

Independent Serious Adverse Incident Review Final Report

To review the investigation and management of the COVID-19 outbreaks at Craigavon Area Hospital, (CAH) and Daisy Hill Hospital (DHH) between August and October 2020.

May 2022

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Acknowledgements

A review of this serious incident is complex and would not have been possible without the support of the patients, families and healthcare workers involved.

The members of the Serious Adverse Incident Review Team wish to thank all those involved for the information and experiences they have shared with us.

Membership of the Serious Adverse Incident Review Team

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Executive Summary

In the Southern Health and Social Care Trust (SHSCT) in Northern Ireland (NI) between August and early October 2020, outbreaks of Hospital Acquired COVID-19 (HA-COVID-19) occurred at Craigavon Area (CAH) and Daisy Hill Hospitals (DHH). The wards involved cared for haematology, medical and surgical patients, and many patients and healthcare workers were affected. In response to these outbreaks, SHSCT and the Public Health Agency (PHA) Northern Ireland commissioned a Level 3 Serious Adverse Incident (SAI) review.

An independent panel was established by the SHSCT and the PHA to undertake the SAI review. The panel comprised senior medical consultants in care of the elderly, haematology and microbiology, an independent senior nurse consultant in infection control, a consultant representative from the PHA NI and a lay representative from the local community.

The SAI Review Terms of Reference

- Review the management of the outbreak.
- Identify system wide strengths and weaknesses in the management of the outbreak.
- Use relevant findings to improve the quality and safety of care and to reduce the likelihood of future outbreaks and mitigate their impact.
- Engage with all affected patients, their families and staff who were directly affected by this SAI.

The objectives of the SAI review were:

- To construct a comprehensive chronology of the events between 10/08/2020 and 23/10/2020 of the COVID-19 cluster incidents at CAH Haematology Ward, Ward 4 South and DHH Male Medical Ward.

- To scrutinise confidential medical and nursing records of each patient who died with a positive test for COVID-19, identifying any factors that may have caused or contributed to their deaths.
- To review confidential medical and nursing records of each patient with a positive test for COVID-19, identifying any issues with the delivery of safe, high quality care in the context of the COVID-19 outbreak under review.
- To ascertain whether the process utilised for investigation and management of outbreaks and steps taken to prevent cross-infection were in accordance with the best practice guidance available at the time. To identify if there were any missed opportunities for intervention during the management of the outbreak.
- To examine the compliance of the Trust with local, regional or national policy/guidance/alerts, professional codes of conduct and risk management processes at the time of the incidents.
- To review the wider context of the incidents, including the appropriateness of the environment, equipment and staff resourcing available.
- To consider the ways in which information regarding the incidents was shared and communicated with families.
- To identify areas of good practice and opportunities for shared learning from the incidents.
- To establish what lessons could be learned from these incidents regarding the management of COVID-19 clusters and ways in which Trust systems could be strengthened regarding safe, high quality, care. Any immediate learning identified during the SAI process was escalated and shared with the Trust Board for dissemination.

Involvement of patients/families

Throughout this SAI review, the panel ensured that the affected patients, their families or carers, were kept informed through the appointment of an experienced liaison officer. This was to ensure that the SAI review process was open and transparent. The liaison officer met or spoke with the patients or their families and also invited them to provide written submissions regarding patient care or other concerns during the outbreak. The patient and family feedback was considered by the panel in making their recommendations.

Involvement of healthcare workers

The outbreaks affected not only patients but also many healthcare workers (HCWs) and their contacts, both inside and outside work. Some of the HCWs contracted COVID-19 in the community while others had to care for patients infected with COVID-19, including some of those who died. The panel felt it was important to seek views of HCWs to have a better understanding of the impact of COVID-19 outbreaks on their working practices, the care of patients and on themselves. The panel also wished to explore in greater depth the working environment, training provided, communications and their experiences regarding COVID-19, both generally and during the outbreaks. To gather this information, a self-completion questionnaire was sent to all HCWs in the two affected hospitals after consultation with the Trust's Human Resources department. No personal details of the healthcare workers were collected to ensure anonymity.

The feedback obtained from healthcare workers was considered by the panel and recommendations made.

Methods used for review:

Effective infection prevention and control is fundamental to help prevent the transmission of COVID-19 infection in hospitals. NHS England has developed an assurance framework to effectively assess compliance with Public Health England (PHE, now UK Health Security Agency [HAS]) and other COVID-19 related infection prevention and control guidance. This framework was adapted to assess the compliance of the SHSCT with best

IPC guidance and practice available in Northern Ireland at the time of the outbreak, together with examining supportive evidence.

Infection Prevention and Control Board Assurance Framework

https://www.england.nhs.uk/coronavirus/wp-content/uploads/sites/52/2020/04/C1337_IPC-Board-Assurance-Framework-V1.6-June2021.pdf

To assess the management of the outbreak in SHSCT, the guidance provided by NHS England on minimising nosocomial infections in the NHS was adopted.
<https://www.england.nhs.uk/coronavirus/wp-content/uploads/sites/52/2020/06/C0586-minimising-nosocomial-infections-in-the-nhs.pdf>

The panel also assessed compliance with the safety recommendations of the Healthcare Safety Investigation Branch (HSIB) report published in October 2020.
<https://www.hsib.org.uk/documents/258/hsib-summary-report-covid-19-transmission-hospitals.pdf> and Health Building Notes (HBN) and Health Technical Memoranda (HTN) Standards <https://www.england.nhs.uk/estates/health-building-notes>

We also explored whether SHSCT followed existing guidance of PHA NI on defining and managing communicable disease outbreaks. In the absence of detailed guidance, the panel assessed the management of the outbreak against the standards and operational guidance provided by Public Health England.
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/343723/12_8_2014_CD_Outbreak_Guidance_REandCT_2_2_.pdf

All assessments were made by reviewing contemporaneous documents and interviews with relevant persons including: the IPC team, nursing managers, clinical directors of affected wards and senior hospital managers, including the Chief Executive and Medical Director.

Two members of the panel also visited CAH and DHH sites.

Findings

- In the three outbreaks, a total of 15 of the 32 patients with COVID-19 (46.8%) sadly died. In the Haematology Ward outbreak, seven of the 14 patients with COVID-19 (50%) died; in the Male Medical Ward outbreak, six of the 13 patients with COVID-19 (46.2%) died and in the 4S Ward outbreak, two of the five patients with COVID-19 (40%) died. The age range of the deceased was 65-84 years. There were 11 males and four females.
- Many of the deceased patients had severe pre-existing comorbidities and limited life expectancy prior to contracting COVID-19. The panel concluded that COVID-19 appears to have contributed to the premature death of 12 of the 15 infected patients. All SAI panel members are cognisant that presence of severe pre-existing comorbidities does not in any way reduce the significance of the COVID-19 outbreak or the impact on patients and their family circle.
- In the Haematology Ward, prior to contracting COVID-19, two of the seven deceased patients were receiving palliative care due to terminal illness. The panel took the view that COVID-19 did not materially contribute to the demise of either of these patients.
- The quality of nursing care that patients received leading up to and during the outbreak was generally of a good standard and compliant with local policies and guidelines. No major deficiencies in nursing care that may have led to the outbreak or affected the care of the patients were identified.
- To establish whether the COVID-19 infection was hospital or community acquired, information on the date of the first positive test results, the date of admission to hospital and the whole genome sequencing of isolates where available, was considered.
- All but one of the deceased patients had either “probable” or “definite” acquired COVID-19 (HA-COVID-19), according to national definitions. In one of the patients, it was not possible to determine if they had acquired the infection in the community or the hospital.

- Following discharge, two patients died within 28 days of the detection of COVID-19. The underlying condition of three of the seven surviving haematology patients appears not to have been affected by having acute COVID-19 symptoms. Four haematology patients had significant delays to their chemotherapy and in three of these, the delayed treatment may have affected their prognosis.
- Four of the surviving COVID-19 patients in the Male Medical Ward (MMW) were asymptomatic. These patients were only found to be infected as a result of screening during the outbreak. In the MMW outbreak, COVID-19 did not appear to have a major clinical impact on the surviving patients' underlying condition and its treatment. This was also the case for the three survivors of the outbreak in 4 South.
- There was insufficient and inadequate isolation and toilet facilities and poor ventilation in all the affected wards. Fans were used for the comfort and the reduction of pyrexia in some immunosuppressed patients.
- In keeping with the Northern Ireland regional guidance prior to the outbreaks, there was a relative relaxation of the visitor policy. Furthermore, in keeping with the Northern Ireland regional guidance at the time of the outbreak, there was no regular screening of 'patient facing' healthcare workers for COVID-19.
- Although there was screening of patients for COVID-19 at the time of admission, there was no regular screening of in-patients thereafter. This was in keeping with the regional NI testing guidance at the time of the outbreaks. Overcrowding in the Emergency Department in Craigavon Area Hospital led to difficulties in managing social distancing.
- Poor ward environments exacerbated difficulties in managing social distancing for patients and healthcare workers.
- Inconsistent and inadequate information was provided to patients and family regarding the outbreaks. The Trust provided general information regarding COVID-19 but did not always provide specific information to patients regarding the outbreak on the wards and the implications for patients, families or their visitors.

- No formal outbreak reports had been written following the outbreaks. These would have facilitated reflection and learning at ward level.
- Families and patients commented on delays in accessing care; the lack of continuity of care as a result of transfers between wards and hospitals; prolonged hospital stays, too many visitors on the wards, overcrowding and lack of social distancing amongst healthcare workers and patients, improper use of PPE, poor infection control practice, excessive use of temporary healthcare workers, and poor communication.
- Healthcare workers commented on the poor state of the wards and poor ventilation, the inability to maintain adequate social distancing on the wards and in healthcare workers' facilities, inadequate and inappropriate supply of PPE, excessive number of visitor, difficulties in trying to keep up with changing and sometimes conflicting infection control guidance, and poor communication regarding the progress of the outbreaks.

Conclusions

The COVID-19 pandemic that started in early 2020 posed several unique and unprecedented challenges to healthcare in the UK and worldwide. One such challenge was the prevention of spread of COVID-19 in hospitals. Since the onset of the pandemic, several outbreaks of hospital acquired COVID-19 (HA-COVID-19) have been reported in Northern Ireland and the UK. Hospitals have highly vulnerable or elderly patients who are not only particularly susceptible to COVID-19 but are also at risk of developing severe forms of the infection, which may be fatal. In principle, HA-COVID-19 infection is preventable but has proved to be very challenging as outbreaks of HA-COVID-19 continue to occur in hospitals throughout the UK.

The COVID-19 outbreaks in CAH and DHH occurred when COVID-19 infection in the community was relatively low but rising. The impact of the outbreaks was catastrophic, with profound implications for the patients, families and healthcare workers involved. It resulted in the loss of loved ones, treatment delays, extended admissions and prolonged

effects in some patients and healthcare workers. Patients, families, and healthcare workers also reported ongoing emotional impacts of the outbreak.

At the time of the outbreak, in keeping with national guidance, patients were screened for COVID-19 on admission. However, there was no screening of inpatients or healthcare workers at regular intervals. The absence of such screening hampered early detection of HA-COVID-19 and the implementation of control measures in advance of the spread of infection. Furthermore, symptoms of sepsis and fever occur commonly in immunosuppressed haematology patients making it difficult to clinically diagnose COVID-19 in these patients.

Insufficient and inadequate isolation facilities, poor ventilation on the wards, overcrowding and inadequate space for social distancing in the Emergency Department of Craigavon Area Hospital and on the affected wards, relaxing of restrictions for ward visits at the time of the outbreaks and the use of fans are likely to have contributed to the outbreak.

The panel identified several deficiencies in the existing estate including the physical condition, functional suitability, compliance with standards and lack of effective space utilisation, that all contributed to the likelihood of transmission of infection on the wards. Wards have few single rooms, with only some having en-suite facilities. There are insufficient isolation rooms with negative pressure ventilation. Toilets and shower facilities are limited. With the exception of the Haematology Ward, where the space between the beds was adequate, multi-bed bays in other wards have poor spacing between beds and do not reflect current standards. This was the case particularly in the MMW and 4S Wards.

While there is scope for improving infection prevention and control, and the capacity of the Infection Prevention Control Team (IPCT), the panel concluded that infection control was broadly in line with recommendations and practice at the time and within the constraints set out in the above paragraphs. The panel found no association between nursing staff levels and the outbreaks.

Investigation of the outbreaks by the IPCT was satisfactory and the control measures put in place were appropriate. Screening of healthcare workers was also initiated promptly. The panel found that the nursing and medical care provided to manage patients with COVID-19 was also satisfactory.

The panel found instances of inconsistent and inadequate communication with patients, families and healthcare workers. In many cases, there were no records of communication of COVID-19 test results to the patients or their families. Similarly, both patients and their families were provided with little specific information regarding the outbreaks, which may have led to confusion regarding isolation requirements and visiting restrictions.

