would be unfamiliar and the absence of family and regular carers who are key to supporting patients and also supporting them to comply with the IPC requirements.

Patients who were wandersome, often due either dementia, delirium, or confusion as a part of their underlying illness and who were therefore unable to comply with social distancing and PPE requirements were found to be a contributory factor in 12 of the 37 outbreaks and in 2 outbreaks this was this thought to be the root cause.

What we did:

- Leadership team:

Staff on the ward were supported by the Dementia Lead Nurse for advice and support around the management of patients with regards to social distancing and PPE.

Signage in the hospital was designed to be dementia friendly.

- Ward teams:

Each patient was risk assessed on the wards and 1:1 partnerships put into place where concerns were identified to support the patient. Staff levels were reviewed daily to support this

strategy. For dementia patients one named visitor was allowed on the wards to help support patients but at times it has been identified that this was not communicated or managed as well as it could have been.

What we have learned:

Patients with dementia or delirium are at significant risk of acquisition of hospital-acquired COVID-19 as they are often unable to comply with social distancing and PPE.

Almost 10% of patients who died from Hospital-acquired COVID-19 had dementia listed as a prior health diagnosis.

Our plans:

Close involvement of families and carers to support patients is a key area for improvement going forwards.

We are currently in the process of recruiting to a Lead Dementia Nurse and one of the priorities for this role is staff training around dementia and promoting 'John's Campaign' on all ward areas.

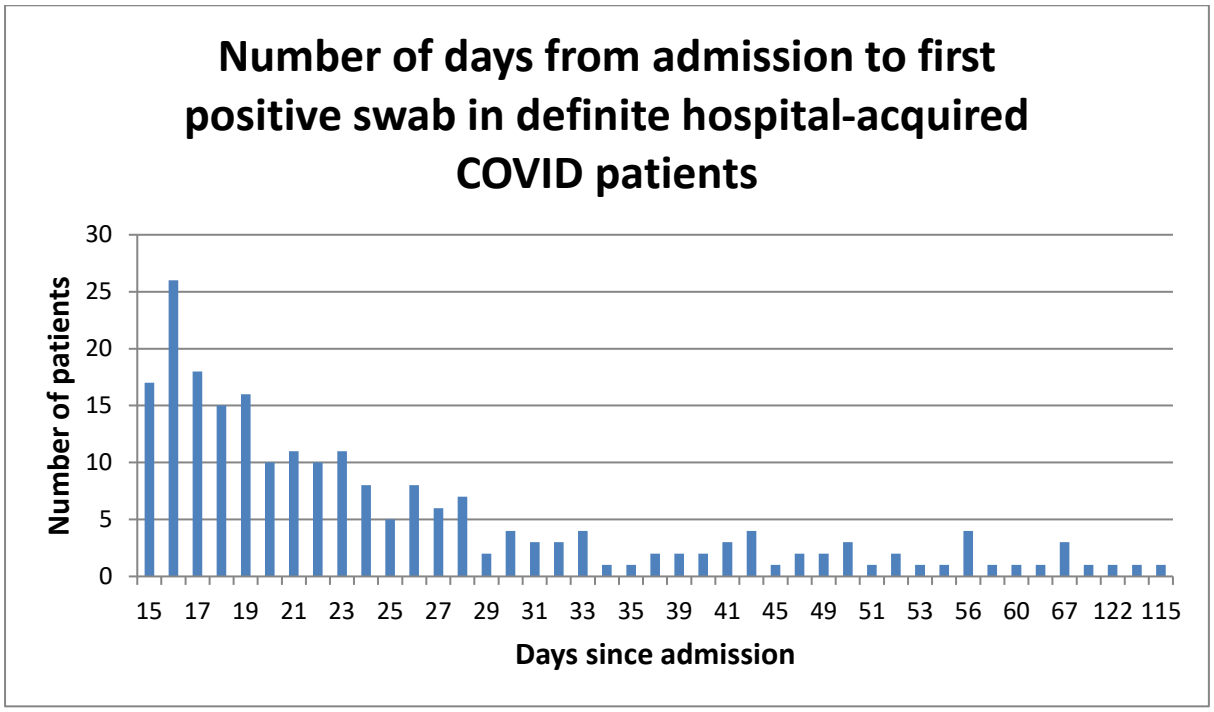
Matrons are continuing to raise awareness, with staff, to support relatives/carers to support care whilst on the wards and improve communication to determine the patients care needs. This includes timely completion of the 'This Is Me' booklet with relatives and carers.

KLOE 9 - WERE THERE ISSUES WITH PROLONGED ADMISSION OR CHALLENGES IN DISCHARGING PATIENTS?

What we know:

It is recognised that prolonged hospital admission is a risk factor for Hospital-acquired infection.

Chart 3: shows the length of time from admission to the acquisition of COVID-19:



The Trust has worked with system partners to ensure that we maximised our established discharge pathways throughout the pandemic. The Trust was well placed in Pennine Lancashire to deliver our discharges in line with the nationally directed Discharge Policy and Operating Procedures and have reviewed our pathways at each revised version of the guidance. This delivery has been multifaceted and includes maximisation of our 'Discharge to Assess' pathways and building a close working relationship with the care sector.

Our Home First pathways were enhanced throughout the period to ensure that 'Home is the default position' and we increased the number of Home First visits that we carried out across a seven-day period.

A Care Home tracking system was completed as part of our Integrated Discharge Service to ensure that all patients were swabbed in line with national guidance and the care homes were notified of results. The Trust also brought the Care Home Allocation Service in house, which had previously been run by a third-party provider (Care Home Select). This allowed the Trust to manage the swabs in a much more robust way. Rather than waiting for the patients and/or family to choose a home, the Trust requests the swabs at a much timely point in the process. This is working well to avoid any further delays and the Trust is requesting rapid swabs at periods of increased escalation (where possible) to facilitate same day discharges. This enables our patients to be safely discharged and to be settled in their preferred home much sooner than they were earlier in the year thus making it easier for family visiting.

ELHT provided support to the Designated Care Settings, of which the Trust had two, via IDS and ICAT teams. This allowed us to safely discharge COVID-19 positive patients therefore reducing the risks of onward transmission in the hospital environment.

ELHT is an Integrated Care Organisation and our community services have in-reached to the acute site to ensure that we support patients back into a community and our Intensive Home Support Service was the lead delivery service to implement the COVID Virtual Ward which has been awarded the HSJ Patient Safety Award for partnership working.

What we have learned:

In a pandemic when services are stretched, working in an integrated way with other healthcare partners can ensure that patients are supported in the best place for their onward recovery and that this is done in the most efficient way.

This data shows that this is more important than ever since prolonged hospital stay is associated with an increased risk of hospital-acquired COVID-19.

Managing patients in a virtual ward environment is a safe and effective way of managing care.

Plans:

The virtual ward model has been emulated in other areas and consideration is being given to how this may benefit patients in other situations not related to COVID-19.

The Trust has appointed a consultant in intermediate care to support these developments going forwards.

KLOE 10 - WHAT WERE THE RATES OF COMMUNITY TRANSMISSION AND HOW DID THIS AFFECT HOSPITAL OCCUPANCY FIGURES?

What we know:

High community prevalence rates affect the risk of hospital acquired COVID-19 because in addition to a high number of patients admitted with COVID-19, the risk of asymptomatic carriage in both patients and staff is considerably increased.

In addition, when more than 15% of the hospital bed base is occupied with patients with COVID-19, hospital-acquired transmission becomes increasingly difficult to prevent despite optimal IPC controls.

