Northern Devon Healthcare NHS Trust

Serious Incident Investigation Report

Learning from nosocomial COVID-19 infections at Northern Devon Healthcare Trust

October 2020 – January 2021

StEIS Log Number 2021/5936

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Executive Summary

On the 17th October 2020 the Trust declared its first internal COVID-19 outbreak as per PHE definitions. Between the 17th October and the 16th December 2020 a total of 7 outbreaks were declared. As part of these outbreaks 58 patients were categorised as per the national definitions as having 'probable' or 'definite' hospital acquired COVID-19. Of these 58 patients 13 went onto die. 12 of these patients were classified as frail and elderly, with all having multiple co morbidities. Following a review of all deaths, 7 cases where identified as meeting the criteria for further investigation.

NHS England guidance as set out in the Healthcare associated COVID-19 infections – further action letter dated 24th June 2020:

'As part of this, we are now asking all organisations to do root cause analyses (RCAs) for every probable healthcare associated COVID-19 inpatient infection i.e. patients diagnosed more than 7 days after admission. In doing this, it will be important that the organisation continues to reference the existing Serious Incident Framework to underpin the next level of investigation, if required to do so.'

The Trust therefore concluded that a Serious Incident investigation was required.

A robust review and investigation has been undertaken using a number of experts. This review concluded the following:

Following review of the case it is evident that this was an ever changing challenging time, with all working in unchartered territory. National guidance was received almost daily, which required rapid action from the Trust. The Trust had a robust mechanism for analysing and interpreting the information and then sharing with the clinical and operational teams.

Increased community prevalence coupled with likely staff to patient and patient to staff transmission led to a number of outbreaks in which already vulnerable patients contracted COVID-19. The Trust was rapidly adapting and changing practice following each outbreak. Service delivery has changed rapidly with staff working differently and more flexibly in order to maximise safety of patients.

There has been extensive rapid learning which continues to ensure we can adapt rapidly in order to maintain safety.

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Section 1. Background and context

1.1 Summary of national / local context

Coronaviruses are a large family of viruses which cause respiratory infections. Some cause mild symptoms (such as the common cold), and others such as Severe Acute Respiratory Syndrome (SARS) coronaviruses cause more severe symptoms, (Public Health England (PHE). On 31 December 2019, the World Health Organization (WHO) was informed of a cluster of cases of pneumonia that had occurred in Wuhan City, Hubei Province, China which were due to an unknown cause. On the 12th of January 2020 it was thought that these cases were due to a novel coronavirus referred to as SARS-CoV-2 and the associated disease became known on 11th February 2020 as COVID-19.

Transmission risk is highest where people are in close proximity (within 2 metres), in poorly ventilated indoor spaces (particularly if individuals are in the same room together for an extended period of time) and airborne transmission can also occur in health and care settings where aerosol generating procedures are performed. The virus has also been detected in blood, faeces and urine.

The symptoms of COVID-19 are variable as is their severity. Asymptomatic infection may occur but of those that develop symptoms (data as of February 2021 from PHE, 2021) indicated that:

- 40% have mild symptoms without hypoxia (low oxygen levels in the blood) or pneumonia
- 40% have moderate symptoms and non-severe pneumonia
- 15% have significant disease including severe pneumonia, and
- 5% experience critical disease with life threatening complications. Critical disease includes
    - Acute respiratory distress syndrome (ARDS)
    - Sepsis
    - Septic shock
    - Cardiac disease

- Thromboembolic events such as pulmonary embolism, and
- Multi-organ failure.

In mid-January 2020 the World Health Organisation (WHO) published guidance documents on managing this emerging disease before declaring the novel coronavirus outbreak a public health emergency of international concern (PHEIC) on the 30th of January. The WHO subsequently announced 11th March 2020 that the COVID-19 outbreak could be characterised as a pandemic. Between these times and in accordance with the evolving situation NHS bodies (Department of Health & Social care, NHS England, NHS Improvement and Public Health England) had been cascading alerts and guidance to individual NHS organisations in order to prepare for an escalating situation and prevent the NHS being overwhelmed. Interim clinical guidance was published by the WHO under the title "Clinical management of severe acute respiratory infection (SARI) when COVID-19 disease is suspected" on 13 March 2020. This was updated in May 2020 and again in January 2021 as a better understanding of COVID-19 disease processes and its management developed.