The panel concurs with the Trust's strategy to establish COVID-19 and non COVID-19 hospitals to segregate patients and prevent the spread of COVID-19 as was the practice across the UK. However, the panel observed that patient transfers between hospitals (separated by nearly 25 miles) had a negative impact on the continuity of patient care for conditions unrelated to COVID-19, and adversely impacted the patient and family experience.

In the panel's view, at the time of the outbreak, incomplete and evolving understanding of the transmission of COVID-19, together with limited availability of rapid point of care diagnostic tests, inadequate isolation facilities, poor ventilation, absence of routine screening for COVID-19 of in-patients and healthcare workers and the non-availability of vaccines, made it difficult to prevent transmission of COVID-19 in the affected wards.

The panel hopes that the findings and recommendations set out in the report will reduce the likelihood of COVID-19 outbreaks in hospitals in the future and minimise the impact of outbreaks if they occur.

Throughout this review, the panel has considered the evolving knowledge regarding the prevention, control, and treatment of COVID-19. The panel has identified the following areas as critical in the prevention of future outbreaks of COVID-19 within hospitals:

- Control of the virus within the community by the vaccination of vulnerable patients and the general population subject to the availability of effective vaccines.
- Vaccination of all health care workers.
- Compliance with infection control recommendations. This includes early detection of patients and HCWs with COVID-19 by a regular testing program together with the isolation of infected patients and exclusion of infected health care workers.
- Improvement in ventilation and the provision of significantly more isolation and toilet facilities in all areas of the hospital.

The panel wishes to acknowledge the tragic consequences that the outbreaks have had on patients, their families and healthcare workers and to thank them for their contribution to this review during these very difficult times.

Recommendations

The SAI Panel have included a number of recommendations within this report. It is worth noting that currently unequivocal evidence has emerged that airborne transmission is the principal method of spread of COVID-19. Therefore, wherever feasible, windows in all clinical areas should be opened as often as possible and integrated as a key COVID-19 control measure.

Recommendations for the Southern Health and Social Care Trust.

1. The SHSCT requires the creation of an Intra-Trust Patient Transfer Policy with guidance in relation to patients with COVID-19 and any other infections with a high risk of transmission.

The SHSCT Intra-Trust Patient Transfer Policy and guidance should include and apply to transfers between all SHSCT departments, wards and hospitals.

The SHSCT Intra-Trust Patient Transfer Policy should provide guidance in relation to: screening, isolation, management in the absence of isolation capacity and the roles and responsibilities of staff to communicate to the patient and family (where applicable), the decision to transfer. A compliance audit should also form part of this policy and procedure to provide continuous assurance, measure performance and highlight any persistent barriers.

Linked to Level 3 COVID-19 Serious Adverse Incident Lessons Learned 5.2.2, 6.1.2, 6.2.2 and 6.6.2.

2. The SHSCT urgently needs to provide a form of audit which provides regular assurance that all relevant staff are aware of: standardised IPC guidance and protocols in relation to Personal Protection Equipment, cleaning of single rooms, cleaning of reusable equipment, appropriate use of single-use equipment, the use of fans in inpatient settings and when to complete relevant Infection Prevention and Control (IPC) risk assessments in relation to reusable equipment or fans.

Linked to Level 3 COVID-19 Serious Adverse Incident Lesson Learned 5.3.2 and 6.6.2.

3. The Southern Trust should ensure that its IPC Policies and guidelines are in line with regional IPC policy and include the following information for users:

- Any SHSCT variation from Regional IPC policy and guidelines.
- Staff responsibilities in relation to hand hygiene and wearing appropriate PPE.
- PPE requirements for visitors.
- Who can request COVID-19 testing.
- When, where and who can use COVID-19 Point of Care testing.
- When COVID-19 screening/testing is required for inpatients and staff.
- Circumstances when repeat COVID-19 testing is required including screening for patients following discharge from hospital.
- Standardised IPC terminology when applying IPC precautions.
- Standardised record keeping in relation to IPC screening, testing, results management and communication with patients, relevant staff and families.
- Recognising atypical signs of COVID-19 infection.
- Use of IPC Risk Assessment tool in relation to reusable equipment/fans.
- Standardised template for compiling IPC post-outbreak reports to capture and reflect learning at ward/department and Trust level.

The provision and receipt of this updated guidance to all relevant staff should be captured and recorded by all relevant teams to provide regular assurance of operational recognition of SAI Lessons Learned.

Linked to Level 3 COVID-19 Serious Adverse Incident Lessons Learned 5.1.2, 5.2.2, 5.3.2, 6.1.2, 6.2.2, 6.3.2 and 6.6.2.

4. The SHSCT IPC Outbreak Policy and Guidance should include a comprehensive IPC Communication Strategy to ensure relevant staff are aware of their roles and responsibilities in relation to communicating screening and test results. The IPC Communication Strategy should also provide guidance on how to convey other IPC concerns or IPC Management issues such as limiting or restricting access of visitors.

The IPC Communication Strategy should include guidance on when and how to share information with patients, staff, families, wards, hospitals or on a Trust-wide basis. This should include roles and responsibilities specific to managing and communicating information about an outbreak of infection affecting patients, staff or hospital access/services. Consideration should be given to including patient or family representatives as part of the working group tasked with developing the IPC Communication Strategy.

The operational implementation of the SHSCT IPC Communication Strategy should be supported by training for all relevant staff that ensures clarity of role, responsibilities, and improving communication skills. Managers and staff should be empowered to provide potentially sensitive information to patients, families, and SHSCT staff in a timely, sensitive and transparent manner.

The provision and receipt of this guidance should be supported by training for all relevant staff and be captured and recorded by all relevant teams to provide regular assurance of operational recognition of SAI Lessons Learned.

Linked to Level 3 COVID-19 Serious Adverse Incident Lessons Learned 6.3.2, 6.6.2 and 6.7.2.

5. The SHSCT should consider creating a bespoke IPC communication strand for managers of healthcare workers in the Trust during an inpatient/ward outbreak of infection. Consideration should be given to including patient or family representatives as

part of the working group tasked with developing the bespoke IPC Communication Strategy for managers of healthcare workers including operational guidance on the manager's role, and responsibility for informing and updating staff.

All associated learning in relation to outbreaks should be shared within wards and across divisions on a regular basis.

The communication guidance for managers, should be supported by training that ensures clarity of role, responsibility, and develops communication skills to empower managers to provide information to staff in a sensitive, clear and consistent manner. Managers should be trained to provide support to staff and ensure that they are aware of the support available through the Occupational Health Department. Staff should also be given details on how to access/refer to health and wellbeing support provided by the Trust and within the Region.

Linked to Level 3 COVID-19 Serious Adverse Incident Lessons Learned 6.3.2, 6.6.2 and 6.7.2.

Recommendations for the Southern Health and Social Care Trust, in collaboration **with** the Northern Ireland Department of Health, PHA and Health and Social Care Board

6. The absence of a NI Infection Prevention and Control (IPC) Framework has resulted in the variation of investment in the Regional IPC workforce, IPC workforce resources, IPC Policy and IPC Management between Trusts in Northern Ireland.

Northern Ireland should implement a NI Infection Prevention and Control Framework to provide consistency between Trusts. This framework should ensure recurrent investment into developing a sufficient Infection Prevention and Control leadership, management and workforce within the Northern Ireland and specifically the SHSCT. Consideration should be given to a regionally funded regional IT platform that facilitates and standardises the collection of Regional IPC data, IPC data analysis, epidemiology including analysis of whole genome sequencing (WGS) as well as tracking and tracing inpatient movement.

The Northern Ireland IPC Framework should accommodate variation in IPC outbreak management when there is a significant rise in local community infection rates that are

unique to individual Trusts. It should also support the application of Regional Guidance in relation hand hygiene and the wearing of PPE by staff and visitors and allow variation of access for visitors when there are higher than average community infection rates within Trust areas.

Linked to Level 3 COVID-19 Serious Adverse Incident Lessons Learned 5.2.2, 5.3.2, 6.1.2, 6.2.2 and 6.6.2.

7. The SHSCT should be supported in providing COVID-19 point of care testing for all patients attending SHSCT Emergency Departments to ensure appropriate placement and management

Linked to Level 3 COVID-19 Serious Adverse Incident Lessons Learned 5.2.2 and 6.1.2.

8. The SHSCT should be supported in securing sufficient investment to provide accommodation for Haematology patients and patients in all other augmented care settings that meets Health Building Notes (HBN) and Health Technical Memoranda (HTN) Standards. This accommodation needs to contain suitable ventilation, en-suite toilet and shower facilities for each patient.

Linked to Level 3 COVID-19 Serious Adverse Incident Lessons Learned 5.1.2, 5.3.2, 6.2.2, 6.3.2, 6.4.2 and 6.5.2.

9. The SHSCT should be supported in securing sufficient investment to ensure the provision of improved ward ventilation within all inpatient accommodation. Consideration should be given to the creation of a Ventilation Safety Group in each Trust in Northern Ireland. There needs to be a significant increase in the number of isolation wards with access to ensuite toilet and shower facilities in all inpatient settings. Investment is also needed to increase the number of patient toilets and showers at ward level in-line with current Health Building Notes (HBN) and Health Technical Memoranda (HTN) Standards.

Linked to Level 3 COVID-19 Serious Adverse Incident Lessons Learned 5.1.2, 5.3.2, 6.4.2, 6.5.2 and 6.7.2.

10. The SHSCT requires urgent support and investment to address the issue of overcrowding. In particular, overcrowding in Emergency Departments continues to increase the risk of exposure and transmission of infection to patients in the Trust.

Linked to Level 3 COVID-19 Serious Adverse Incident Lessons Learned 6.2.2, 6.4.2, 6.5.2 and 6.7.2.

Recommendation for the Southern Health and Social Care Trust, in collaboration **with** the Northern Ireland Department of Health, Health and Social Care Board and the Belfast Health and Social Care Trust (BHSCT)

11. The NI Regional Virus laboratory in BHSCT should provide whole genome sequencing (WGS) and interpretive support for all positive Covid-19 samples, as part of the investigation of suspected inpatient outbreaks.

Linked to Level 3 COVID-19 Serious Adverse Incident Lessons Learned 5.1.2 and 5.3.2

1. Introduction

1.1 Purpose of the report

Between August and October 2020, outbreaks of Hospital Acquired (HA)-COVID-19 occurred at Craigavon Area (CAH) and Daisy Hill Hospitals (DHH) in the Southern Health and Social Care Trust (SHSCT) in Northern Ireland (NI) and affected many patients and healthcare workers. In response to these outbreaks, SHSCT and the PHA NI, commissioned a Serious Adverse Incident (SAI) review in September 2020.

The purpose of this report is to set out key actions undertaken by the SHSCT to control and prevent transmission of the COVID-19 virus within the affected wards, identify areas of learning and set out recommendations linked to these areas.

1.2 Terms of Reference (ToR) of the SAI Review

An independent SAI review panel was appointed by SHSCT in October 2020. The panel comprised senior medical consultants in the care of the elderly, haematology and microbiology, an independent senior nurse consultant in Infection Prevention and Control, a consultant representative from the PHA Northern Ireland and a lay representative from the local community.

ToR were developed by the panel and ratified by the SHSCT and the PHA. The ToR were also sent to the patients or their relatives and affected healthcare workers for their comments which were then incorporated into the ToR if considered appropriate by the Panel.

The purpose of the review was to:

- Review the management of the outbreaks.
- Identify system-wide strengths and weaknesses in the management of the outbreak.
- Use relevant findings to improve the quality and safety of care and to reduce the likelihood of future outbreaks and mitigate their impact.

- Engage with all affected patients, their families and members of healthcare workers who were directly affected by the SAI.

The objectives of this review were to:

- Construct a comprehensive chronology of the events between 10/08/2020 and 23/10/2020 of the COVID-19 cluster incidents at CAH Haematology Ward, 4 South and DHH Male Medical Ward.
- To scrutinise confidential medical and nursing records of each patient who died with a positive test for COVID-19, identifying any factors that may have caused or contributed to their deaths.
- To review confidential medical and nursing records of each patient with a positive test for COVID-19, identifying any issues with the delivery of safe, high quality care in the context of the COVID-19 outbreak under review.
- To review if the process utilised for the outbreak, including staff management and the steps taken to prevent cross-infection, were in accordance with the best practice guidance available at the time. To identify if there were any missed opportunities for intervention during the management of the outbreak.
- To examine the compliance of the Trust with local, regional or national policy/guidance/alerts including professional codes of conduct and risk management processes in place at the time of the incidents.
- To review the wider context of the incidents including the appropriateness of the environment, equipment and healthcare worker resources available.
- To consider how information regarding the incidents was shared and communicated with families.
- To identify areas of good practice and opportunities for sharing learning from the incidents.

- To establish what lessons are to be learned from these incidents regarding the management of COVID-19 clusters and how Trust systems can be strengthened to provide safe and high quality care. Any immediate learning identified during the SAI process should be escalated and shared with the Trust Board for dissemination.

1.3 The establishment of the review team

The panel was supported by a secretariat provided by SHSCT and included corporate, clinical and social care governance coordinators, the liaison officer and secretarial support. The panel was given free access to all necessary documents and to the healthcare workers it wished to meet.