The charts 4 and 5 below show that for much of the pandemic, community prevalence rates in Pennine Lancashire have been above national levels and that consequently for a considerable period between October 2020 and January 2021, hospital bed occupancy rates were above 15%.

Chart 4:

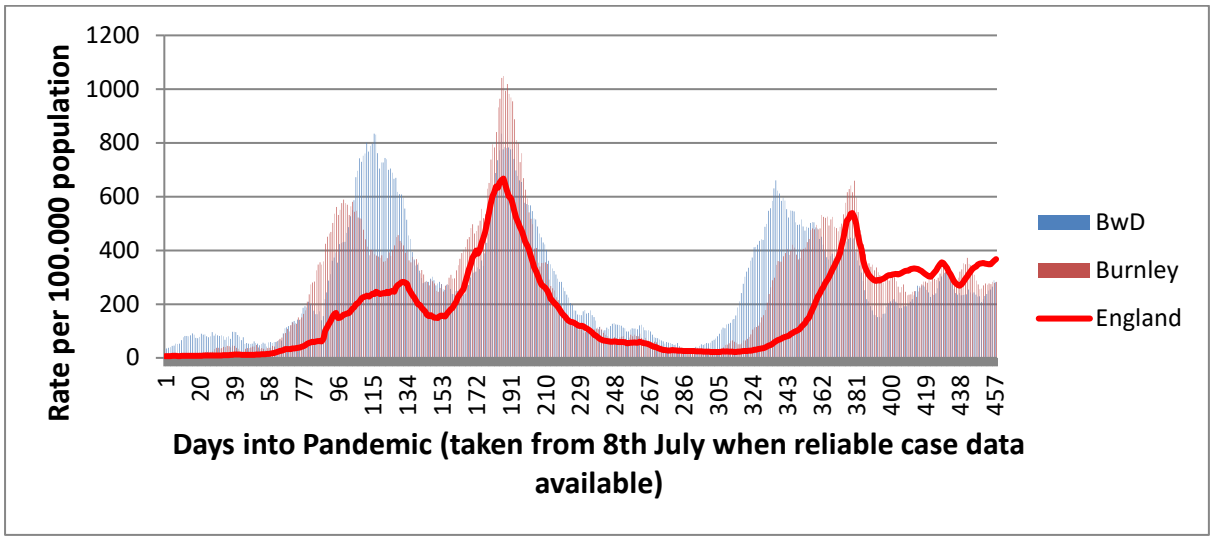
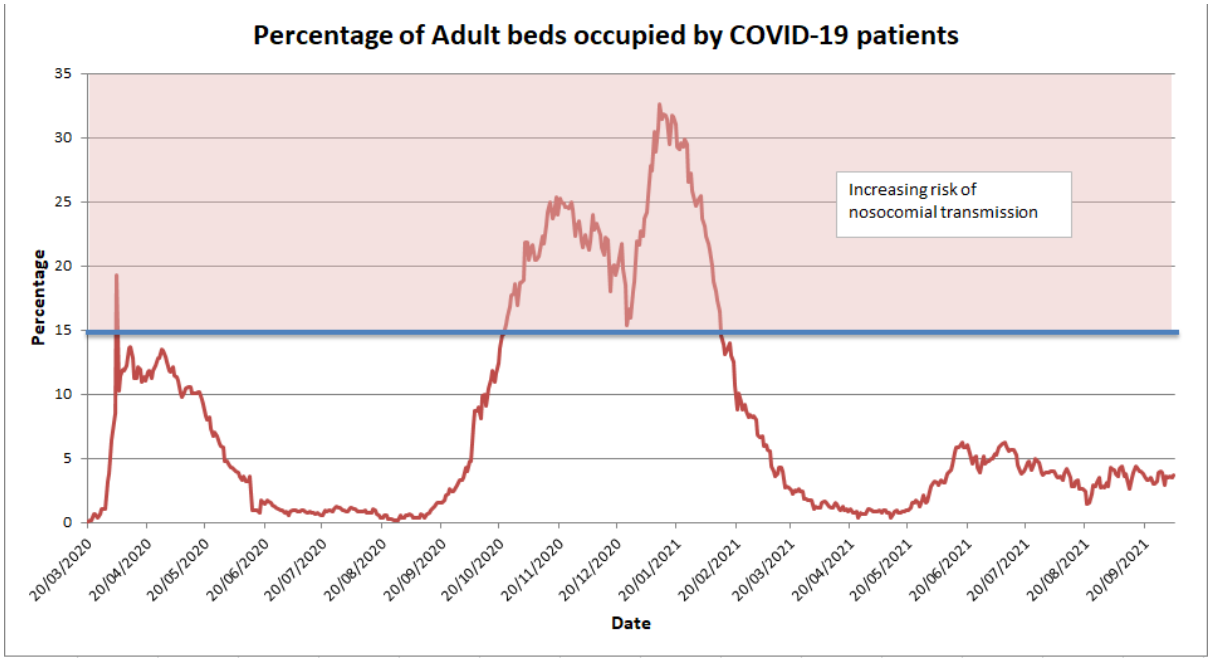


Chart 5:



What we did:

Whilst the Trust was not able to directly influence the community prevalence, close links are in place between local public health teams and the Trust. The COVID-19 virtual ward was also pivotal in reducing the number of patients in hospital to the minimum possible to reduce hospital-acquired transmission.

Given the high rates of transmission in the community, swabbing of all patients and regular swabbing of staff played an important part in reducing the possibility of spread by asymptomatic staff members. Asymptomatic staff swabbing was introduced on 10 August, as a pilot in cancer services before being rapidly rolled out to the rest of the Trust. This was performed initially by lateral flow testing and more recently by twice weekly LAMP testing.

The Trust has issued approximately 14,500 lateral flow tests. 289 staff contacted the Trusts Occupational Health team with a positive result of which 232 PCR results tested positive, allowing these staff to be isolated.

Since LAMP testing has been introduced in the Trust 2,820 staff have registered, of which 2,540 are providing regular samples. Testing has identified 8 positive results.

Approximately 5,000 staff have had an antibody blood test completed.

What we have learned:

Despite high rates of community transmission and high occupancy figures, the Trust maintained levels of hospital-acquired infection below the regional average.

Staff testing allowed the isolation of several staff who could otherwise have been a source of infection.

Plans:

As COVID-19 continues to be present in high levels in the local population and with the possibility of waning vaccine immunity, continuing staff testing is important and the Trust continues to support uptake by as many staff as possible.

Screening of admissions for asymptomatic COVID-19 remains an important tool particularly when community prevalence is high.

KLOE 11 - WHAT WAS THE IMPACT OF STAFFING SHORTAGES?

What we know:

During the pandemic many health and social care organisations have been impacted by staffing shortages. These can be due to several issues:

- Shortages due to Staff contracting coronavirus in the community.
- Shortages due to staff contracting coronavirus at work.
- Sickness absence due to stress/anxiety/depression.
- Sickness absence due to staff having caring responsibilities either for children or other relatives who have become unwell.