On the 26th March 2020 the first UK lockdown measures legally came into force. A phased lifting of measures took place during June, July and August as the first wave of COVID-19 infections decreased over the summer; however some local lockdowns remained in place. From September 2020 the numbers of COVID-19 cases again started to rise indicating the start of the second wave of infections. This resulted in a second lockdown imposed in England from 5th November until 2nd December which did cause a reduction in cases. Following the second lock down a three tier system of restrictions was imposed but cases continued to rise and on the 6th of January 2021 a third national lockdown was imposed. This along with the national vaccination project which also commenced in January 2021 brought a significant reduction in reported cases and hospital admissions. Northern Devon Healthcare NHS Trust (NDHT) staff began receiving vaccinations at the end of December 2020.

NDHT is a relatively small organisation providing integrated acute and community health and care services across Northern Devon together with a range of specialist community services across Devon and Cornwall. Prior to the COVID-19 pandemic there were 3392 staff delivering care in the organisation. The acute district general hospital (the most remote in England) has 300 beds and provides 24/7 emergency

and urgent acute hospital services to the population, with an emergency department, intensive care unit, women's and children's services, full diagnostics and outpatient services.

The health and social care community teams visit around 500 patients in their own homes (across a wide geographical area) during a 24 hour period and at any one time, they are overseeing around 6,000 people's care. The Trust also provides domiciliary care service, through 'Devon Cares', which is a partnership of high quality local care agencies who provide social care to people in their own homes.

During the first wave of the COVID-19 pandemic, and compared to other organisations the level of activity within the Trust was relatively low. The hospital did not have any outbreaks or identify any transmission of the virus within the hospital during the first wave. Local prevalence was low and lockdowns helped the Devon area. Many services were quieter than expected and hospital admissions peaked at 23 positive cases on 15th April 2020 for one day, (generally running in the teens for two weeks in April) but by the 28th April had decreased to seven. By mid-June there were no COVID-19 positive inpatients and aside from one occasion on 24th September, the hospital remained COVID-19 free until the 5th October when the second wave of infections began to develop.

The transmission dynamics of the delta variant identified in October 2020 has impacted on the rates of transmission. All hospitals reported increased transmission in the second wave and that the delta variant appeared to be more transmissible than the virus was in the first wave. Increased community prevalence also coincided with the identification of the delta variant.

Section 2. Identification of the incident, investigation and terms of reference

2.1 Identification of the incident

The Trust were monitoring national guidance in relation to the levels of investigation required for patients with hospital acquired COVID-19. The Trust took the decision ahead of national guidance to undertake nosocomial infection feedback reviews and mortality reviews for all patients who died with probable and definite hospital acquired COVID-19.

Following discussion with the Clinical Commissioning Group (CCG) and guidance from NHS England the Trust made the decision to proactively report these cases as a collective serious incident. All patients who developed hospital acquired COVID-19 were initially added to one incident for each outbreak. Following this however, a decision was made in January 2021 to individually incident report for each person which was retrospectively undertaken.

2.2 Investigation process and methodology

The following process for investigation was adopted:

- Gather all relevant evidence
- Establish the facts where possible
- Review / analyse the evidence
- Identify the most significant safety factors and safety issues that contributed to the incident being investigated
- Formulate findings and safety recommendations

This process is supported by the following:

2.2.1 Family input

Duty of Candour was undertaken in real time for all of the patients. What this investigation found was that for most cases this was undertaken with the patient and family immediately after the identification of a hospital acquired COVID-19 infection. As such for all 7 patients the next of kin were contacted again for a follow up conversation and to advise them that an investigation was taking place. All were offered the opportunity to ask any specific questions. All would like to see the report once completed. The following questions were received:

- 1) Why was there a failure to communicate with relatives during the patients hospital admission
- 2) Why were visitors not allowed to the hospital?
- 3) I struggled to get through to the ward at times for updates

2.2.2 Review of medical records / mortality reviews / staff outbreak

The multidisciplinary mortality reviews were reviewed for each patient. Medical Records were also utilised.

All relevant trust policies, procedures and practices were reviewed.

A review of the Trust staff outbreaks report was also utilised.

2.2.3 Expert review

A core group of people were identified to provide expert opinions as part of this review, these included:

- Respiratory Physician / COVID-19 Clinical Lead
- Consultant Microbiologist
- Infection Control Specialist Nurse
- Deputy Chief Nurse (as per structure at the time of the outbreak)

2.2.4 Review of Trust approach to COVID-19

A high level review of the Trust approach to COVID-19 was undertaken.

2.2.5 Review / analyse the evidence

The evidence collected was analysed and reviewed by the experts.

2.3 Terms of reference

The terms of reference were defined by the Head of Quality & Safety and the Serious Incident Lead. They were reviewed and approved by members of Gold Command (the senior command structure for responding to incidents/or severe pressure – as per Trust Incident Response Plan) and agreed with the CCG.