2.0 Approaches used by the SAI panel

This section of the report sets out the approaches and methods used by the SAI review panel to identify the areas of learning which have informed the panel's findings and recommendations.

2.1 Involvement of patients/families

In July 2020, the SHSCT appointed Northern Ireland's first dedicated liaison officer in recognition of the value and need for patients, families and staff to have timely and continuous support throughout and after the SAI process. Ms Beverley Lappin is a senior social worker with over 20 years' experience and provided liaison support for patients, families and staff in relation to this Level 3 SAI since it commenced in September 2020.

Although the panel did not directly meet the affected patients or their relatives, the Patient Liaison Officer who attended the meetings of the panel, met or communicated with most of the patients or their families. She reported their experiences during the outbreaks and relayed any concerns or questions to the panel. The panel also read written submissions from families. This work is described in Appendix 1 and ensured that the SAI review process was open and transparent.

Key aims of the Liaison Officer were to:

- Ensure effective and clear communication.
- Provide and share information in a transparent and timely manner.
- Provide opportunities for service users and families to share their experiences with the Panel whilst being mindful of the impact of their trauma and ongoing grieving.

Traditionally, such support is provided at face-to-face meetings but due to government guidance regarding COVID-19 and social distancing, this support was primarily conducted through telephone conversations. All patients and/or families were offered home visits but due to ongoing COVID-19 restrictions or their personal choice, the Liaison Officer was able to visit only six patients or their families in their homes. The opportunity of support through a home visit remains open to all patients and their families once COVID-19 restrictions are lifted. Overall, the patients and families have been receptive and open in their interactions with the Liaison Officer.

The Liaison Officer initially contacted 31 of the 32 patients and their families. One patient, who has since died, could not be contacted as they had been transferred to a UK Specialist Centre with a non-COVID-19 related issue. One patient did not wish to have any involvement with the SAI review and another patient made an informed choice to take no further part in the process due to ongoing health issues.

Following the initial contact, there was regular communication with 29 patients and/or families throughout the SAI process. The type and frequency of communication was determined by the preferences of patients and families. During these contacts/meetings, patients and families commented on the terms of reference for the review, were informed of the timeline and given regular updates of progress. Importantly, the patients and families were given an opportunity to describe their experiences during the outbreaks and the impact on their health and well-being. After obtaining informed consent, the Liaison Officer presented this information to the panel during SAI Panel meetings.

The Liaison Officer actively promoted individual advocacy and support via the Patient and Client Council and a small number of families availed of this support. Through regular communications, she directed patients and families to appropriate and relevant services such as:

- Independent advocacy,
- Bereavement support,
- Carers rights, services and support,
- Counselling,
- Mental health services,
- Community and voluntary services for financial/benefits advice.

A small number of patients and families had complaints that were not covered by the ToR of the Review. The Liaison Officer is supporting the resolution of these complaints through the Trust's internal processes.

2.2 Involvement of healthcare workers

The outbreaks affected not only patients but also many healthcare workers (HCWs) and their contacts, both inside and outside of the work place. Some of the HCWs were themselves infected with COVID-19 while others had to care for patients infected with COVID-19, including some of those who died. The panel felt it was important to seek healthcare workers' views to have a better understanding of the impact of COVID-19 on their working practices, the care of patients and on themselves. The panel also wished to explore in greater depth the working environment, training provided, communications and the experiences of HCWs regarding COVID-19, both generally and during the outbreaks.

Following consultation with the Trust, a self-completion anonymised survey was sent to all HCWs in the two affected hospitals. The panel sought guidance from the Trust's legal and human resources departments to ensure the confidentiality of HCWs who responded to the survey.

The panel had access to previous HCW surveys on COVID-19 conducted by the Trust in July 2020 (before the outbreaks) and October 2020 (after the outbreaks). The panel also received anonymised feedback from HCWs who had tested positive for COVID-19 during the outbreaks.

The panel also interviewed the clinicians and nurse managers on the affected wards, clinical psychologists, the IPCT including the consultant microbiologists, the head of occupational health, and the senior management team of the Trust.

2.3 Overview of the panel's work

The panel met (by videoconferencing) weekly or fortnightly from October 2020 to August 2021. In addition to developing ToR, it reviewed the medical and nursing records of all affected patients, minutes of outbreak meetings and the root cause analysis reports for the majority of the affected patients. In the absence of root cause analysis reports, the panel used the information from the patient's clinical notes.

The panel's report is based on a review of patient clinical and other records. Members of the review team did not assess the patient in person. The views formed below are based on and limited to information from these document sources and as such, opinion may vary if other sources and time periods are considered or any additional information becomes available.

2.4 Review Methodology

2.4.1 Review framework

The review followed methodology recommended in the [Regional Serious Adverse Incident Framework \(2016\)](#) was cognisant of the rights of all involved to privacy and confidentiality and followed fair procedures.

2.4.2 Evidence collection

The panel had access to the findings of most IPC root cause analysis / post infection review documentation related to the cases, medical and nursing notes of all affected

patients, timelines of the outbreak and minutes of meetings with action logs, infection control policies and audits undertaken by the IPC team.

In addition, the panel had access to Trust policies on the prevention and control of COVID-19, managerial arrangements, staffing, description of Trust's estate and floor plans of the affected wards. The panel interviewed senior nursing staff and the consultants caring for the affected patients and the IPC team. Two members of the panel visited CAH and DHH sites; it was not possible for the full panel to attend due to COVID-19 restrictions in place at the time of the visit.

The Liaison Officer supporting the panel met or spoke on the telephone with the patients or their relatives. She facilitated the collection of written submissions from them documenting their views on patient care, and any other concerns they had relating to the outbreak. After seeking advice from the information governance department, all HCWs in the Trust, including those who were infected or exposed to COVID-19 during the outbreaks, were encouraged to complete an online semi-structured questionnaire. The findings of the survey are set out in Appendix 2.

2.4.3 Methods used for review

Effective infection prevention and control is fundamental to prevent and control transmission of COVID-19 infection in hospitals. NHS England has developed an assurance framework to effectively assess compliance with Public Health England (PHE [now UK Health Security Agency [HAS]]) and other COVID-19 related IPC guidance and to identify risks. We adapted this framework to assess compliance in the SHSCT with best IPC guidance and practice available in NI at the time of the outbreaks and also examined supportive evidence. https://www.england.nhs.uk/coronavirus/wp-content/uploads/sites/52/2020/04/C1337_IPC-Board-Assurance-Framework-V1.6-June2021.pdf

To assess the management of the outbreak in SHSCT, we adapted the guidance provided by NHS England on minimising nosocomial infections in the NHS

<https://www.england.nhs.uk/coronavirus/wp-content/uploads/sites/52/2020/06/C0586-minimising-nosocomial-infections-in-the-nhs.pdf>

We reviewed compliance with the safety recommendations of the Healthcare Safety Investigation Branch (HSIB) report published in October 2020. <https://www.hsib.org.uk/documents/258/hsib-summary-report-covid-19-transmission-hospitals.pdf> and Health Building Notes (HBN) and Health Technical Memoranda (HTN) Standards <https://www.england.nhs.uk/estates/health-building-notes>

We also assessed if SHSCT followed existing guidance of PHA Northern Ireland on defining and managing communicable disease outbreaks. In the absence of such guidance, we assessed the management of the outbreak adapting the standards and operational guidance provided by Public Health England. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/343723/12_8_2014_CD_Outbreak_Guidance_REandCT_2_2_.pdf

All assessments were made by reviewing contemporaneous documents and interviews with relevant persons including the IPC team, nursing managers and clinical directors of affected wards and senior hospital managers including the chief executive and medical director.

2.5 Local, regional and national guidance for prevention and control of COVID-19 in hospitals

Knowledge regarding the prevention and control of COVID-19 is evolving and the guidance has changed in the last year to reflect new knowledge. Although the panel used the guidance existing at the time of the outbreaks to assess the response of the Trust, the recommendations made by the panel reflect the current updated guidance.

Archived National Guidance: Version 3.2 18 June 2020 (attached at Appendix 3) (COVID-19: Infection Prevention and Control Guidance). At the time of writing the report, this guidance had been updated to reflect the ongoing pandemic situation across the UK:

Version 1.1 21 January 2021: COVID-19 Guidance for maintaining services within health and care settings: Infection Prevention and Control (IPC) recommendations.

2.6 Confidentiality and data security:

To ensure patient confidentiality and data security, guidance was sought from the data controller of the Trust. All documents required by the panel were uploaded by the Trust on to a secure, password protected 'Egress' server. Members of the panel had access to the documents using individual passwords. Communications containing confidential information with or between members of Panel was sent via secure NHS email addresses.

2.7 Draft report

Following completion of the review, a draft report was prepared by the panel outlining the chronology, findings, conclusions, lessons learned and recommendations. It was supplemented with appendices providing analyses of individual affected cases. Owing to the confidential nature of this information, neither affected patients nor HCWs were identifiable. All those who participated in the review were given the opportunity to review the extracts from the report relevant to them to ensure that they were factually accurate and fair.

3.0 The COVID-19 virus

The purpose of this section is to provide information on the COVID-19 virus relevant to this review. The information contained in this section explains:

- The epidemiology and virology of COVID-19 (epidemiology is the study and analysis of the distribution, patterns and determinants of health and disease conditions in defined populations. Virology is the scientific study of viruses).
- The transmission of COVID-19.
- Symptoms of infection.
- HA-COVID-19 infections.
- The definitions of outbreak and clusters in hospitals.

- The epidemiology of COVID-19 in Northern Ireland from the first case identified on the 29/02/2020 and throughout the periods of the outbreaks.

3.1 COVID-19: Epidemiology, Virology and Clinical Features

<https://www.gov.uk/government/publications/wuhan-novel-coronavirus-background-information/wuhan-novel-coronavirus-epidemiology-virology-and-clinical-features>

On 31/12/2019, the World Health Organization (WHO) was informed of a cluster of cases of pneumonia of unknown cause detected in Wuhan City, Hubei Province, China. On 12/02/2020, it was announced that a novel coronavirus had been identified in samples obtained from cases and that initial analysis of virus genetic sequences suggested that this was the cause of the outbreak. This virus was referred to as SARS-CoV-2, and the associated disease as COVID-19. The source of the outbreak has yet to be determined.

As of 22/02/2021, over 109 million cases have been diagnosed globally with more than 2.4 million fatalities. In the 14 days to the 17/02/2021, more than 5.7 million cases were reported (European Centre for Disease Prevention and Control worldwide).

The total number of daily confirmed cases in the UK is published by the Department of Health (DoH) and Social Care and is available in a visual dashboard.

<https://www.health-ni.gov.uk/articles/covid-19-daily-dashboard-updates>

3.2 Transmission

SARS-CoV-2 is primarily transmitted between people through respiratory (droplets and aerosols) and contact. Transmission risk is highest where people are in close proximity (within two metres) and airborne transmission can occur in health and care settings when procedures or treatments that generate aerosols are performed. Airborne transmission may also occur in poorly ventilated indoor spaces, particularly if individuals are in the same room together for an extended period of time. In addition to respiratory secretions, SARS-CoV-2 has been detected in blood, faeces and urine. The DoH has issued guidance on the precautions to prevent human-to-human transmission for both suspected and confirmed cases.

3.3 Clinical features

COVID-19 presents with a range of symptoms of varying severity. Asymptomatic infection frequently occurs.

More common symptoms are:

- Fever, a new and continuous cough,
- Shortness of breath,
- Fatigue,
- Loss of appetite,
- Anosmia (loss of smell),
- Ageusia (loss of taste).

Patients can also have non-specific symptoms such as

- Fatigue,
- Loss of appetite,
- Headache,
- Sore throat,
- Diarrhoea.

Older and immunocompromised people can have atypical symptoms, such as delirium and reduced mobility, in the absence of a fever.

Of people who develop symptoms, data indicates that 40% have mild symptoms without hypoxia (a low level of oxygen in the blood) or pneumonia, 40% have moderate symptoms and non-severe pneumonia and 15% have significant disease including severe pneumonia. 5% experience critical disease with life-threatening complications

There is growing evidence to suggest that individuals who have suffered from both mild or severe COVID-19 can experience prolonged symptoms or develop long-term complications commonly referred to as 'long COVID'.

The risk of severe disease and death is higher in people who are older, male, from deprived areas, from certain non-white ethnicities, have underlying health conditions and/or are obese.

At the time of writing the report, a variant of the virus causing COVID-19, called 'Delta variant' had emerged and become the predominant strain in the UK. It is estimated to be 40% more transmissible than the ancestral virus and earlier variants seen in the UK. The virus affects a relatively younger age group and others who are not vaccinated. The commonest symptoms of COVID-19 caused by the Delta variant were headache, followed by sore throat, a runny nose, and fever. Cough and loss of taste appear to be less common symptoms.

3.4 COVID-19 incubation period

The incubation period is the time between exposure to a pathogenic organism and when symptoms and signs first appear. The incubation period for the virus causing COVID-19 is between two and 14 days.