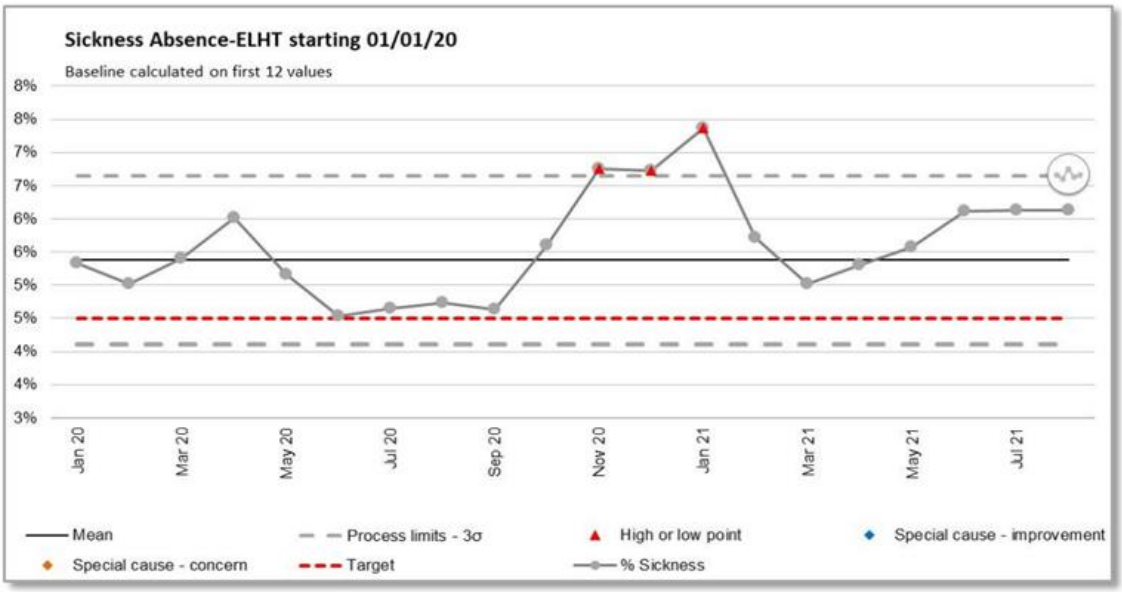
In addition, the Trust along with many organisations was impacted by the requirement for staff to self-isolate or by dependents such as children being required to self-isolate and requiring care unexpectedly.

In such cases, reliance on temporary, or agency staffing increases. Whilst all staff are appropriately trained, there is a risk that agency staff are less familiar with the guidance.

During the 37 outbreaks, 144 staff were involved and hence needed to self-isolate placing further pressure on already busy areas.

Staffing data shows that significant levels of sickness absence especially during the peak months of November 2020 to January 2021.

Chart 6:



Further data on reasons for staff sickness shows a significant impact of stress, anxiety and depression:

Table 3: Info on absence rates

All sickness absence	**5.56%**
COVID Sickness Absence	**0.89%**
Sickness absence: Stress/anxiety/ depression	**1.59%**
Of which Stress/anxiety/ depression as % of all sickness absence reasons	**29.00%**

What we did:

- Leadership team:

The Trust was swift to roll out vaccination to all staff and community partners with staff vaccination hubs established on both hospital sites.

The Trust invested heavily in the 'well team' to support all staff and especially those in areas under the greatest pressure. An emphasis was put on health and wellbeing and bespoke support was offered to staff who were struggling to come to terms both with personal losses, but also with work related stresses related to working in a pandemic.

Several staff were redeployed including staff with a clinical background who had moved into non-clinical roles but who volunteered to return to clinical practice.

It is however undeniable that achieving adequate nursing and medical staff cover over an expanded bed base with significant staff absence was one of the largest challenges of the pandemic, and rates of agency staff usage did increase.

In addition, the Trust worked with other trusts in the ICS through mutual aid to support each other when staffing affected the number of beds which could be safely opened.

Many staff needed to be redeployed and several new staffing models were introduced to skill mix experienced staff with less experienced staff on redeployment.

On a positive note, some staff relished the challenge to work in new areas and gain new skills. Staff moving into new areas such as critical care we given thorough induction and psychological support to enable them to cope with the challenges they faced.

What we learned:

Our staff are our most valuable asset. However, the pandemic has exposed our staff to stresses and experiences which they have never encountered previously. Supporting our staff so that they can support our patients is one of our most important duties.

Plans:

It is recognised that many of our staff will require ongoing support to recover emotionally as well as physically from the impact of the pandemic.

Simultaneously there is a need to increase activity in areas where activity was paused which poses a risk of exposing staff to further stress. As such, the Trust is exploring new models of working to improve the resilience of our staffing structure and prepare for the challenge of increasing activity whilst continuing to care for patients with COVID-19.

KLOE 12 - WHAT IS THE IMPACT OF OTHER COMORBIDITIES?

What we know:

There are several factors including age, ethnicity, gender and underlying health conditions which affect survival in COVID-19. An analysis has been performed of the patients who died with definite or probable hospital-acquired COVID-19.

Most patients were of white British background, with a male predominance. 55% of patients were over the age of 80.

Most patients had other comorbidities, with most patients having multiple comorbidities. The breakdown of common comorbidities is shown below.