1. To establish a clear and complete chronology of what happened between 17th October 2020 when the Trust declared its first internal COVID -19 outbreak up to 16th February 2021 when there were no COVID-19 positive inpatients.
2. To listen to the views and opinions of the patient and/or their relatives/carers in line with the Being Open Policy and Legal Duty of Candour.
3. Key elements to examine:

- Review the specific COVID-19 protocols and practices that were in place at the time of onset to establish whether they were in line with national guidance;
- Review whether changes to practice (including testing/PPE management) were promptly implemented locally to reflect national requirements;

- Was the monitoring and reporting of potential or actual lapses in care or practice timely and appropriate?
- Were Trust responses to managing hospital acquired outbreaks timely, appropriate and did they make the required difference?
- Provide a review of the staffing situation during this time, to include the numbers testing positive, self-isolating and hospitalised for COVID-19 treatment and identify hospital acquired transmission if possible;
- Provide a review of the patients identified as having probable and definite hospital acquired COVID-19 infections, and their cause of death where applicable;
- Review the individual care of the patients who died due to hospital acquired COVID-19 to establish whether their overall care met standards. Consider specifically:
    - Could the patient's care have been managed elsewhere?
    - Did the patient need to be in hospital when they acquired the infection?
    - What factors influenced any delay in discharge?
    - Was treatment of their COVID infection appropriate?
- Follow up existing duty of candour for the patients who died due to hospital acquired COVID-19 and invite their next of kin to participate in the investigation; and
- Review patient/family experiences of visiting restrictions and communication issues to identify potential improvements.

4. Where significant concerns are identified in relation to the key elements identified at point 3, the contributory factors for any serious lapse in care management or service weakness must be identified, and where possible the most significant influencing factors (i.e. root causes) to these lapses.
5. To consider whether the matters raised by the SI have implications and lessons beyond the Trust and, if so what these are.

Outcome

1. To establish how recurrence may be reduced or eliminated;

2. To formulate recommendations and an action plan to manage care and service delivery issues;
3. To provide an investigation report as a record of the investigation process that sets out clearly the investigation team's findings, recommendations and conclusions (written in plain English); and
4. To provide a means of sharing learning from the incident.

Section 3. Facts of the case

3.1 Incident criteria: Death of patients with 'Probable' or 'Definite' Hospital Acquired COVID-19 as per Public Health England Guidance.

NHS England guidance as set out in the Healthcare associated COVID-19 infections – further action letter dated 24th June 2020:

'As part of this, we are now asking all organisations to do root cause analyses (RCAs) for every probable healthcare associated COVID-19 inpatient infection i.e. patients diagnosed more than 7 days after admission. In doing this, it will be important that the organisation continues to reference the existing Serious Incident Framework to underpin the next level of investigation, if required to do so.'

PHE definitions:

- COVID-CO: Community Onset - First positive specimen date ≤ 2 days after admission to Trust
- COVID-HOIHA: Hospital Onset - Indeterminate Healthcare Associated - First positive specimen date 3-7 days after admission.
- COVID-HOPHA: Hospital Onset - Probable Healthcare Associated - First positive specimen date 8-14 days after admission.
- COVID-HODHA: Hospital Onset - Definite Healthcare Associated - First positive specimen date 15 or more days after admission.

In line with the SI framework:

- ***Unexpected or avoidable death[8] of one or more people.***
- ***[8] Caused or contributed to by weaknesses in care/service delivery (including lapses/acts and/or omission) as opposed to a death which occurs as a direct result of the natural course of the patient's illness or underlying condition where this was managed in accordance with best practice.***

This would therefore indicate that this would meet the SI criteria. As such via the Trust Safety Huddle (a senior multi-disciplinary meeting responsible for reviewing incidents against SI criteria) the decision was made to report a serious incident based on the 7 deaths.

3.2 The incident

On the 17th October 2020 the Trust declared its first internal COVID-19 outbreak as per PHE definitions. Between the 17th October and the 16th December 2020 a total of 7 outbreaks were declared. As part of these outbreaks 58 patients were categorised as per the national definitions as having 'probable' or 'definite' hospital acquired COVID-19. Of these 58 patients 13 went onto die. 12 of these patients were classified as frail and elderly, with all having multiple co morbidities. Following a review of all deaths, 7 cases where identified as meeting the criteria for further investigation.

Section 4. Investigation findings and analysis

4.1 Organisational Factors

During the period under review the Trust were experiencing their first significant pressure as a result of the COVID-19 pandemic. During wave 1 of the pandemic there were no hospital declared outbreaks, no transmission of COVID-19 identified in the hospital and local community prevalence had been low.