3.5 Hospital Acquired (HA) - COVID-19 infections

Although during the first wave, the majority of patients acquired the infection in the community, it was estimated that 10-20% of patients admitted to the hospital for non-COVID-19 conditions, acquired COVID-19 during their hospital stay. These infections are termed as HA COVID-19 infections or nosocomial COVID-19 infections. A recent publication estimates that up to one in six SARS-CoV-2 infections among hospitalised patients with COVID-19 in England during the first six months of the pandemic could be attributed to nosocomial transmission. However, these represent less than 1% of the estimated three million COVID-19 cases during this period.

<https://www.medrxiv.org/content/10.1101/2021.02.16.21251625v1>

The impact of nosocomial infections in terms of morbidity and mortality is greater in hospitalised patients due to advanced age, frailty and presence of co-morbidities. A recent study in Wales reported in-patient mortality rates for HA COVID-19 ranged from 38% to 42% and was consistently higher than that for inpatients with community-acquired infection (31% to 35%). The study also found that patients with HA COVID-19 were an older, frailer, and had more comorbidities than those with community-acquired infection <https://www.medrxiv.org/content/10.1101/2021.01.18.21249433v1>

Given the proximity of vulnerable patients in hospitals and the infectivity of COVID-19, many outbreaks of HA COVID-19 have been reported, some of which have also been reported in the media. In the Northern Ireland, the PHA's COVID-19 dashboard provides a tally of HA COVID-19 infections. <http://www.health-ni.gov.uk/>

Transmission of COVID-19 in hospitals is not confined to patients. HCWs can also contract the infection from fellow HCWs or patients. Conversely, HCWs can infect fellow HCWs or patients. HCWs and patients who are infected with SARS-CoV-2 virus but do not have symptoms are thought to be an important cause of transmission.

The following epidemiological definitions have been recommended by NHS for the surveillance of COVID-19 detected in hospitals.

<https://www.gov.uk/government/publications/covid-19-epidemiological-definitions-of-Outbreaks-and-clusters/covid-19-epidemiological-definitions-of-Outbreaks-and-clusters-in-particular-settings>

- Community-onset community acquired (CO.CA), first positive test (FPT) within 14 days pre-admission, up to day two after admission;
- Hospital-onset indeterminate healthcare-associated (HO.iHA), FPT on day three to seven following admission;
- Probable healthcare-associated (HO.pHA), FPT on day eight to 14 after admission;

- Hospital-onset definite healthcare associated (HO.HA), FPT from day 15 of admission until discharge;
- Community-onset possible healthcare-associated (CO.pHA), FPT up to 14 days post-discharge.

3.6 Definition of outbreak and clusters in hospitals

- The term outbreak is strictly defined in PHE guidance as two or more cases in a single setting (for example, in a single ward or having shared a location) that have become symptomatic or have been detected through screening on or after day eight of admission.
- The term 'cluster' is used when referring to the detection of unexpected, potentially linked cases. PHE and PHA guidance suggests that some cases and clusters of communicable disease may not require a formal outbreak to be declared. It is important that such cases are appropriately recorded and managed for audit purposes and to support surveillance and any future outbreak management.

4.0 COVID-19 in Northern Ireland (NI)

The first patient with COVID-19 in NI was detected on 29/02/2020. The number of infections grew steadily during March, April and by the end of May 2020, there were a total of 4,716 confirmed cases with 523 deaths. During this period, the government placed the country in a lockdown with restrictions on work, leisure, education, and travel to prevent further spread. To concentrate on providing care for patients affected with COVID-19 and other emergencies, NHS hospitals stopped many elective activities and moved a proportion of outpatient activity to video and telephone consultations. Visitors to hospitals were actively discouraged to prevent further introductions of the virus. By the second week of June 2020, the number of COVID-19 cases had fallen and there were no COVID-19 associated deaths. On 12/05/2020 the NI Executive published a Five Stage Recovery Plan to ease lockdown restrictions. Restrictions were eased in July and August 2020 and on 17/08/2020, hospital visiting was extended across wards on a staggered basis. NHS hospitals were asked to embark on a recovery programme to perform

postponed elective procedures and out-patient consultations. The number of COVID-19 cases began to rise by end of August 2020 and restrictions were then re-introduced on 22/09/2020 and further tightened again on 16/10/2020.

Hospital admissions for COVID-19 in Northern Ireland have largely followed the number of infections in the community. [Figures 1 and 2].

Figure 1: The rates of infection across Northern Ireland.

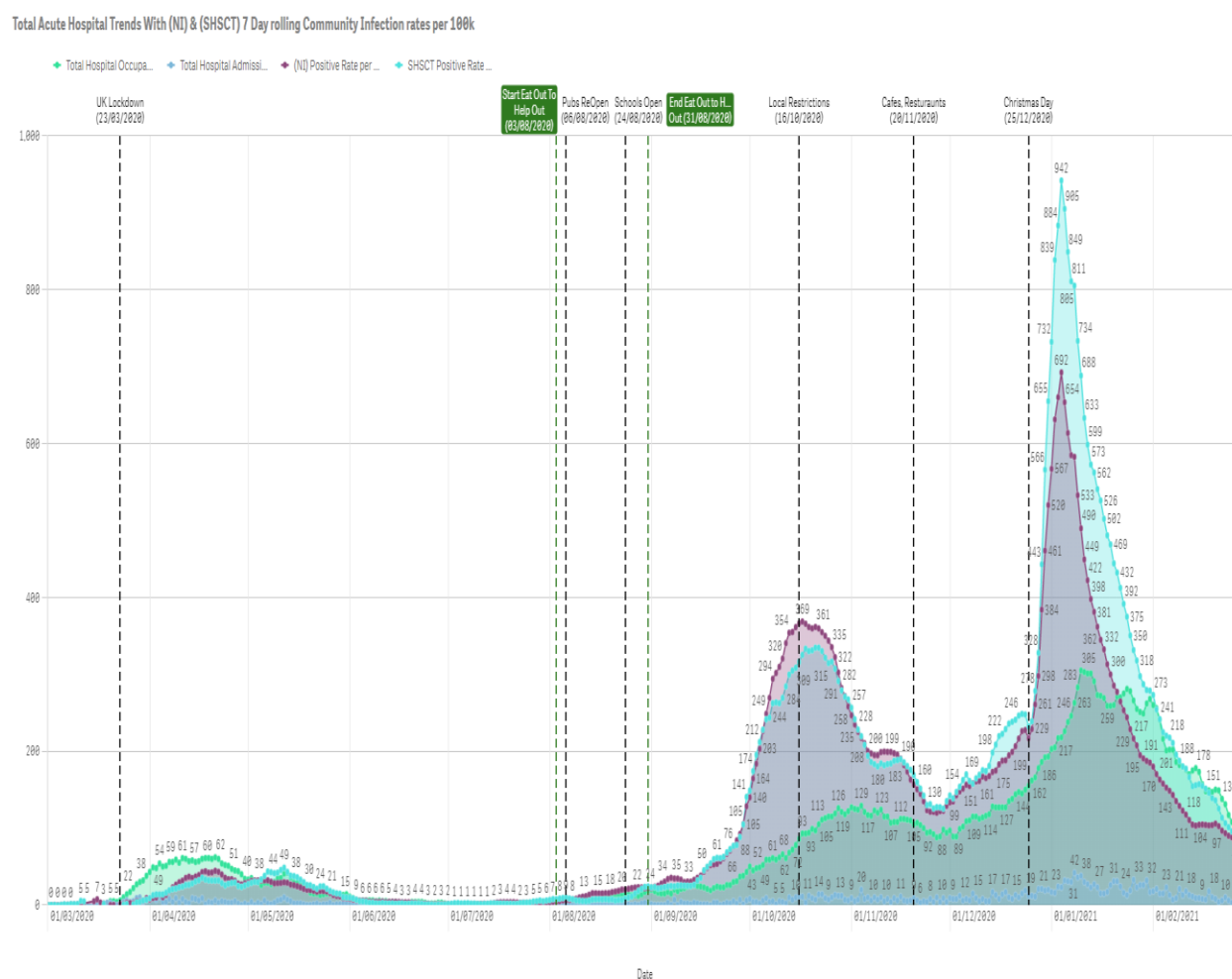
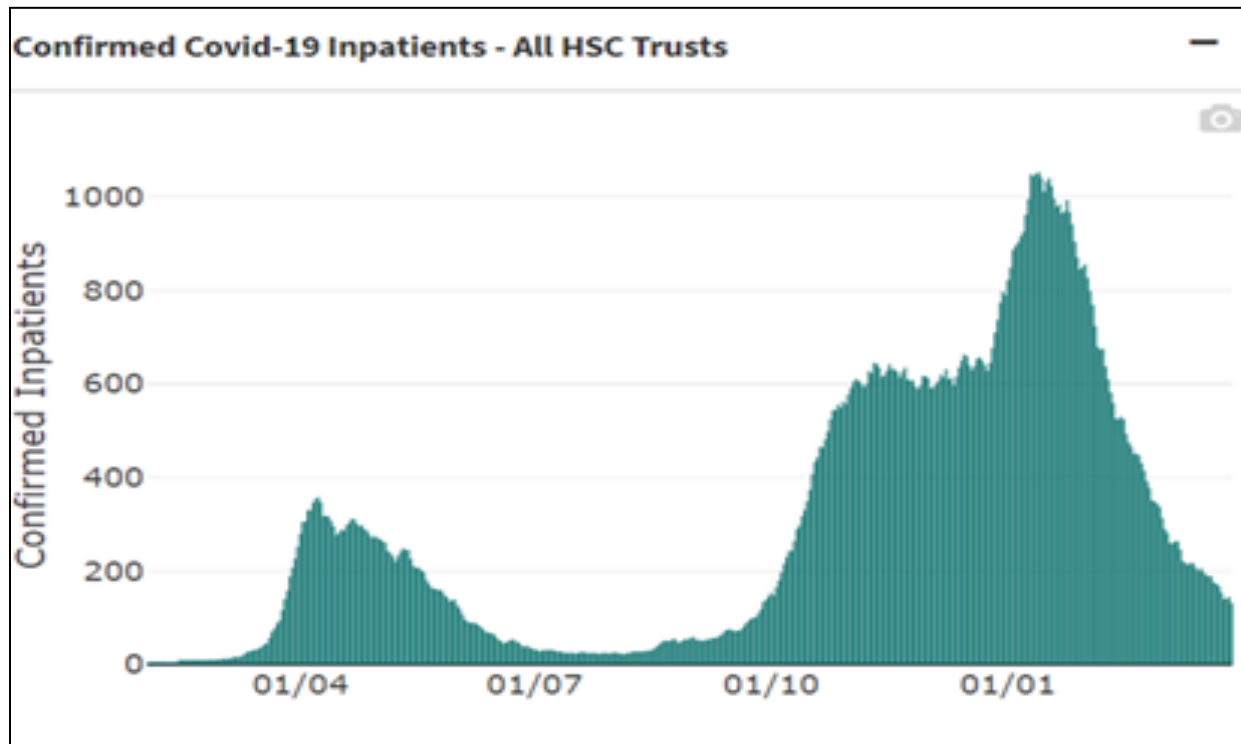


Figure 2: The number of confirmed COVID-19 inpatients in all Northern Ireland Health and Social Care Trusts.



4.1 The Southern Health and Social Care Trust (SHSCT)

The Trust provides acute hospital and community services to the legacy council areas of Armagh, Banbridge, Craigavon, Newry, Mourne and Dungannon. The acute hospital services provided by the Trust are also used by people from outside the Southern area including Fermanagh, Down and Lisburn, Antrim, Cookstown, Magherafelt and the Republic of Ireland.

The Trust's hospital network comprises two acute hospitals CAH and DHH with a range of local day, outpatient and diagnostic services provided at South Tyrone Hospital and Lurgan Hospitals. Both acute hospitals provide a range of medical, surgical and maternity specialties including emergency departments; elective and non-elective inpatient medicine and surgery; maternity and paediatrics. CAH is the larger of the two acute hospitals hosting much of the more complex care including haematology; Critical care

(intensive care and high dependency) beds are located at CAH to support the more complex surgical procedures and there is also a cardiac catheterization facility for diagnostic and therapeutic cardiovascular procedures and a kidney stone treatment unit. In addition to providing the acute hospital services already noted, DHH delivers a haemodialysis service for renal patients.

As of January 2021, CAH had 491 beds comprising medicine/surgery (407), ICU (8), paediatrics (21), neonatology (16) and maternity (39). DHH had 203 beds comprising medicine/surgery (165), paediatrics (19) and maternity (19).

4.1.2 Admission arrangements in place at the time of the outbreaks

At the time of the outbreaks, the Emergency Departments and hospital admissions at SHSCT had been reconfigured. To minimise transmission of COVID-19 in the hospitals, the Trust management decided to manage all patients with suspected or confirmed COVID-19 at CAH and maintain DHH as a non-acute, 'COVID-19 free' hospital. The Trust closed the ED at DHH and all patients were re-directed to the ED at CAH. Patients attending the ED at CAH were directed into two areas depending on their symptoms with the aim of segregating patients with suspected COVID-19 from those where COVID-19 was thought unlikely. Patients with respiratory symptoms or suspected COVID-19 were seen in the 'Respiratory ED' and those without respiratory symptoms and where COVID-19 was thought unlikely, were seen in 'non-respiratory ED'.