Chart 7

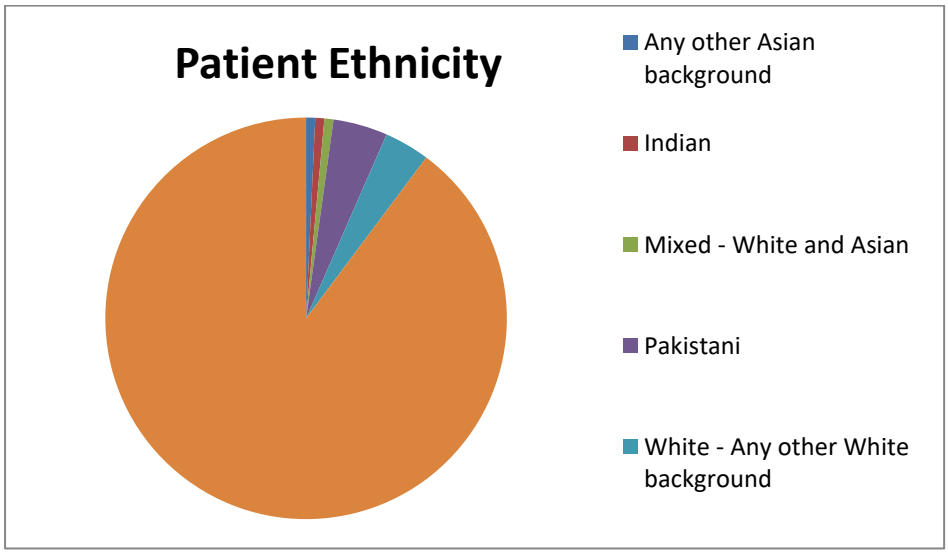


Chart 8

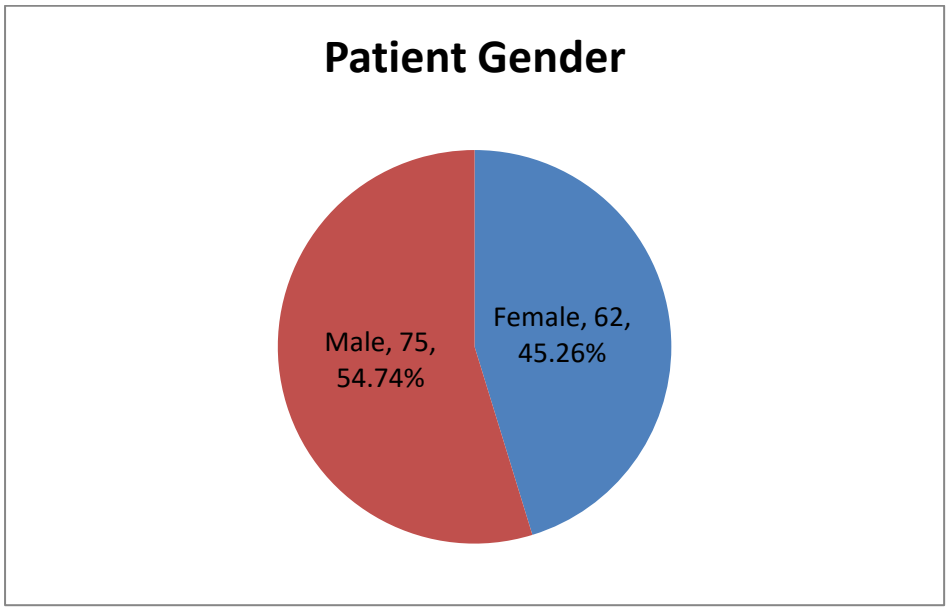


Chart 9

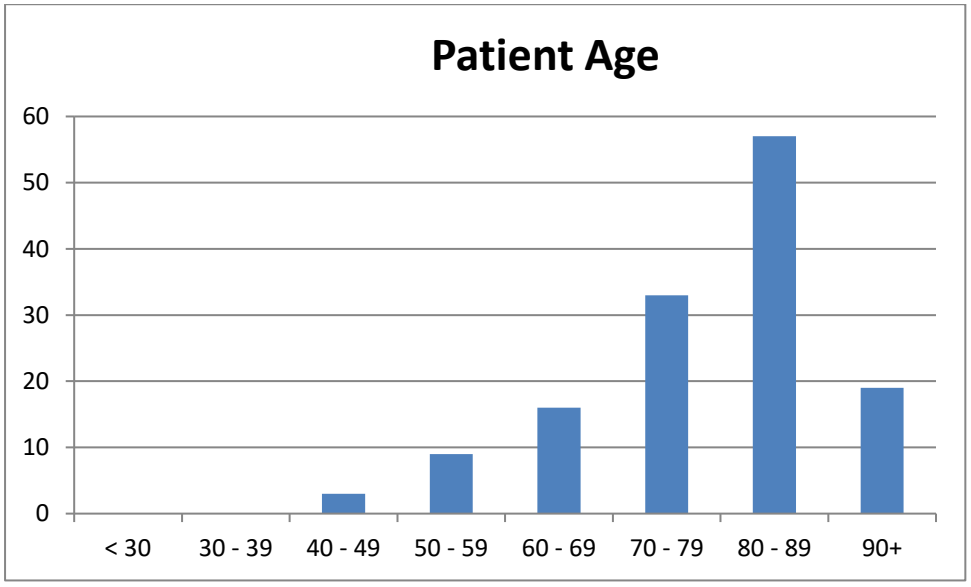
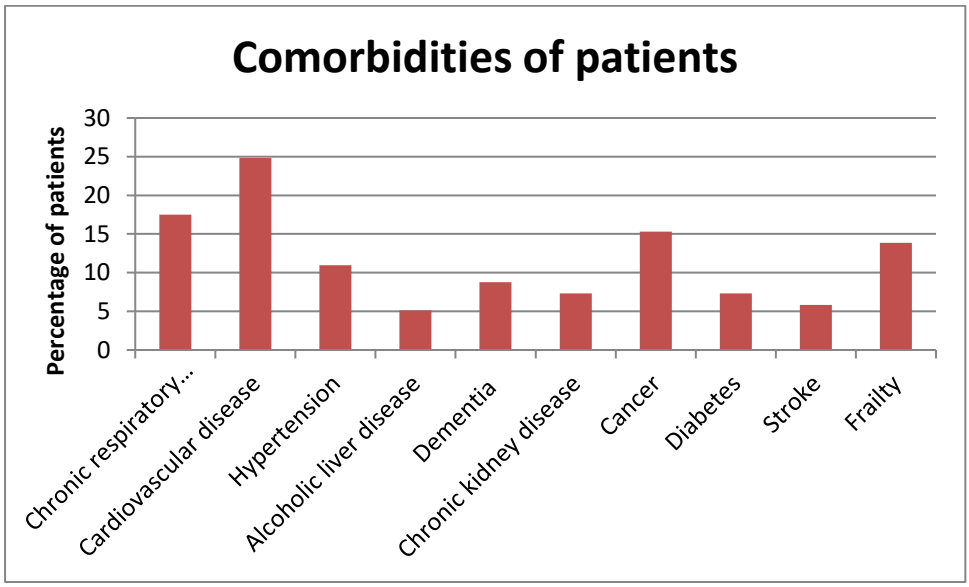


Chart 10



What we have learned:

Patients who are elderly, frail and with co-morbidities are at increased risk of mortality from hospital-acquired COVID-19 which carries an overall mortality rate of 38%.

Plans:

Recognising the significant mortality associated with hospital-acquired infection in these patient groups means that prevention on hospital-acquired COIVD-19 will remain a key priority for the Trust going forwards. Rates will continue to be carefully monitored through Trust Board and its subcommittees to ensure the reduction in cases seen as the pandemic has progressed are maintained.

KLOE 13 – WHAT IS THE IMPACT OF THE WARD ENVIRONMENT AND VENTILATION ON HOSPITAL-ACQUIRED TRANSMISSION?

What we know:

The physical environment and ward estate was a key issue for infection prevention teams during the pandemic.

The Healthcare Safety Investigation Branch (HSIB) studied the impact of environment and ventilation in its report on Hospital-acquired COVID-19 transmission in October 2020. They noted the following:

“The understanding of how transmission of COVID-19 occurs continues to grow. Current understanding suggests that the three key modes of transmission are: droplets via people within close proximity, contact via surfaces, and aerosol via airborne particles

Evidence regarding airborne transmission of COVID-19 emerged as the pandemic progressed and scientific understanding of the virus developed. On 29 March, 2020, the WHO commented that in respect of COVID-19, there was the possibility of airborne transmission in very specific circumstances, which included aerosol generating procedures (AGPs). The WHO updated this guidance on 9 July 2020, when it considered whether the virus may be spread through airborne transmission not associated with AGPs. Although the WHO accepted that scientific modelling had suggested that this could occur, it concluded that further research was required."

As the pandemic has progressed therefore, the importance of good ventilation has grown, and this has been seen in public health messaging.

Key issues noted with environment were as follows:

1. Difficulties in cleaning areas and equipment
   - Limited storage space for equipment on wards and in bays which led to clutter in areas making it more difficult for staff to clean.
   - Guidance on cleaning materials changed, staff confused which cleaning products to use as this was a change in practice.
   - Patient Services Assistants where under pressure to complete terminal cleans and this impacted on the normal cleaning rotas.
   - Cleaning check lists got missed due to staff shortages
   - A new change in practice was introduced regarding touch point cleaning, this was not embedded in staff practice at the time
   - Staff found it hard to locate the most up to date information, which was changing weekly in the early stages of the pandemic.

2. Poor ventilation in older parts of hospital
   - Health care technical memorandum (HTM) for all new builds is HTM 6 per hour, buildings built before this guidance may not comply.
   - Further research is being completed nationally to see if higher levels of PPE are required in older buildings, at the time of writing the report no further guidance has been provided nationally.

Environment issues were highlighted as a key factor when investigating outbreaks across the hospital sites. The estate in East Lancashire is of variable age from some modern facilities fit to modern standards with state-of-the-art ventilation systems, through to wards in older buildings without the ability to adequately ventilate. The pressure on hospital beds meant that patients who would ordinarily be nursed in well ventilated areas of the Trust had to be nursed in less suitable areas.

Challenges with Building ventilation were found to be a root cause in 12 outbreaks.