In March of 2020 and per NHS England and Public Health England the Trust initiated a major incident response as required. As part of this the Trust setup the GOLD level response (strategic senior team meeting in order to facilitate timely and effective decision making), a component of the Major Incident Response Plan. This group has continued to date with meeting frequency being flexed up and down dependent on the activity changes. During the time under review GOLD was taking place every Tuesday and Friday with very good attendance and engagement. There were 10 'cells' feeding into GOLD. Each of these cells played a critical role in analysing and interpreting the information received from a national level and developing the local context. During the setup up of the COVID-19 incident response, changes were also made to the weekend and evening on call structures to enhance the clinical availability on site, this included the introduction of a senior nurse on site and a

medical COVID-19 contact in addition to the already available 24/7 clinical site managers and microbiology on call. The infection control nurses changed their usual way of working to provide a weekend service during this time.

Following the first outbreak being declared on the 16th October 2020 the Director of Infection Control (DIPC), called a virtual meeting with senior clinical teams to identify any further action required to support staff and contain the outbreak (50 staff in attendance) this took place on the 26th October 2020. A number of immediate actions were identified:

- Increased Infection control ward presence (which had been implemented as soon as the first positive case had been identified).
- Increased communications out to all staff regarding appropriate practices.
- The commission of a rapid round table review to identify and further the immediate actions required.

A virtual round table review was held on the 5th November 2020 with the Head of Quality and Safety, Associate Medical Director - Medicine (COVID-19 Clinical Lead), Infection control team, Associate Director of Nursing (Medicine), Head of Compliance and Risk and the Risk Lead. This identified the following potential issues which were identified and the mitigation put in place. These included:

- Communication including pictures on how to appropriately space beds and chairs within bays to ensure social distancing (communication had previously been disseminated but the renewed communication included pictures to aid staff).
- Increased communications out to all staff regarding appropriate practices, including social distancing during breaks, car sharing, PPE practices and being vigilant for symptoms.
- Ensuring all patients received COVID-19 testing at the required intervals and further development of an existing COVID-19 dashboard.

Communication was a key output from the GOLD meeting, with twice weekly all staff communications being produced and dissemination on the same day as the meeting to ensure rapid communication (this had been in place since wave 1). There were

also line manager updates and other specific all staff updates as required. This frequency of updates has continued as staff have reported these to be helpful.

It is acknowledged that clinical staff on the wards have more limited time to view the all staff updates and as such additional mechanisms like ward safety briefings have been used to provide updates. Ward staff report that sometimes they did not feel fully updated on the changing guidelines during the periods under review as elements were changing so rapidly. All updates are accessible on the Trust external website for staff to view at any time. In addition to this a specific COVID-19 area was setup on the Trust intranet, with all up to date guidance, posters and communications being available (all available since wave 1).

Staff also felt that at times the media caused them to be confused about approaches being taken. More often than not the first time the Trust heard about imminent changes was from the Parliamentary COVID-19 national briefings. Following these briefings there was often a delay in the guidance being disseminated from national teams for Trusts to enact. The Trust processes in place ensured that once information was received it was implemented as soon as practically possible.

4.2 Personal protective equipment (PPE) and infection prevention and control factors (IPC)

The supply of PPE available to the Trust during the period was found to be satisfactory, there was a level of anxiety around the numbers of visors in stock; however the Trust did have enough to meet the required needs, there were no identified shortages of PPE. Heightened levels of concerns about supply and demand were fuelled by national media communications, the PPE cell provided oversight to GOLD committee members providing constant reassurance.

National guidance for the wearing of PPE during this period was adopted by the Trust. In order to support the clinical teams the infection control and communications teams worked to produce a quick guide (during wave 1) ‘What PPE do I need to wear?’, these were printed/laminated and displayed in all clinical areas, when changes were made these were updated in all areas. These posters also included images for ‘putting on’ and ‘removing’ of PPE. Feedback from staff was that these

provided an easy to follow guide, with many areas displaying these in multiple areas to assist staff. Staff also reported that at times they did feel there was a lack of clarity around PPE as they felt they were hearing conflicting information from the media. Videos were also produced to walk staff through processes as it was not always possible for face to face training.

In mid-December 2020 the Trust contact tracing and Infection Control teams introduced universal visors for patient care across the whole Trust. The implementation of visors / increased droplet precautions was in response to the recognition that the green, amber, red pathways (in place to segregate patients) couldn't be relied on as some patients in the green / low risk pathways were incubating on admission (negative) and subsequently testing positive against a background of increased community transmission. This had been identified as effective in other care settings and GOLD supported this enhancement to the PPE which was extra to the NHS England guidance. The introduction of visors saw an almost immediate termination of hospital outbreaks for patients and staff.