Similarly with the aim of segregating the inpatients, some patients were transferred to DHH when there was low suspicion of COVID-19, the patient tested negative and was stable enough for transfer.

4.1.3 COVID-19 testing arrangements in place at the time of the outbreaks

At the time of the outbreaks, a limited number of points of care tests to detect COVID-19 were available in the UK. SHSCT received an allocation of roughly 17 point

of care tests per day. These tests were used for patients requiring urgent surgery or admission to the Intensive Care Unit. All other COVID-19 tests were sent to the laboratory and generally had a turnaround time of four to 24 hours.

4.1.4 The Infection Prevention and Control Team Structure

The table below sets out the team structure in the SHSCT at the time of the outbreaks.

Designation	Roles and responsibilities
Medical Director /Director of Infection Prevention and Control (DIPC)	Overall responsibility for Infection Prevention and Control
Interim Assistant Director Infection Prevention and Control	Operational responsibility and oversight for Infection Prevention and Control
Three Consultant Microbiologists	Provide infection control and microbiology support.
Infection Prevention Control Lead (Nurse) Band 8a	Day to day leadership and management of the Infection Prevention and Control service
Infection Prevention and Control Nurses (IPCN) (Bands 7 and 6) 9.03 Whole Time Equivalent (WTE) nurses. (One WTE = 37.5 hours)	Provide day to day operational support for Infection Prevention and Control activities in the Trust

There are no set standards in the UK for the number of IPCNs a Trust should employ; however, it is generally accepted that there should be the equivalent of one IPCN for every 100 acute hospital beds and one IPCN for every 250 community and nursing home beds. This means that for the SHSCT a total of 16.88 WTE would be the recommended number. It should be said that few Trusts in the UK have this level of staffing.

In the UK it is recommended that there is a lead microbiologist to support Infection Prevention and Control (IPC). Although at the time of the outbreak, none of the

microbiologists were designated in this post, medical cover for IPC was present and consistent.

The panel are satisfied that the Southern Health and Social Care Trust Infection Prevention and Control team (ICPT) were:

- proactively attending wards to observe practice and give advice.
- proactively assessing risks within the wards and hospital estate to the appropriate forums within the SHSCT.
- providing an audit structure to monitor the implementation of PHA guidance with immediate and written feedback.

The panel saw evidence that all staff had access to up to date written guidance and information on Infection Prevention and Control and that staff reported that the SHSCT Infection Prevention Control Team were accessible and supportive.

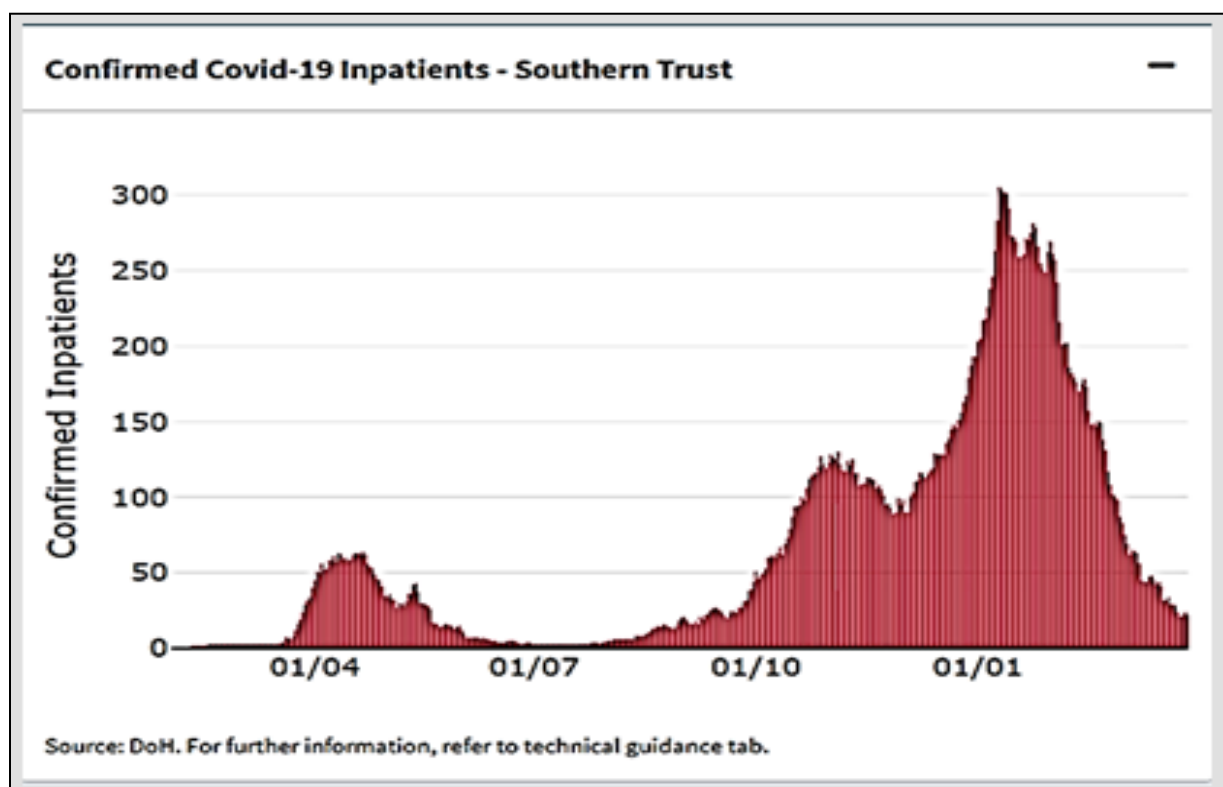
4.1.5 Hospital estate

CAH and DHH were constructed in the late 1960s/early 1970s. Since then, there has been little major capital investment and much of the investment has only been for preventive maintenance. The organisation recognised that there were deficiencies in the existing estate in terms of physical condition, functional suitability, compliance with statutory standards and space utilisation.

4.1.6 COVID-19 hospital admissions to SHSCT

COVID-19 admissions to SHSCT have generally followed the national trend in hospital admissions with a relatively low level of admissions during the first wave in March/April 2020, a second wave beginning in late August/September 2020 that led to many more admissions followed by a surge in late December 2020 leading to even more admissions. At the time of writing (April 2021) the number of hospital admissions had fallen to the level seen in October 2020. These trends are reflective of the trends of COVID-19 infections seen in the other Trusts NI (Figures 2 and 3). The figures also show that the number of patients with COVID-19 in SHCST hospitals followed the same pattern for all Northern Ireland hospitals.

Figure 3 shows the number of patients in hospital with confirmed COVID-19 in the SHSCT.



4.1.7 Hospital acquired COVID-19 in NI and SHSCT

Although a majority of patients acquire the infection in the community, unfortunately some patients admitted to the hospital for non- COVID-19 conditions, become infected with the virus whilst in hospital. These are known as HA-COVID-19. Outbreaks of HA COVID-19 have been reported in nearly all hospitals in NI, the UK and many parts of the world and generally occur at a time when the number of COVID-19 admissions to the hospital increase.

Figures below display the number of new (HA) COVID-19 patients by week for the SHSCT (Figure 4) in comparison with Northern Ireland (Figure 5). This information starts from Epi week 11 (2020) (09/03/2020 – 15/03/2020) to Epi week 10 (2021) (14/03/2021). An epidemiological week, commonly referred to as an epi week, is a standardized method of counting weeks to allow for the comparison of data year on year.

Figure 4: The number of people who may have acquired COVID-19 in SHCST hospitals in 2020.

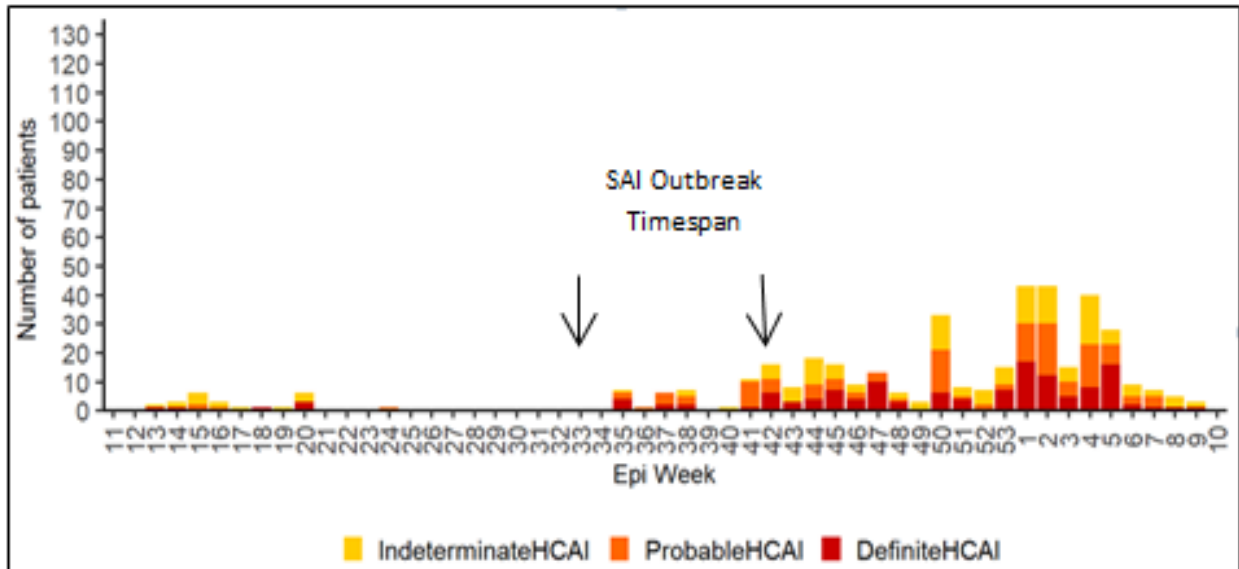
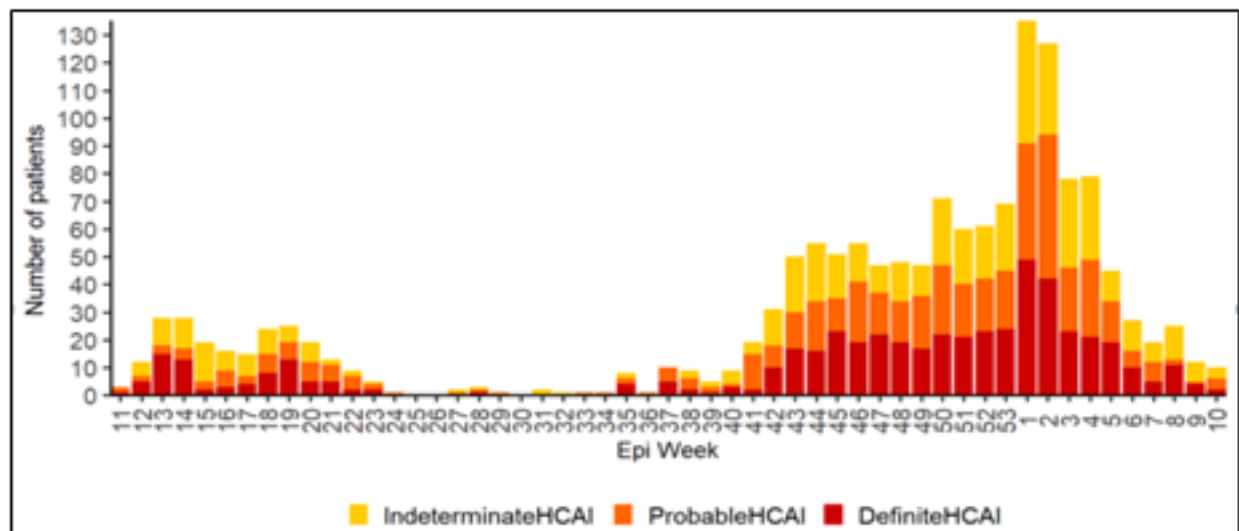


Figure 5: The number of people who may have acquired COVID-19 in all Northern Ireland hospitals in 2020.



Figures 4 and 5 show that the increase in the number of people acquiring COVID-19 in SHSCT hospitals occurred at the time when there was an increase in HA-COVID-19 in other Northern Ireland hospitals.

5.0 The outbreaks

This section of the report describes the timeline chronological evolution of COVID-19 outbreaks in the three affected wards (Haematology, Male Medical and 4 South) and the key actions taken to control and prevent transmission of the infection.

Also in this section are the key findings and lessons learned from the outbreaks in the affected wards. The recommendations associated with the outbreaks can be found in Section 7.

The panel assessed the management of the outbreak in the Haematology Ward, adapting the standards and operational guidance provided by Public Health England https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/343723/12_8_2014_CD_Outbreak_Guidance_REandCT_2_2_.pdf

Appendix 4.1 – 4.32 provides a chronology of events relating to individual patients in the form of a Patient Summary. To ensure patient confidentiality was maintained at all times, patients and families who were impacted by the outbreak only received the summary relevant to them as individuals or their family member.