What we did:

- Leadership team

In response to the cleaning challenges, the Trust produced easy to digest information around the latest cleaning practices in poster form on wards for staff. Additional cleaning staff were rapidly employed and trained to ensure sufficient staff to take on the additional cleaning duties.

- IPC team

Mitigations were put in place to manage ventilation issues in older buildings. This included hourly window opening to ensure adequate ventilation in older areas, but these risks could not be eliminated. Mobile hand washing facilities were provided at each entrance of a ward.

- Estates team:

Following closure of all outbreaks, HPV (hydrogen peroxide vapour) decontamination was completed before re-opening any ward areas to ensure all traces of COVID-19 were removed.

Agency staff were employed to clean communal areas as Trust staff were undertaking enhanced cleaning on the wards and departments.

Mobile changing rooms were provided for staff then they could change into uniform on the premises

What we learned:

Ventilation was a key factor in hospital-acquired transmission and was the most challenging factor to mitigate. This is recognised by HSIB who have issued a recommendation to NHS England to respond to emerging scientific evidence and shared learning when reviewing guidance for NHS Trusts on the role of hospital ventilation systems in hospital-acquired transmission.

Plans:

Further work is being undertaken on the safe storage of equipment on the wards to reduce equipment being stored in open areas of the wards.

Ventilation systems are being discussed and options for improvement will be presented to Capital Board for ICS funding.

The Trust will respond to recommendations from NHS England once a review into the latest evidence has been completed and recommendations made.

Using knowledge of the challenges of ventilation, the IPC team will work with clinical flow teams to select the most appropriate areas for Cohort wards to reduce the possibility of hospital-acquired transmission going forward.

PART 3 - Review of learning from Structured Judgement Reviews

A structured judgement review is a case review of a patient's care which is carried out in a selection of patients who have died in the Trust. The review is systematic, looking at five phases of care (although not all phases will be relevant to every patient) and concluding with a score for the overall quality of care. The scores are as follows:

- 5 – Excellent care
- 4 – Good care
- 3- Adequate care
- 2 - Poor care
- 1- Very poor care.

All cases with an overall score of 1 or 2 undergo further review by a senior investigator and if the score is confirmed then a detailed investigation is undertaken to establish the underlying causes. This involves families who are notified if this is the case as part of the Trusts 'duty of candour' obligation.

The review is carried out by trained investigators and such a review may be triggered by several mechanisms, such as relative complaint, concern from a clinical team or medical examiner, or in a diagnostic group where there is a higher-than-expected number of deaths.

As well as a score, the reviewer notes both positive and negative aspects of care for phase. These can be collated and grouped into themes which can be used both to share good practice and to highlight areas for quality improvement work to take place.

In March 2021, NHS Northwest region published guidance on the role of structured judgement reviews in the investigation of hospital-acquired COVID cases. The guidance noted:

- Defining whether a death was avoidable will not be possible for most of the hospital acquired Covid-19 patients as there were many factors which could not be investigated by looking at the care of a single patient in isolation.
- Structured judgement mortality review does not interrogate the cause or potential impact of any type of hospital-acquired infection.
- Retrospective case note review is not considered an effective tool for learning in hospital-acquired infection as it does not record issues such as staffing, ward acuity, PPE compliance or other known contributory factors
- The mortality review and IPC investigation processes are not always linked
- There is pressure on the mortality review process as during times of heightened pressure clinical staff prioritise the care of patients.

This guidance was reviewed at the Trust Mortality Steering Group where it was agreed that for assurance a limited number of cases should be reviewed as part of the SJR process. The Deputy Medical Director presented the initial analysis of the SJR data taken from the 27 cases of hospital acquired COVID-19 to the mortality Steering Group in July 2021.

- 12 cases showed good care
- 13 cases showed adequate care
- 2 cases demonstrated poor care: these cases have been investigated however the poor care was not related to COVID-19 or the acquisition of such, and the poor care did not affect the outcome.

The following themes were identified:

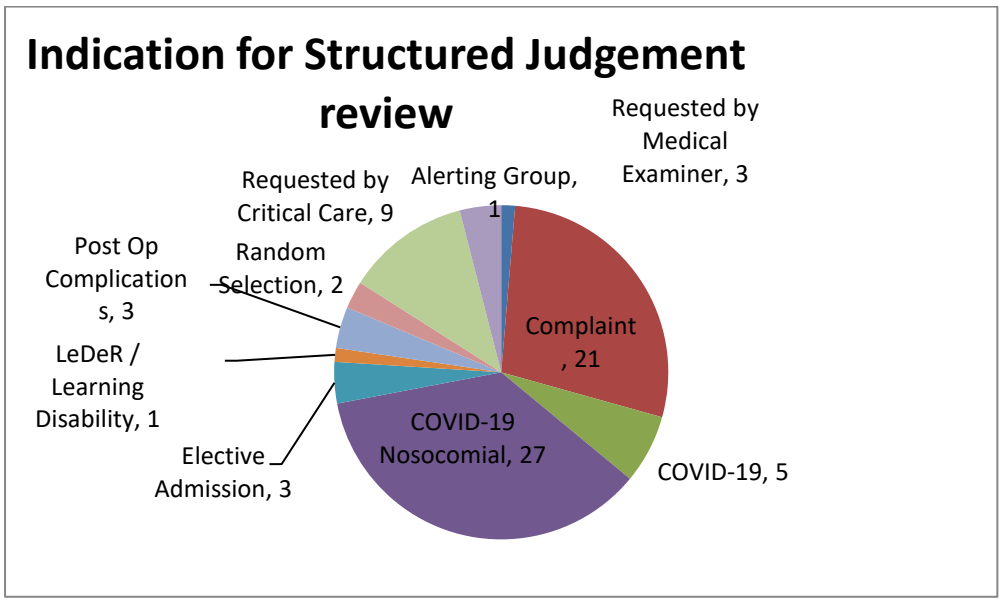
Good care:

- The multidisciplinary team of doctors, nurses and allied health professionals worked well together to support delivery of effective care.
- Communication between the teams caring for the patient was observed in many cases to be timely and effective.
- There was early consultant review and comprehensive plans were put in place early.

Areas for learning:

- Senior review later in the patient journey was lacking - this was recognised because of the significantly expanded bed base however was not found to affect care.
- Late recognition of the end of life leading to lost opportunities to involve the specialist palliative care team. It was recognised that recognition of impending death could be challenging in COVID-19, the specialist palliative team worked with ward teams to improve recognition and support for staff in this situation.