The Trust had a process for staff to access filtering face piece class 3 (FFP3) fit testing. The Trust has a number of identified peer FIT testers and a number of staff employed for certain hours to undertake mass FIT testing, again this model flexed and adapted based on the clinical need. During the period under review there were concerns around the availability of the FFP3 masks that staff were tested on, due to different brands being sent from the NHS supply chain. Measures were put in place to ensure high risk areas and resuscitation trolleys had all masks available, other areas stock control was maintained to specific brands to reduce the need for additional FIT testing. Posters were produced and put at ward entrances identifying the masks stored in the area.

The infection control specialist nursing team took on a key role during this outbreak supporting and advising the clinical teams. However they are a limited resource and as such provided a Monday to Friday working hour's service. The infection control nursing team offered and rostered a weekend service in the second wave, but it was recognised that this would deplete the team / numbers of staff available during the week and this was seen to be more of a risk to the organisation. Outside of these hours the Senior Nurse/Clinical Site Manager would liaise with the on call

microbiologist for specific advice. The availability of this expert resource to deal with the multiple requests for support was a challenge with the team working to also meet the reporting requirements for NHS England. The team made themselves available to patient facing clinical staff as much as possible, visiting clinical areas continuously and made repeated visits every day to areas where COVID-19 positive patients were cared for or identified through the screening. This expert resource was also vital in supporting the interpretation of national guidance which again consumed a significant amount of time. This finding links to the finding of the *HSIB COVID-19 transmission in hospitals: management of the risk – a prospective safety investigation* and the national lack of Infection Prevention Control staff.

In December the gap analysis against the National Health Service England (NHSE) Infection Prevention and Control (IP&C) Board Assurance Framework (BAF) version 1.4 was presented to the Safety and Risk Committee. The IP&C Assurance Framework was issued by NHS England in May 2020 and updated in July and October 2020 (version 1.4). It is an assessment tool designed to provide a source of internal assurance for IP&C teams, Directors of Infection Prevention Control, Directors of Nursing and Trust boards, that internal guidance and practices for management of COVID-19 are compliant with national guidance. The framework has 101 lines of enquiry and was translated into the IPC trust wide action plan. A preliminary assessment demonstrated full compliance with 70 of the 101 lines of enquiry.

The 30 lines of enquiry where there were gaps / actions which would improve compliance include:

- Staff adherence to guidance for correct use of personal protective equipment, (PPE) use, and “hands, face, space”
- Provision of mandatory IP&C and PPE use training
- Executive approval for nosocomial infection data submission
- Oversight of outbreaks of COVID-19 at Trust board
- Triage of patients, and restriction of access across different patient pathways
- Use of masks by hospital inpatients
- Regular audit of adherence to PPE use in practice

- Hand hygiene audits
- Availability of negative pressure isolation facilities and en-suite isolation rooms
- Monitoring and reporting of testing turnaround times
- Provision of fit testing for use with disposable and reusable FFP3 respirators
- Documentation of staff risk assessments
- Support for staff who have tested positive for COVID-19

The Trust has an external contract with Sodexo to provide the cleaning provision. The management team of Sodexo were actively engaged in discussions around cleaning provision and prioritisation of cleaning in clinical areas. From wave 1, cleaning regimes were altered to focus on clinical environments. This did mean that there were some reduced cleaning regimes in non-clinical areas. Decisions regarding this were made at the Trust GOLD meeting. In November the Trust identified that increased ward level cleaning was required as the clinical staff were unable to undertake all of the elements that would usually have been assigned to them resulting from new ways of working due to COVID-19. As such GOLD agreed a substantial investment to enhance the ward based cleaning (including overnight) and remove some duties that did not require clinical staff to undertake them. Sodexo worked hard to recruit additional staff and enhanced cleaning was underway from January 2021, additional touch point cleaning was also introduced at additional cost.

The areas for improvement continue to be monitored via the Trust wide Infection Control Group.

4.3 Testing and capacity factors

The Trust established a testing cell group early in the pandemic, this group looked at patient and staff testing and monitored the laboratory testing capacity.