5.1 Outbreak management in the Haematology Ward CAH

It is not clear how the outbreak started on the Haematology Ward. A healthcare worker on the ward with atypical symptoms of COVID-19 tested positive for COVID-19 on 23/08/2020. This does not imply that the healthcare worker was the source of the outbreak. When patients on the ward were screened for COVID-19 on 24/08/2020, six of the patients tested positive and an outbreak was declared in the ward. A comprehensive range of infection prevention and control measures were then introduced including:

- Screening of all patients and HCWs who may have been exposed to the infection
- Segregating COVID-19 positive patients.

- Reinforcing PPE and infection prevention guidelines such as hand hygiene, social distancing, droplet, and contact precautions for HCWs. Further visiting restrictions were also introduced.

All patients admitted to the ward from 10/08/2020 to 17/09/2020 were reviewed, including those who had been discharged. In all, 20 patients who may have been exposed to COVID-19 (based on the incubation period) were reviewed, with 19 being tested for the virus. One of the patients died before testing. 14 of the 19 patients were found to be positive for COVID-19. The last positive patient on the ward was detected on 28/08/2020. Six positive patients were detected after discharge from the ward. The last patient linked with the outbreak was detected on 29/08/2020. There were no further positive patients up to 17/09/2020, 18 days after the last case. Seven of the 14 COVID-19 positive patients sadly died.

Of the 145 HCWs tested during the outbreak, 23 were positive for COVID-19. The first HCW positive for COVID-19 was detected on 23/08/2020 and the last on 25/09/2020, 2020. No deaths occurred among the affected HCWs.

Chronology of the time of detection of cases (patients and HCWs) is shown in Figure 6.

Figure 6: The number of new COVID-19 cases per day during the Haematology Ward outbreak. The different colours represent both healthcare workers and patient cases.

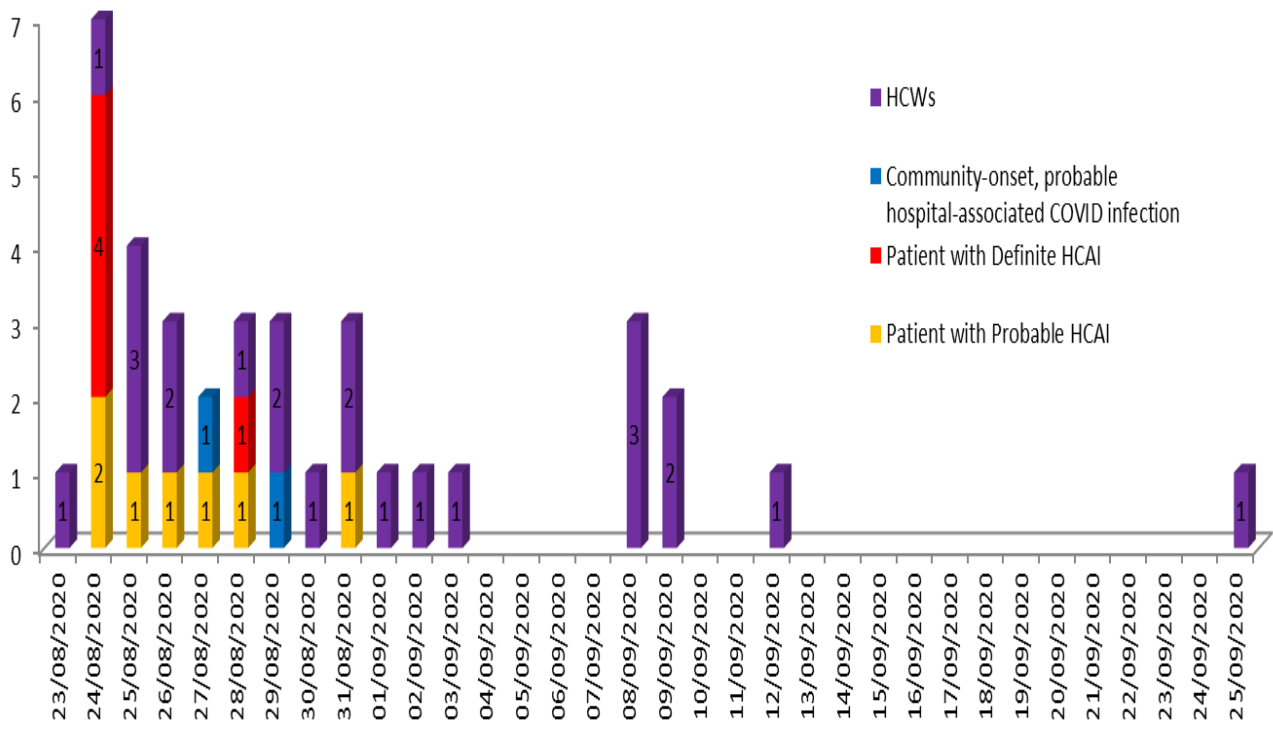
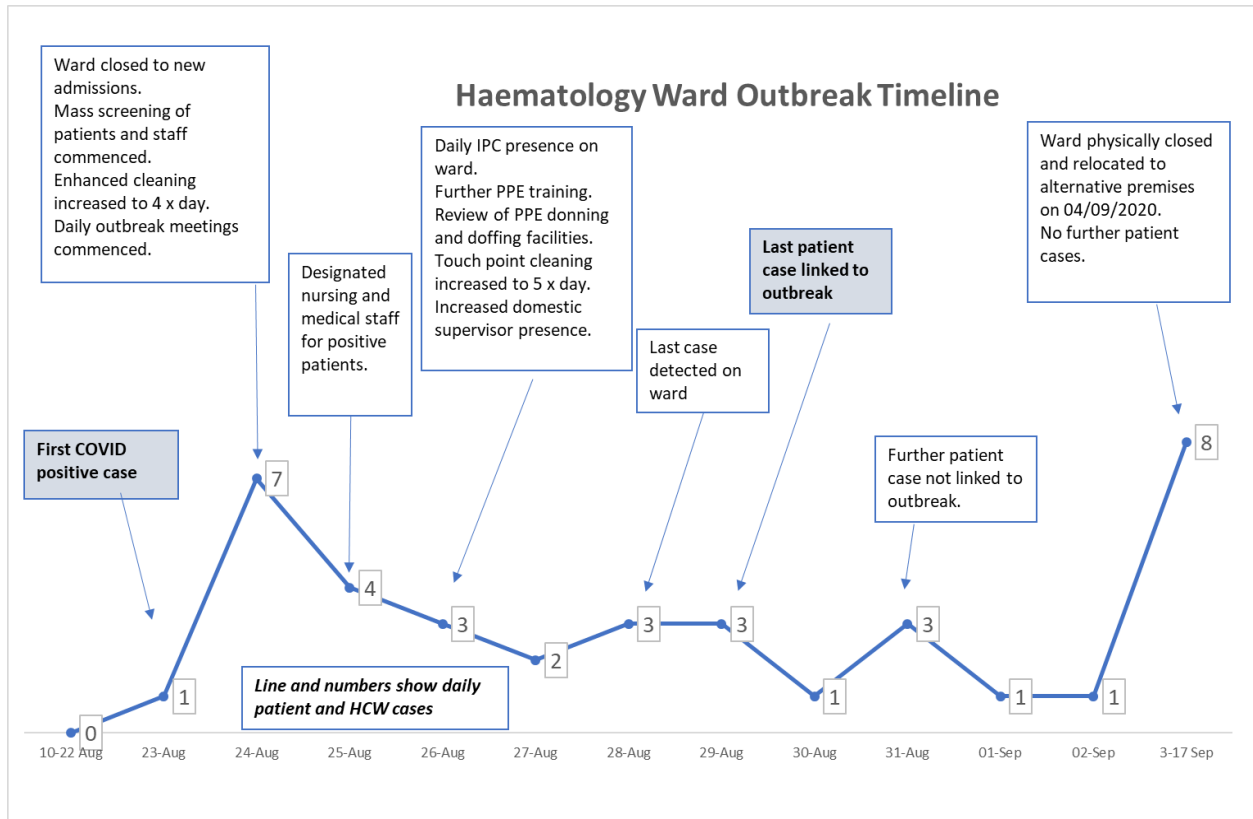


Figure 7: The total number of daily healthcare workers and patient COVID-19 cases in the blue line and boxes. The actions that were taken to address the outbreak are shown in the text boxes with the arrows pointing to the dates these actions were taken.



5.1.1 Summary of the key findings in Haematology Ward:

- The outbreak was detected early and its management was started promptly.
- Medical and nursing staff may not have recognised atypical symptoms and signs of COVID-19 infection.
- There was no routine post admission screening of patients.
- There was no routine screening of healthcare workers before the outbreak.
- The IPC team, healthcare workers on the ward and the Trust management took appropriate steps to control and prevent transmission of infection after the outbreak had been recognised. There was no evidence of continuing transmission following the implementation of control measures.

- All the affected patients were transferred to another ward (Ward 2 North) CAH for management of COVID-19.
- Prompt microbiological investigation was carried out including an intention to perform Whole Genome Sequencing (WGS) on all strains to confirm transmission of the COVID-19 strain in the ward. However not all isolates from affected patients were sequenced.
- The BHSCT WGS results indicated that two distinct strains of SARS-CoV-2 were mainly responsible for the outbreak. Other strains were also detected in the patients, suggesting multiple introductions of the virus into the ward.
- It was not clear how the outbreak strains were introduced into the ward as all patients were admitted to the ward only after screening for COVID-19.
- The facilities for isolating patients and social distancing in the ED department at CAH were reported by the IPCT to be inadequate. It is likely that there were several opportunities for transmission in the ED Department, despite segregation of 'respiratory' and 'non-respiratory' patients.
- Facilities for the isolation and segregation of patients were limited.
- Natural ventilation on the ward was poor. There was no air conditioning. As a result, portable fans were used for the comfort and reduction of pyrexia.
- At the start of the outbreak, regular screening of in-patients and HCWs was not recommended in Northern Ireland. Absence of such screening prevented earlier detection of the outbreak.
- All testing and communication of results was done by the doctor based on the Ward. The panel requested and was provided with a log of communications between the doctor and the affected patients regarding COVID-19.
- The consultant haematologists intentionally reduced the number of daily visits by themselves and associated health practitioners to reduce the 'foot fall' on the ward and the possible transmission of COVID-19 to patients and key workers. The junior haematology doctor on the ward was supported by the Consultants.

- Consultant haematologists conducted video and telephone clinics to protect vulnerable patients by limiting their presence on the wards to further reduce the likelihood of transmitting the virus.
- When alerted to the outbreak, the Occupational Health department acted promptly and carried out extensive screening of exposed HCWs. Those who tested positive for COVID-19 were excluded from the workplace.
- During the outbreak, some of the discharged patients were allowed to travel home in transport provided by family members without adequate precautions. This may have resulted in spread of infection to family members.

5.1.2 Lessons Learned

- Immunosuppressed patients in Haematology Wards are highly vulnerable to COVID-19 infection.
- There is a high morbidity and mortality rate in immunosuppressed patients who are infected with COVID-19.
- Poor ventilation and few isolation facilities increase the risk of transmission of infection in the ward.
- Medical and nursing healthcare workers may not recognise atypical symptoms and signs of COVID-19 infection.
- Haematology Wards should be managed as high-risk environments during COVID-19 and other infection outbreaks with the routine screening of patients and healthcare workers undertaken.
- Genome sequencing is an important aspect of a COVID-19 outbreak response.

5.2 Outbreak management on the Male Medical Ward (MMW) at DHH

The MMW outbreak first came to light when a healthcare worker on the MMW tested positive for COVID-19 on 06/09/2020. This does not imply that the healthcare worker was

the source of the outbreak as a patient had been transferred from MMW to HDU on 06/09/2020 and tested positive on the 07/09/2020. Also, there may have been other asymptomatic patients or healthcare workers on the ward. An outbreak was declared on 08/09/2020 when three more patients on the MMW also tested positive, and Bay Five (within Male Medical Ward) was closed to admissions. A comprehensive range of IPC measures were introduced including screening of all patients and HCWs who may have been exposed to infection. On 10/09/2020, the entire Male Medical Ward was closed to admissions.

Fifteen patients admitted to the ward between 24/08/2020 and 30/09/2020 that may have been exposed to COVID-19 (based on the incubation period) were reviewed and tested for the virus. Thirteen of the 15 patients were found to be positive for COVID-19. The last positive patient on the ward was detected on 15/09/2020 and five of the 13 positive patients were only detected after being discharged from the ward. The last positive patient linked with the outbreak was detected on 20/09/2020. There were no further cases up to 04/11/2020. Six of the 13 COVID-19 positive patients sadly died.

Twenty-five of the 314 HCWs who worked on the ward during the outbreak, tested positive for COVID-19. The first HCW tested positive for COVID-19 on 06/09/2020 and the last HCW tested positive for COVID-19 on 26/09/2020. None of the affected HCWs died.