In addition, Structured Judgement reviews were carried out on a further 48 patients with COVID-19. Hence in total the case notes of 75 patients were reviewed. The primary reason for review is shown in **Chart 11:**

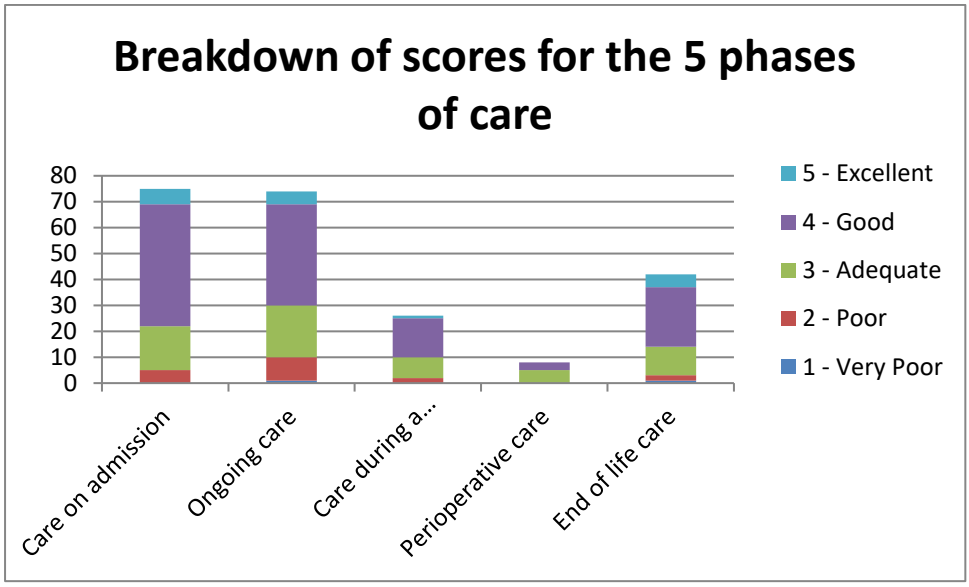


Of the 75 reviews, 3 cases showed excellent care, 39 cases showed good care, 28 cases showed adequate care, 5 cases showed poor care. 3 of the poor care cases related to hospital-acquired COVID-19 and are described above.

The Structured Judgement Review evaluates 5 phases of care as follows:

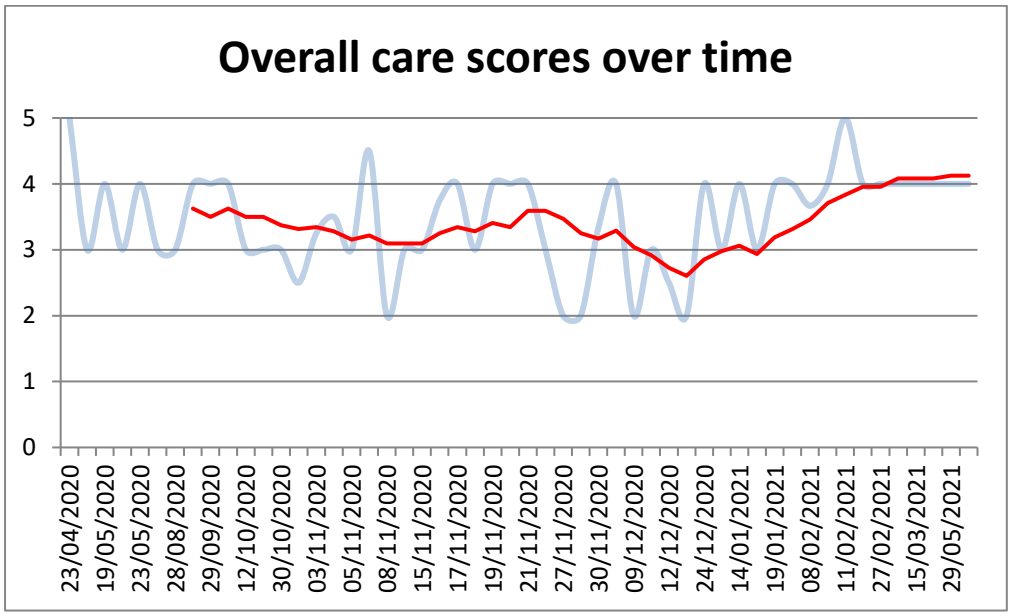
- Care on admission (normally the first 24 hours)
- Ongoing care.
- Care during a procedure where applicable (not including surgery)
- Care during surgery (perioperative care) where applicable.
- End of life care.

Chart 12: Demonstrates the score for the 5 phases of care:



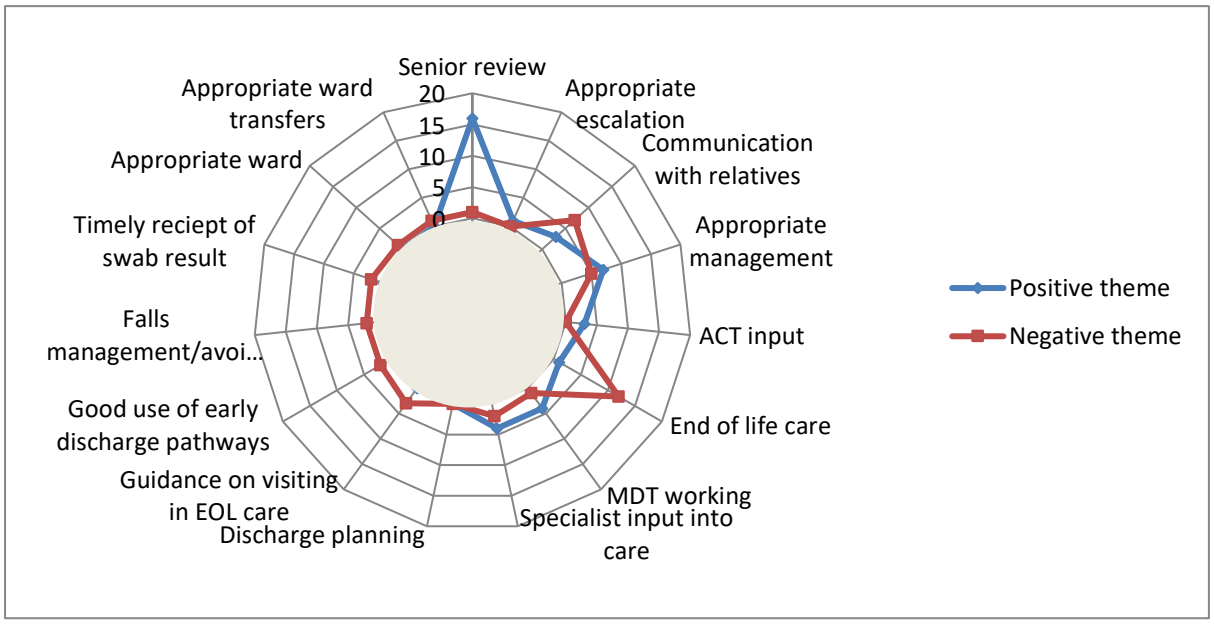
Furthermore, cases have been sampled throughout the course of the pandemic making it possible to map average overall scores over time. This shows a dip in overall care scores around the time of greatest pressure on the hospital during the wave around December and January 2021:

Chart 13:



Themes where overall review was positive included senior review, appropriate management, involvement from the acute care team, specialist input into care and multidisciplinary team working. Themes where review was overall negative included End of life care, communication with relatives, and guidance on visiting at end of life, falls and use of early discharge pathways.

Chart 14: shows a summary of themes:



What we learned:

Despite the pressures of the pandemic, in 93% of cases reviewed, care was adequate, good, or excellent. Where learning was identified, common themes were end of life care, communication with relatives and visiting.

The Royal College of Physicians has recently collated learning from a study of 510 SJRs completed on patients who died from COVID-19. Themes noted were broadly similar in some respects with poor care being related to care at the end of life, hospital-acquired infection, delays in assessment, poor communication and poor documentation.

Early senior review, which was described as a source of poor care in the RCP study, has been found in ELHT to be a positive aspect of care.

Plans:

These themes will be fed back to the clinical teams and discussed further with senior leaders.

A key priority for the Trust is a focus on End-of-life care. Work has taken place during the pandemic around treatment escalation planning and a detailed quality improvement plan for End-of-Life care has been formulated.

A recent business case to expand the specialist palliative care team has been approved and this will allow an increase in the provision of his service from 5 to 7 days per week.

The Trust is working with partners across Pennine Lancashire to improve end of life care in the community as well as in hospital.