The Trust consistently followed the national regimen for testing of hospital inpatients and at many times was undertaking enhanced screening. In November 2020 when the Trust was experiencing its first outbreak the ‘Testing cell’ (proactively with GOLD approval) changed the frequency of inpatient testing. Initially testing was on

admission and day 5, but by the end of November a further increase was made to admission, day 3, and day 7. There were incremental changes to testing in the areas where outbreaks were confirmed and for Covid-19 contacts (patients and staff), flexing to manage outbreaks and mitigate risks. For example during outbreaks all patients on the ward had a PCR swab performed (unless they had been swabbed in the previous 24 hours) as a baseline, and then continued patient testing as per the regimen, (unless they were identified as contacts in which case they had PCR swabs taken on alternate days for the entirety of their contact period i.e. 14 days). Staff had PCR tests when they presented on shift as a baseline and then depending on the findings were retested at intervals – sometimes on a daily basis.

The Trust developed an in house COVID-19 dashboard during wave 1. This integrated data from the laboratory system and the patient record, which includes flags indicating the patients' COVID-19 status. The dashboard indicated which patients were due to have tests undertaken, so that the levels of rescreening could be monitored through GOLD. Rescreening by the wards was generally done in a timely manner, at times there were patients missed for up to 48hrs due to various reasons such as staffing capacity, or not being aware that it was due for a specific patient. The clinical matrons and clinical site managers supported ensuring rescreens were undertaken which supported improvements in timeliness. The dashboard had many useful outputs including enabling staff to identify new positive results and when positive patients did not have a COVID-19 flag.

The Trust had adequate supplies of reagents to undertake testing during this period, but a large percentage of tests were going to the RD&E lab for testing as per an agreed process. Tests were being performed at NDHT but physical testing capacity was limited initially, however this increased over the course of the pandemic. The Trust had a limited supply of rapid testing kits, (limited at around 15 per day), these were identified for use during this time for patients that needed rapid results to receive treatment i.e Stroke patients, patients requiring urgent surgery. Results from on-rapid tests took on average 24 hours to be returned; therefore if asymptomatic the patient may have spent a significant length of time in an open area before being identified as positive.

For staff the Trust developed a staff testing guide which included the provision of testing household contacts for staff. In wave 1 a Trust contact tracing team had been developed and was functioning to a high standard in terms of early identification and isolation of staff. Staff were seconded and recruited to provide a staff contact tracing service. This combined with in-house testing for staff and household contacts provided a rapid and expert service for managing staff. This allowed individual risk assessment of staff who were contacts. Identifying likely sources of COVID-19 in staff allowed actions to be undertaken to reduce or eliminate these contacts in the future.

The Trust received lateral flow testing kits for staff in late November and early December; these were distributed rapidly to patient facing staff over a 2 week period. It is therefore important to acknowledge that for the most of the outbreaks asymptomatic staff testing was not available.

4 4 Environmental Factors

Wards were proactively prepared for COVID-19 during wave 1, where NDHT saw fewer cases than expected. New ventilation systems were fitted in the wards that were identified for COVID-19 patients during March and April 2020. These ventilation systems (extraction fans) were put in place to improve air flow and ventilation in the ward areas where COVID-19 patients would be cared for. As the operational plan for wards developed additional work was carried out during May, June and July 2020 to ensure that ward bays had doors reinstated, many had been removed pre COVID -19 to make it easier to nurse the patients.

The layout of some wards due to design of Trust estate did prove a challenge when segregating patients in particular on Glossop Ward and Capener Ward. These areas have 6 patients in each bay and toilet facilities are outside of the bays. Whilst social distancing was possible in the bays this left little room to move around within them. Patients had to leave bays to use facilities and this increased the potential of cross contamination. Despite significant estate transformation and investment in the preceding 10 years both Capener and Glossop ward lacked en-suite facilities in side

rooms and in the bays. Support from the infection control team alongside posters were produced to support wards to promote social distancing between patients.

Ward activity and layout which differs in each area can create additional transmission risks. Wards worked where possible to reduce the number of staff in specific areas, but this was not always possible due to clinical and safety factors.

Steps were taken to identify additional areas for staff to use for breaks as current rest areas were small. Guidance was produced for using staff rest rooms promoting social distancing.

4.5 Staff factors

Feedback from staff; highlighted that some staff did not feel prepared having had such a long gap between having cases in the Trust between waves. Staff reported that they rapidly re-adapted to the COVID-19 ways of working but for those working in the areas where outbreaks were declared they reported increased anxiety and emotional distress.

The outbreak and the national lockdown which was imposed during November 2020 saw an increase in the shielding workforce and an increased number of staff isolating due to confirmed COVID-19 or being identified as a contact.