Chronology of the time of detection of cases (patients and HCWs) is shown in Figure 8.

Figure 8: The number of new COVID-19 cases per day during the Male Medical Ward outbreak. The different colours represent both healthcare workers and patient cases.

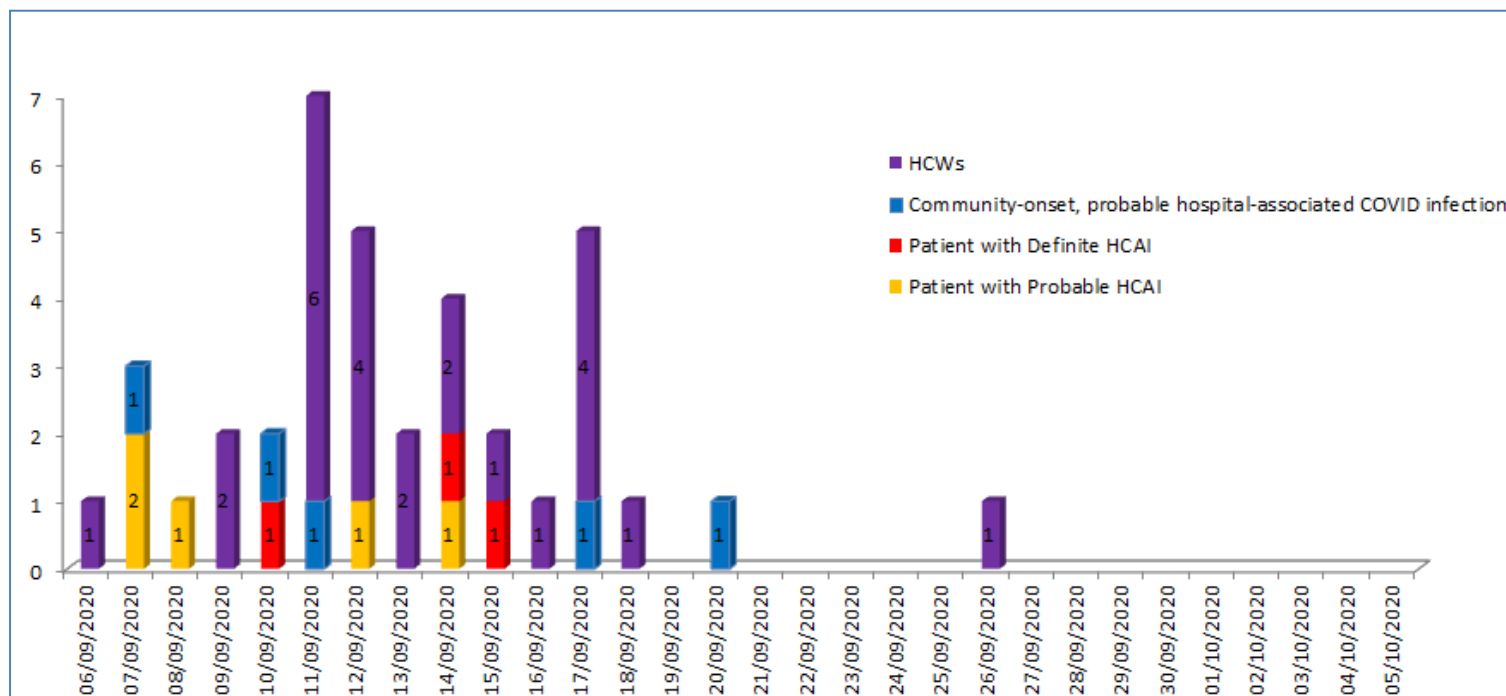
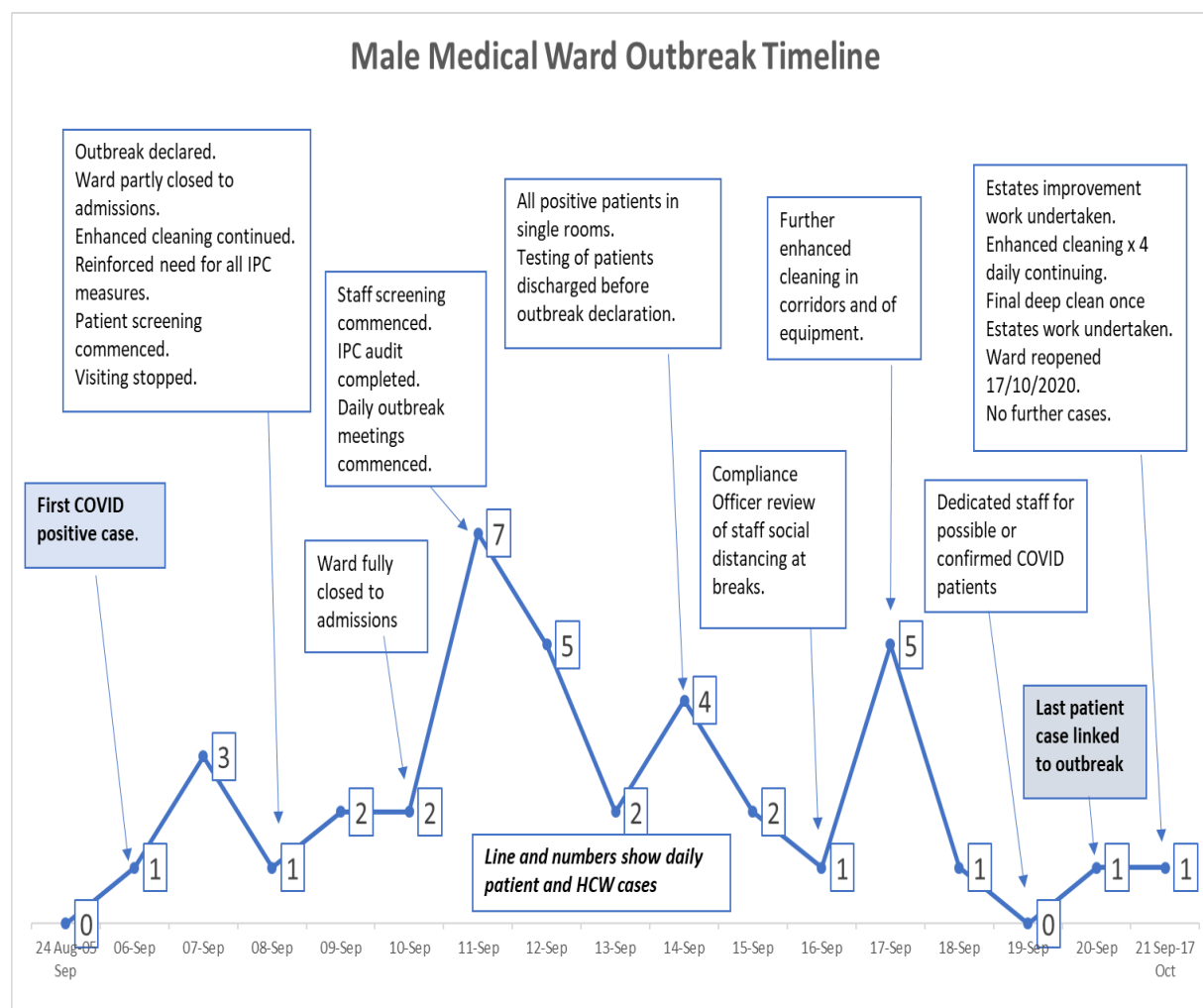


Figure 9: The daily number of COVID-19 +ve healthcare workers and patients in the blue line and boxes. The actions that were taken to address the outbreak are shown in the text boxes with the arrows pointing to the dates these actions were taken.



5.2.1 Summary of the key findings in the Male Medical ward

- Outbreak management was started promptly after detection of the outbreak.
- The IPC team, healthcare workers on the ward and the Trust management took appropriate steps to control and prevent transmission of the infection after the outbreak had been recognised. There was no evidence of continuing transmission after the implementation of control measures.
- All but one COVID-19 positive patients were transferred from DHH to Ward 2 North at CAH for isolation and management of their clinical condition.

- Prompt microbiological investigation was carried out including Whole Genome Sequencing (WGS) to confirm transmission of a strain in the ward. However not all isolates from affected patients were sequenced.
- WGS results indicated that a single strain of SARS-CoV-2 was responsible for the outbreak.
- WGS also suggested that the outbreak strain of SARS-CoV-2 virus (identified as type 2) may have spread from CAH to DHH as the strain was identified in CAH amongst patients and HCWs before the DHH outbreak.
- It is not clear how the outbreak strain was transferred from CAH to DHH. However, it is probable that closure of the Emergency Department at DHH and the transfer of patients back to wards at DHH following assessment at the ED at CAH may have played a role.
- The facilities for isolating patients and social distancing in the Emergency Department at CAH were reported by the IPCT to be inadequate. It is likely that there were several opportunities for transmission in the CAH ED despite segregation of 'respiratory' and 'non-respiratory' patients.
- Facilities for isolation and segregation of patients were limited on the MMW and toilet and bathroom facilities were inadequate.
- The Occupational Health Department acted promptly and carried out extensive screening of exposed HCWs and excluded from work those who screened positive for COVID-19.
- There were inconsistent standards of communication with patients and families although there were instances of good practice.
- Some patients wandered around the ward and this may have contributed to the spread of infection.
- At the time of the outbreak, regular screening of in-patients and HCWs was not recommended in Northern Ireland. Absence of such screening prevented earlier detection of the outbreak.

5.2.2 Lessons Learned

- Limited availability or non-availability of urgent COVID-19 tests at the time of admission may lead to incorrect placement of infected patients in ward areas with uninfected patients who are then exposed to the infection.
- Exposed patients and HCWs may develop symptomatic or asymptomatic infection
- Asymptomatic patients and HCWs play an important role in the transmission of COVID-19 in hospitals.
- Absence of surveillance of COVID-19 by routinely testing inpatients and staff may lead to delayed detection of infections and the implementation of control measures.
- Medical and nursing staff may not recognise atypical symptoms and signs of COVID-19 infection.
- Transfers of infected COVID-19 patients to other wards overnight due to swabbing results coming back to the ward late in the evening, causes considerable anxiety to patients and their families.
- Transfer of patients can affect the continuity of care of patients.

5.3 Outbreak management Ward 4 South (4S) CAH

The outbreak came to light when two patients and one HCW tested positive between 15/09/2020 and 17/09/2020.

An outbreak was declared on the 18/09/2020. As a result, all patients on the ward were screened for COVID-19. A comprehensive range of IPC measures were introduced including screening of all patients and HCWs who may have been exposed to infection.

Seventeen patients admitted to the ward between 08/09/2020 and 18/09/2020 were reviewed, and tested, including discharged patients who may have been exposed to COVID-19 (based on the incubation period). Five of the 17 patients were found to be positive and two of them died. The last case on the ward was detected on 19/09/2020 and two cases were detected after discharge from the ward. The last patients linked with the outbreak were detected on 25/09/2020.

Four of the 178 HCWs who had worked on the ward between these times tested positive for COVID-19. The first HCW positive for COVID-19 was detected on 16/09/2020 with the last positive HCW being detected on 26/09/2020. None of the affected HCWs died.

5.3.1 Summary of key findings

- The outbreak was detected early and appropriate actions were taken to limit further spread.
- There was no evidence of continuing transmission following the instigation of the control measures.
- It is not clear how the outbreak strains were introduced onto the ward.
- Most of the cases were in Bay One, suggesting there was transmission within the bay.
- In addition, there may have been transmission between consecutive patients in a side-room, indicating a possible problem with terminal cleaning of the room.
- Factors allowing transmission were: poor ventilation (natural and artificial), shared facilities including toilet and showers, and limited side-room availability.
- Some lapses in hand hygiene and compliance with PPE requirements were observed by the IPCT during the outbreak.
- It is unfortunate that no strains were sent for WGS, although the requirement for this was mentioned in outbreak minutes dated 18/09/2020.
- There was evidence of equipment including blood pressure cuffs and commodes not being designated to individual patients.

5.3.2 Lessons Learned

- Regular post-admission testing of patients will allow early detection of cases.
- Regular testing of asymptomatic healthcare workers will improve the early detection of outbreaks.

- Relaxing restrictions between waves of infection increases the possibility of transmission.
- Environmental cleaning and the frequency of cleaning have an impact on the incidence of infections.
- Poor ventilation leads to airborne transmission.
- The provision of single rooms with en-suite facilities is necessary to isolate infected patients.
- It is important to implement high standards of hand hygiene and compliance with PPE requirements.
- Whole Genome sequencing is an important requirement in a COVID-19 outbreak response.

Figure 10: The number of new COVID-19 cases per day during the 4 South outbreak. The different colours represent healthcare workers and patients.