Where poor care was identified investigations have been undertaken involving families and a detailed action plan for improvement has been created and shared.

Part 4 - Patients, Families and Carers Experience.

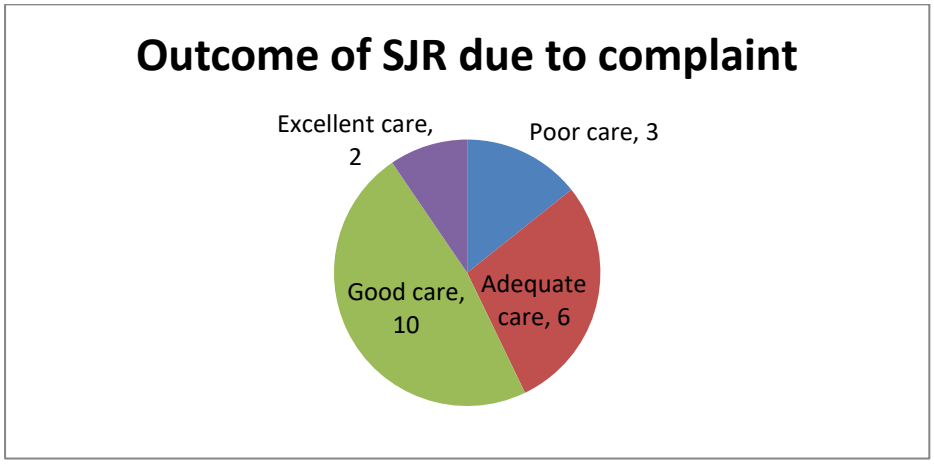
4.1 Impact on patients, Families and Carers

It goes without saying that patient, families and carer's experience of the Trust has been impacted by the pandemic. The involvement of patients, families and carers throughout the pandemic has been a key priority for the Trust. Over this period the Trust introduced several services to help support patients and families which include:

- spiritual support from the chaplaincy,
- introduction of iPads on wards to support patients and families to be able to talk over the internet (virtual face to face)
- patient bags drop off service
- Boosted Trusts Wi-Fi signal to ensure patients could use own devices to stay in contact with families
- Virtual meetings set up with patients and families to discuss care plans

It is accepted however that on many occasions, communication with families during this most difficult of times has been challenging. Where complaints were received in relation to patients who had died these underwent structured judgement review in addition to a complaints' response.

The outcome of these is shown in **Chart 15**:



3 reviews concluded poor care. In all cases a detailed investigation was carried out. All related to hospital-acquired COVID-19 infection however no evidence was found of individual lapses in care which could be linked to acquisition of COVID-19. Issues identified in care related to delays in investigation which did not affect outcome, challenges faced by patients being managed on COVID-19 cohort wards rather than specialty specific wards, end of life care and communication with families. In all 3 cases it was concluded that the deficiencies in care did not affect the patient outcome. All complaints were responded to in line with the Trusts complaints policy.

4.2 Incident reporting and duty of candour

The Trust has reported all hospital COVID-19 deaths on the national reporting learning system as death/catastrophic and an overarching incident for all reported deaths has been generated and reported to the Strategic Executive Information System (StEIS) in line with national reporting standards and the Serious Incident Framework. A duty of candour letter has been sent out to the next of kin of patients who died with an apology and explanation the Trust is completing this investigation into the outbreaks. The letters informed families of the investigation and stated the report will be made available for them to view on the Trust website in October 2021. All families at the time of writing to them were provided with Trust contact details to enable them to raise any issues/concerns they would like the Trust to take into consideration as part of the investigation.

Several families have provided accounts of their loved ones contracting COVID-19 and the impact this has had on them and their families, highlighting areas of learning (one of the main themes related to communication regarding day-to-day care and key touch points with families) and concerns they would like to be taken into consideration as part of this investigation. Some families have raised concerns regarding individual care and treatment; these families have been asked if they would like the Trust to investigate these under the Trusts complaints policy.

4.3 Issues raised by families and carers

Several families and carers have written to the Trust stating issues regarding communication, visiting, and privacy and dignity which resulted in undue distress. The following themes have been identified by the patient experience team:

- Delays in informing families regarding COVID-19 test results.
- Not receiving timely updates on their relative's condition.
- Phones not been answered on ward, requiring multiple attempts to get through and then no one available to speak to family members.
- Families unable to visit loves ones due to COVID-19 restrictions
- Inconsistency between staff progress reports when updates were provided on patients to family and at times very vague information provided.
- Vulnerable patients (e.g., patients with dementia) unable to communicate.
- Issues with face time meetings due to staffing and patients' phones not being charged.
- Families not treated with compassion.
- Lack of end-of-life privacy and dignity.

Other families have reported positive experiences of care despite the pressures of the pandemic. We would like to thank all families who took the time to contact the Trust with their experiences, both positive and negative. Where our care has fallen below the expected standards we would wish to apologise and assure families that their feedback is valued and will be used for future improvement.

Part 5 - Summary of key learning

1. Pennine Lancashire has been severely affected by COVID-19. High rates of community transmission and significant periods of time with more than 15% of the bed base occupied with patients being treated for COVID-19 created a challenging backdrop for prevention of hospital-acquired transmission.
2. Despite this the Trust had levels of hospital-acquired deaths as a percentage of total hospital deaths which were lower than the regional average.
3. Despite challenges for the organisation in rolling out new guidance rapidly, and for staff in learning new ways of working, compliance with social distancing, PPE and hand hygiene was good.
4. Although there was considerable concern about PPE supplies, Trust staff always had access to appropriate PPE.
5. Whilst prolonged hospital stay is known to increase the risk of hospital-acquired infection, good links with system partners were able to facilitate discharge wherever possible.
6. Access to timely testing is key. Delays with swab results were a factor in several outbreaks. Furthermore, there was a significant decline in the percentage on hospital-acquired cases when point of care testing was introduced in the emergency department.
7. Hospital-acquired infection predominantly affected those who were already elderly, frail, and who had significant comorbidities. These associated factors contributed to a high mortality rate.
8. Whilst availability of PPE was good, there were groups of patients and visitors for whom compliance with PPE was challenging. Given the link with hospital-acquired infection, supporting patients, visitors and staff is key to successful prevention of hospital-acquired infection.
9. Ensuring adequate ventilation was a significant challenge and despite considerable efforts, the poor ventilation in some areas of the hospital proved difficult to mitigate.
10. Despite the challenges of a pandemic, care which was at least adequate was delivered to 93% of patients whose cases were reviewed. There was no difference in the standard of care depending on whether the patient acquired COVID-19 in hospital.
11. There were occasions however where care was not delivered to an adequate standard. Care at end of life and communication with families are acknowledged as key areas for improvement.
12. The challenges of supporting patients with dementia are acknowledged. More needs to be done to support families to care for their relatives whilst in hospital and this is an area of focus for the Trust.
13. The lack of visiting for relatives was a source of great unhappiness for patients, families and staff. This analysis explains why due to the role visitors played in hospital-acquired transmission, visiting was stopped, however reinstating visiting when safe to do so has been a key priority.
14. Our staff, as our most valuable asset have worked through a traumatic period. Staff fatigue and emotional distress is significant. Supporting our staff is a key priority and is essential for safe patient care going forwards.

Conclusions and Future Plans

This report has documented the many steps taken to manage the COVID-19 pandemic at ELHT and the steps taken to reduce Hospital-acquired transmission. Through the work of the dedicated Infection Prevention and Control team and the work of Trust staff, despite several factors outside the control of the Trust such as high levels of community prevalence, high numbers of patients with COVID-19 in inpatient beds and estate which was difficult to adequately ventilate, the rate of hospital-acquired transmission was considerably lower than the regional average.