A total of 69 COVID-19 positive staff were associated with the outbreaks. The Health and Safety Manager in conjunction with the contact tracing team undertook a review of these staff. Some staff reported that they did not believe they contracted COVID-19 from work but this cannot be confirmed. Key elements that came out of staff conversations were:

- Changing advice regarding visors
- Availability of staff rest areas
- Availability of staff swabbing

It is not possible to ensure that staff were always following best practice preventative measures, despite being regularly requested and flagged.

The number of staff that were required to isolate added additional pressure to the 'working' workforce, with wards running at reduced nurse to patient ratios on some days. Due to this there was also increased internal redeployment of staff in order to

mitigate risks. The contact tracing team during this period identified potential transmission amongst staff that had been internally redeployed. The deputy chief nurse in conjunction with the infection control team developed clear guidance for the redeployment of staff in order to reduce any potential risk of transmission. The staffing Matrons followed the guidance where possible in order to mitigate the risks while maintaining patient safety.

The Trust had setup a number of forums and mechanisms to support staff health and wellbeing during this period. This included increasing the provision for staff areas which enabled improved social distancing.

As outlined in the testing and capacity factors the Trust did not receive lateral flow testing kits until late November, early December 2020.

The Trust had multiple mechanisms for communicating with staff at all levels and areas. It is important to acknowledge that ensuring all staff had the ability to be up to date with all information was a challenge in particular for our clinical patient facing staff who had less time and ability to access all staff updates. The role of the ward safety briefing was critical in delivering the most up to date messages on a day to day basis. Staff reported that at times they were confused by information as it might change from one shift to the next and if they had had an extended period off they often felt they had missed lots of information. The ward managers, clinical matrons and associate directors of nursing worked hard to ensure information was passed on in a meaningful and succinct manner but all acknowledge that at times social media did complicate messaging.

As we learnt more about the virus, we were able to evolve the clinical care given to patients. Additional training was given to staff to support this with face to face infection control and resuscitation training recommencing in August 2020.

4.6 Patient Factors

Of the 7 patients identified as requiring further review the ages ranged from 80-96 years old, with a median age of 85. These patients were admitted to hospital between the 13th November and the 30th November 2020. For each of these patients the Charlson Comorbiditity Index has been used to calculate a predicted comorbidity score (the Charlson Comorbidity Index is a method of categorising

comorbidities of patients based on the International Classification of Diseases (ICD) diagnosis codes and data within the patient notes). The Head of Quality and Safety and Respiratory Physician / COVID-19 Clinical Lead, used the mortality reviews undertaken for each patient to establish a basic score. All patients scored between 6 and 10, with a median of 7. This therefore indicates that all 7 patients had a less than 2% estimated 10 year survival rate due to complex comorbidities. This indicated that all the patients identified were classified as frail and elderly.

6 of the 7 patients had contact with COVID-19 positive patients during their admission and then went onto develop symptoms themselves as identified as part of reviews. All patients were tested at multiple points during their admissions prior to contracting COVID-19. 3 patients had multiple ward moves, although individually each move was justified to try and maintain the patient in a green pathway. It was evident that a number of patients could have avoided admission or been discharged at an earlier opportunity if there had been capacity to support their care at home, however it is recognised that these are finite resources and therefore during high volumes of patient demand they were not always available.

Communication with families

Patients were cared for by staff who were wearing masks and gowns, which made communication much more difficult than usual. That said, skilled, compassionate care remained central to how individuals and teams cared for patients. However, restrictions to visitors on site also led to significant challenges, with the loss of vital support and understanding that visitors provide to ward staff, leading to patients needing additional support from staff, and multiple queries and concerns from worried relatives and friends unable to visit their loved ones. This led to the provision of virtual visiting, with electronic mobile devices provided to the wards to enable virtual visiting either by phone or video link. However it is evident that at times communication with relatives did not always meet the standard we would aspire to.

4.7 Incidental Findings

On review of this case a number of incidental findings have been identified.

- Standards of documentation - documentation for all staff groups was limited at times which made analysis of patient level information more difficult, this is despite documents being simplified for use during the pandemic.

- Access to testing dashboard – access was limited due to dashboards showing results for staff and patients – mitigation was put in place so ward level information was distributed each day.
- COVID-19 positive results are located on LabCentre and the COVID-19 dashboard this information was rarely transcribed into patient notes.
- Visiting stopped in wave 2 due to the national lockdown – initially there was some misunderstanding around guidance and visiting.
- Testing regimes changed.

Section 5. Conclusion & Safety Recommendations

5.1 Conclusion

1. **Organisational approach**

   The Trust had a well established COVID-19 GOLD incident command process with the appropriate groups feeding into this process. GOLD and the cells feeding in were agile and responsive to the local and national context, flexing frequency of meetings and required attendance to meet immediate needs.

2. **Personal protective equipment (PPE) and infection prevention and control factors (IPC)**

   The Trust had satisfactory PPE supplies. The Trust followed national guidance on PPE and from mid – December introduced enhanced PPE with the introduction of visors for all patient contact which had a significant impact on reducing in-hospital transmission.

   The Trust does not have an infinite resource of IPC specialist nurses. The team worked tirelessly to interpret national guidance and support clinical teams, but due to capacity were unable to respond to all requests for support. It must be acknowledged that no team would have been resourced to respond to a pandemic.

   Staff were faced with ever changing national guidance therefore we cannot say with absolute certainty that staff were always fully compliant with PPE at all times during this period.

   The gaps / actions identified in the updated IP&C assurance framework in December 2020 correlate to the findings of this review and ongoing review continue through the Trust wide Infection Control Group

3. **Testing and capacity factors**

The Trust adopted the national guidance for testing of hospital inpatients and at many times was undertaking enhanced screening. The Trust developed in house digital systems to support rescreening of patients

The Trust did not receive staff lateral flow testing kits until the end of November 2020 and therefore, by necessity during the main period of these outbreaks there was limited proactive staff surveillance. Staff testing has continued to evolve in line with national guidance.

4. **Environmental Factors**

Significant investment and change was proactively undertaken, such as the instalment of additional ventilation and additional doors. There are 2 Trust wards in which the layout is not conducive to managing patients which are cohorting due to the lack of toileting facilities in the bays.

5. **Staff Factors**

Despite IPC measures in place a significant number of staff did contract COVID-19 and therefore staff to patient and patient to staff transmission is likely. Where outbreaks were declared staff reported increased anxiety and emotional distress. The staff also felt fatigued at the thought of another wave of COVID-19 and the impact on them, colleagues and families. The emotional impact of COVID-19 is acknowledged and supporting staff wellbeing has been a key Trust priority throughout.

6. **Patient Factors**

All the patients included within this report had complex medical issues, which did put them at increased risk of death once they contracted COVID-19. It is important to remember that during the period under review there was no available vaccination and all of these patients would have been classified as ‘highly vulnerable’. It must be acknowledged that although every effort was taken to minimise the chance of spread between patients, some patients experienced numerous moves to try and minimise this exposure.

5.2 Overall Summary

Following review of the case it is evident that this was an ever changing, challenging time, with all working in uncharted territory. National guidance was received almost daily, which required rapid action from the Trust. The Trust had a robust mechanism for analysing and interpreting the information and then sharing with the clinical and operational teams.

Increased community prevalence coupled with likely staff to patient and patient to staff transmission led to a number of outbreaks in which already vulnerable patients contracted COVID-19. The Trust was rapidly adapting and changing practice following each outbreak. Service delivery has changed rapidly with staff working differently and more flexibly in order to maximise safety of patients. There has been extensive rapid learning which continues to ensure we can adapt rapidly in order to maintain safety.

It is not possible to ensure that staff, patients and visitors were always following best practice preventative measures, despite being regularly requested and flagged, therefore to identify the exact point of infection for patients who acquired Covid-19 as inpatients has not been possible.

5.3 Limitations of the investigation

The terms of reference as initially set out and agreed with the CCG proved a challenge to deliver as it was not possible to review every aspect of COVID-19 management or where/how specific infections occurred. This would have been beyond the resources available to this investigation and the information available with the Trust current paper based patient notes. The report content has evolved over the course of the investigation adapting and flexing to meet perceived changes to requirement.

5.4 Safety recommendations

The Trust has since March 2020 adapted and changed services in order to meet the challenges posed by COVID-19 in our community. There have been some clear recommendations identified but it must be acknowledged that that these have been evolving and adapting over 2021 and will not be unique to this Trust, these elements do align to the National HSIB investigation into COVID-19.

It is recommended that the Trust continue to consider the following:

1. Communication mechanisms and involvement of staff and patients are regularly reviewed and adapted to meet needs.
2. The Trust has more work to do to ensure patients receive care on the ward that best meets their individual needs first time, thereby preventing multiple and unnecessary ward moves which too often result in a poor patient experience and leads to a breakdown in communication between the hospital, patients and their families.
3. Infection Prevention and Control must continue to be everybody's business with PPE, distancing and other safety requirements still necessary to prevent the spread of the COVID-19.
4. Increased number of IPC specialist nurses to support the clinical areas

Appendix 1. Reference list

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A number of Trust policies and guideline were also viewed and considered.