This does not take away the fact however that patients lost their lives to COVID-19 infection which was acquired in hospital. It is recognised that at times care fell below the high standards we would expect, albeit due to pressures on the hospital Trust never experienced, however care was in most cases at least adequate and more often good or excellent.

We recognise that communication with families has been a key area of concern. The report describes the basis on which the decision was taken to halt visiting from families given the high risk posed to patients already in hospital if they acquire COVID-19, however this was not done lightly and we recognise the effects this has had on patients and their families, which is not just about patient and family experience but is about losing key members of the team who know their relatives, can detect subtle deterioration and provide vital information to the medical and nursing teams. One of our first actions as cases have fallen in the community has been to reopen visiting with appropriate safeguards.

We also recognise the challenges which have been faced in providing high quality end of life care. Considerable work has gone on through the pandemic to improve such care in the Trust and importantly to create seamless pathways of care through to the community. End of life care remains a key priority for the Trust which has recently invested in additional staff to ensure that specialist palliative care expertise is available 7 days per week. Likewise, investment has been made in training in advanced communication skills, to facilitate staff to recognise the importance of good communication both in person and remotely.

Recently the Trust held a series of quality workshops involving both staff and patient groups, to determine key patient safety priorities for the Trust going forwards. Both communication and end of life care were recognised as key areas and will remain key priorities as we move forwards as a community together.

Appendix 1 – Timeline of National Guidance, ELHT Implementation and First outbreak

Date	Event	Action by ELHT
22/01/2020	**Briefing Note published PHE** Patients presenting with respiratory symptoms with a history of travel or contact with those travelling from Wuhan isolated and samples obtained, samples sent to Colindale Source isolated in a single room/negative pressure room if available Staff entering the room to use FFP3 (staff must be FIT tested prior to use) or respirator. Use of long sleeve fluid repellent gowns Disposable gloves with long tight-fitting cuffs for contact with the patient or their environment Eye protection to be worn for all patient contacts Refrain from touching mouth, eyes or nose with potentially contaminated gloves Specimens should be double bagged and delivered by hand to the laboratory	Information cascaded to all relevant staff and advised to ensure all wards have adequate supplies of PPE. (24/01/2020)
29/01/2020	1st symptomatic patient attended ED, samples sent to Colindale and Manchester	Results taking 3 to 4 days to receive back – Negative result confirmed
04/02/2020	Testing Pods opened on sites at Royal Blackburn Hospital and Burnley General Hospital	
07/02/2020	1st sample sent to pod	Negative result confirmed
07/02/2020	Staff Covid guidance upload on Trust OLI site	All staff can access the Trusts OLI site
17/02/2020	Fit testing sessions for staff commenced within ELHT for staff	
03/03/2020	1st positive patient recorded for ELHT	
14/03/2020	**PHE Guidance published** Cohort confirmed respiratory infected patients with other patients confirmed to have COVID-19 Ensure patients are physically separated; a distance of at least 1 metre Use privacy curtains between the beds to minimise opportunities for close contact Have signage displayed warning of the segregated area to control entry All visitors entering a segregated/cohort area must be instructed on hand hygiene. They must not visit any other care area. Visitors with COVID-19 symptoms must not enter the healthcare facility.	

	Visitors who are symptomatic should be encouraged to leave and must not be permitted to enter areas where there are immunocompromised patients.	
15/03/2020	1st positive in-patient confirmed in ELHT	
16/03/2020	ELHT Guidance for cohorting suspected patients, ward B20 opened as Trusts first Cohort Ward. Cat 2 patients can be together initially, similarly Cat 3 patients No mixed sex wards or bays permitted If required, then cohort Cat 2 and 3 together In a bay of 4 put patients diagonally opposite from each other and draw curtains down the long side of the bed	See appendix 2 for Hospital COVID Categories
19/03/2020	COVID-19 was declassified as an HCID (High consequence infection disease) by Public Health England	
26/03/2020	COVID-19 samples being sent to Royal Preston Hospital as the nearest testing facility	Taking 2 days to receive results back
26/03/2020	Following guidance from NHS England, visitors should be limited to one per patient unless: the patient is receiving end-of-life care the visitor needs to be accompanied – accompanying visitors should not stay in patient, ward, or communal areas, and this applies to inpatient and outpatient settings they are a partner and birthing partner accompanying a woman in labour No children under 12 Different rules for Paediatrics and Neonates, where two visitors are allowed and this may include a child under 12	Visiting guidance issued from NHS England restrictions put in place within ELHT
27/03/2020	Admissions pathways introduced (Red and Green) Green pathway – patients at low risk of COVID-19 Red pathway – patients of high risk of COVID-19	
07/04/2020	Introduced face masks on entry to a cohort wards with suspected or confirmed COVID-19 patients wards following publication of national guidance	Face masks not required in hospital corridors at this time.
27/04/2020	Publication of National Guidance 24/04/20 All patients attending as emergency admissions to be swabbed	
07/05/2020	In house testing Cepheid limited samples (rapid tests where an urgent result was vital)	(approx. 20 per day provided to Trust)

26/05/2020	Guidance issued to all clinical staff re: uniforms (Staff must not travel to and from work in uniform)	Trust guidance introduced following complaints from the public as staff were seen in supermarkets etc. in uniform
09/06/2020	NHSE/I Guidance that all NHS Trust need to report any Hospital Associated COVID-19 (hospital-acquired) outbreaks nationally	
15/06/2020	National guidance published 04/06/2020 and made mandatory from 15/06/2020	All staff / Visitors must wear face masks in all areas of the hospital within the Trust
24/06/2020	National guidance published 24/06/2020	All patients to be swabbed on day 5-7 post admission implemented within the Trust
17/07/2020	Enhanced cleaning and frequently touched points introduced on all wards	
10/08/2020	Weekly staff swabbing	This was initially a pilot in Cancer Services
23/09/2020	1st COVID-19 outbreak reported in ELHT (Ribblesdale ward)	Trust followed NHSE guidance for reporting and investigating the outbreak, providing feedback to NHSE
06/11/2020	Biofire in house Testing (paediatric test for COVID-19, Flu and Respiratory Syncytial Virus (RSV)	Respiratory Syncytial Virus is a viral illness that causes cough/cold and it can cause bronchiolitis. Typically affects babies under 12 months, but difficult to distinguish fr4om COVID-19 without testing
26/11/2020	1st COVID-19 area had Hydrogen Peroxide Vapour (HPV) fogging 1 bay on C4	C4 had a large outbreak and it was one of our poorly ventilated wards. The bay was closed and fogged to control the spread of COVID-19.
21/12/2020	All patients to be swabbed on day 4 and day 6	
27/01/2021	Point of Care (POC) testing went live in Emergency Department	

Appendix 2 – Hospital COVID-19 Categories

Green			**Red**	
Green elective	**Category 1 Lowest risk**	**Category 2 Low risk**	**Category 3 Moderate risk**	**Category 4 Confirmed**
Patient has self-isolated for the requisite period pre-operatively (as directed by their surgeon/physician) and have a negative COVID-19 swab taken within the 72 hours before admission	No features of any other risk category	Patient where clinical concern exists, but suspicion is low. This category includes patients without respiratory symptoms but who have been exposed to a COVID-19 patient in the last 14 days.	Patient meeting case definition where clinical presentation felt suspicious, but alternative diagnosis exists.	Clinical diagnosis (characteristic presentation or CXR findings) or positive swab.