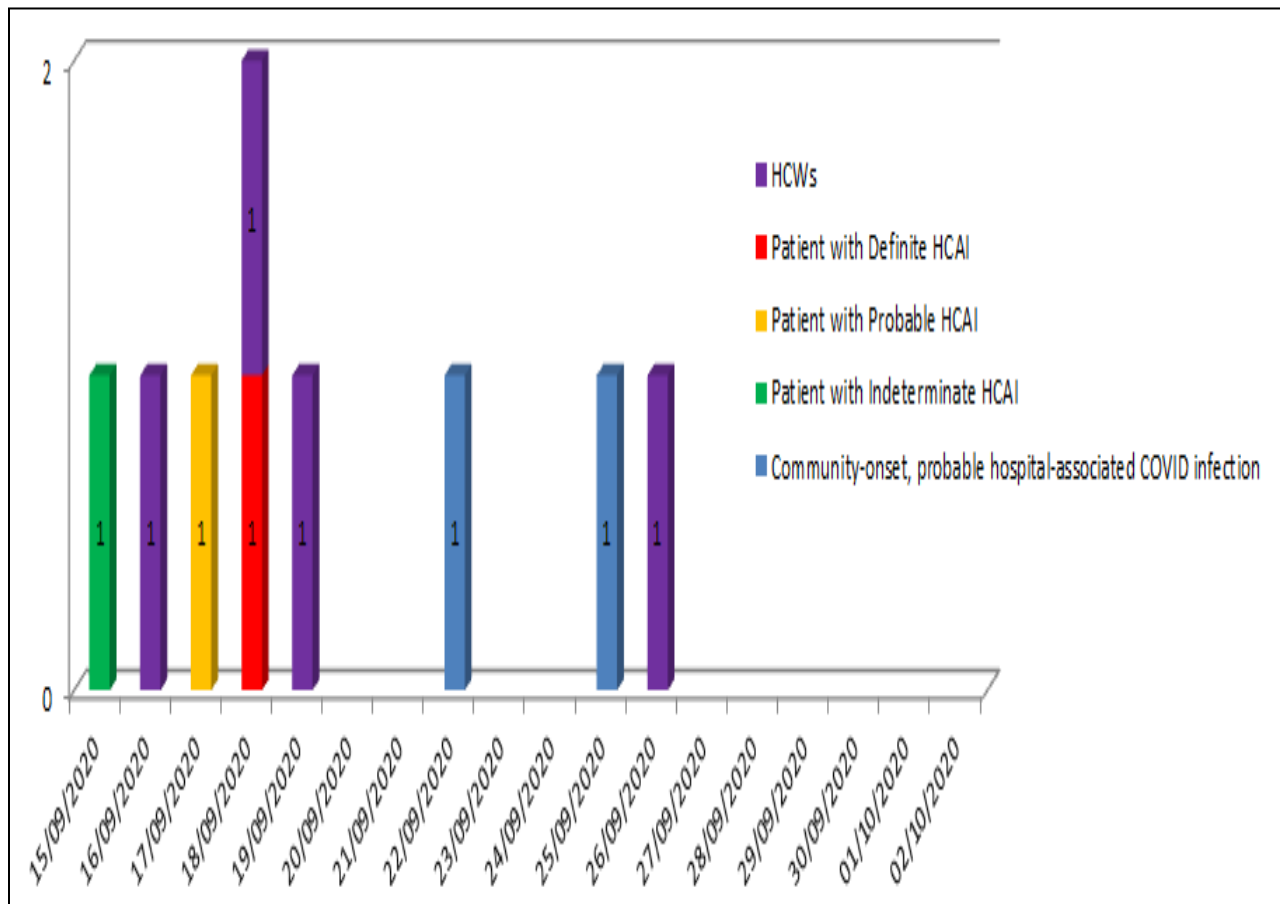
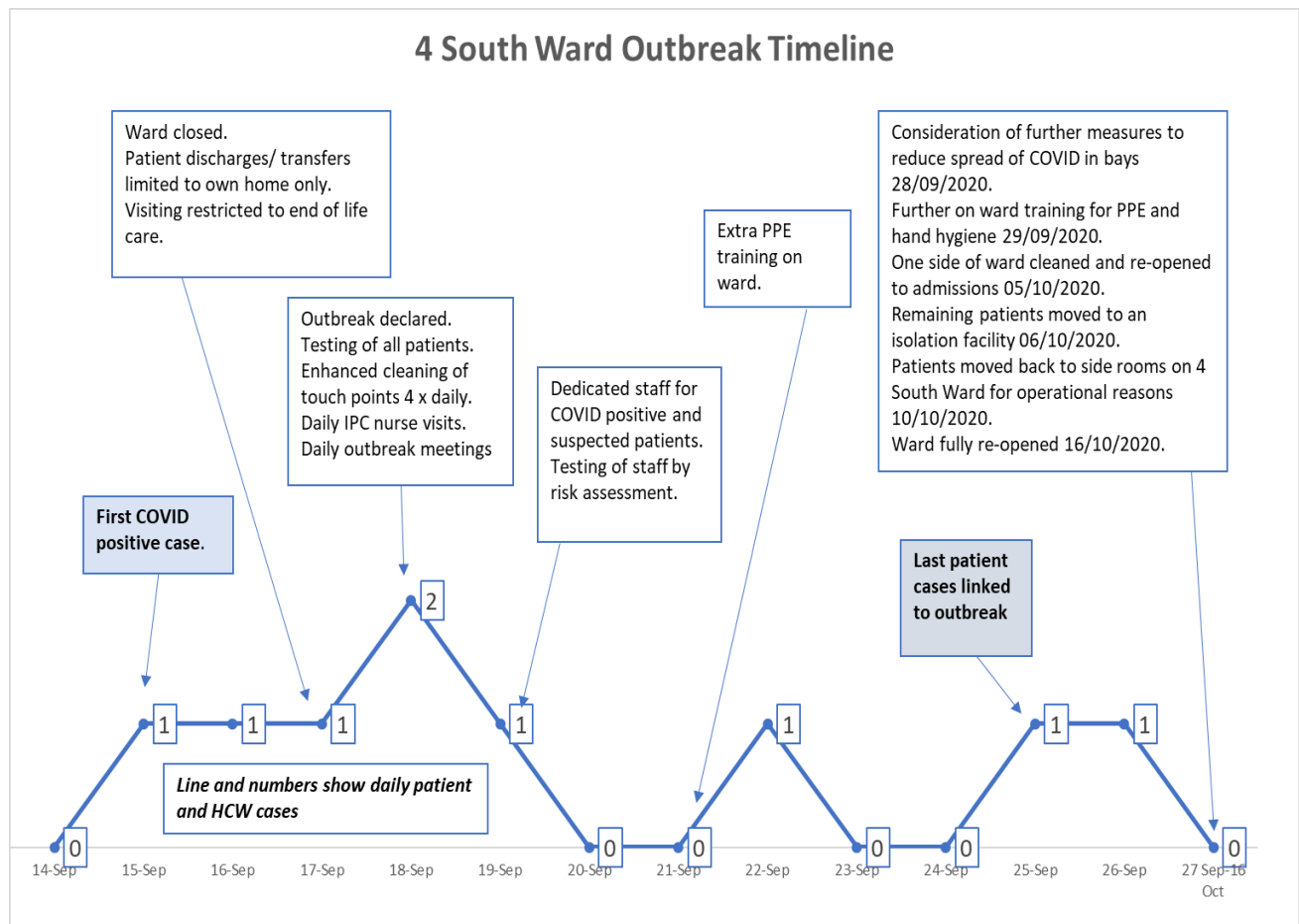


Figure 11: The total number of daily healthcare workers and patient COVID-19 cases are shown in the blue line and boxes. The actions that were taken to address the outbreak are shown in the text boxes with the arrows pointing to the dates these actions were taken.



5.4 Factors that may have contributed to the deaths of patients who tested positive for COVID-19

One of the members of the panel, who is a care of the elderly physician and a medical examiner in England <https://www.england.nhs.uk/establishing-medical-examiner-system-nhs/#introduction-to-the-medical-examiner-system> reviewed the medical records of each fatal case to establish if the deceased patient acquired the COVID-19 infection in the hospital, whether the infection affected the treatment of the patient and whether the

infection caused or contributed to the death of the patient. A senior consultant haematologist also examined the records of the deceased patients in the Haematology Ward outbreak.

A senior nurse who is also an Infection Prevention and Control specialist on the panel reviewed the nursing records of each of the deceased patients with COVID-19 infection to identify any issues with their nursing care related to COVID-19 management that may have caused or contributed to their death.

5.5 The findings of the review of the cause of death or factors that may have contributed to the death of patients with a positive test for COVID-19 during the outbreak were:

- In the three outbreaks, a total of 15 of the 32 patients with COVID-19 (46.87) sadly died. In the Haematology ward outbreak, 7 of the 14 patients with COVID-19 (50%) died; in the male medical ward outbreak, 6 of the 13 patients with COVID-19 (46.2%) died and in the 4S ward outbreak, 2 of the 5 patients with COVID-19 (40%) died.
- The age range of the fatal cases was 65-84 years; 11 males and four females.
- The panel concluded that COVID-19 appears to have contributed to the premature death of 12 of the infected patients. Many of the deceased patients had severe pre-existing comorbidities and limited life expectancy prior to contracting COVID-19. The presence of severe pre-existing comorbidities did not any way reduce the significance of the COVID-19 outbreak or the impact on patients and their families.
- In the Haematology Ward, prior to contracting COVID-19, two of the seven deceased patients were receiving palliative care due to terminal illness. The panel concluded that COVID-19 did not materially contribute to their demise. The panel understands that presence of terminal illness does not diminish the significance of the COVID-19 outbreak or the impact on patients and their families.
- The quality of nursing care the patients received leading up to and during the outbreak was generally of a good standard and compliant with local policies and

guidelines. No major deficiencies in nursing care were identified that may have led to the outbreak or affected the care of patients.

- The panel used the dates of admission to hospital and the first positive laboratory test, together with the results of WGS (where available) to determine if the COVID-19 infection was acquired in the community or in the hospital. All but two of the deceased patients had either probably or definitely HA-COVID-19 and in one patient, it was not possible to determine if they had acquired the infection in the community or the hospital.
- During their treatment, all but one of the deceased patients were transferred to the 'COVID' Ward in CAH for care.

5.6 Care and treatment of patients with positive COVID-19 tests and who were discharged from the hospital.

- Following discharge, two patients died within 28 days of a positive COVID-19 test.
- There were four surviving haematology patients who had acute COVID-19 symptoms but whose underlying condition appears to have been unaffected.
- One surviving haematology patient had significant COVID-19 symptoms for several weeks which delayed his/her chemotherapy. However, the prognosis for their underlying haematological malignancy was unlikely to have been affected.
- Two surviving haematology patients had their chemotherapy treatment markedly affected. It is possible that the delay may have had adverse effects on their disease. They also had marked long COVID-19 symptoms.
- Four of the surviving Male Medical Ward (MMW) COVID-19 patients were asymptomatic and were only found to be infected as a result of screening during the outbreak.
- In the MMW outbreak, COVID-19 did not appear to have a major clinical impact on the surviving patients' underlying condition or its treatment. This was also the case for the three survivors of the Ward 4 South outbreak.

6.0 Additional review findings and Lessons Learned

In addition to reviewing the outbreak management within the individual wards, the panel examined the areas listed below and set out their findings, lessons learned, and recommendations relating to these areas.

- Patient safety, quality of care and record keeping.
- Infection prevention and control.
- Communication /information.
- Hospital estate and isolation.
- Patient and family experience.
- Healthcare workers' experience.

6.1 Patient safety, quality of care and record keeping

6.1.1 Findings

- When the outbreaks were detected, prompt action was taken to manage the situation effectively.
- Overall, the staffing levels of nurses and doctors on the affected wards were satisfactory prior to and during the outbreaks. Although some temporary nursing staff were employed, they were generally drawn from a pool of healthcare workers already employed by the Trust. They had volunteered to do extra hours and were familiar with the infection prevention and control procedures of the hospitals.
- The IPC team, ward based healthcare workers and Trust management took appropriate steps to control and prevent transmission of the infection after the outbreaks were recognised. There was no evidence of continuing transmission following the implementation of control measures.
- All but one of the affected patients including those from DHH, were transferred to the designated COVID-19 Ward (2 North) for management of their COVID-19 symptoms.

- Overall, the quality of medical and nursing care provided to the affected and exposed patients was good.
- At the time of the outbreaks, nursing staff were alerted to identify the typical symptoms of COVID-19 known about at the time. This was in accordance with the national and UK guidance. However, we now know that some patients, especially the elderly may present with atypical symptoms such as confusion. In some cases, families of patients with symptoms had to prompt nursing staff to test for COVID-19.
- Overall, the maintenance of care records for the patients was good, although information regarding the reason for ordering COVID-19 tests was not always recorded in the medical or nursing notes.
- Communication of the results to the patient was not always recorded in the medical or nursing notes.
- Prompt microbiological investigation was carried out including WGS to confirm transmission of the organism in the ward. However not all isolates from affected patients were sequenced.
- Due to limited availability of urgent tests for COVID-19 (roughly 17 tests/day), this testing was limited to ICU, surgery or those being transferred to other hospitals rather than admission screening of all patients. Some of the admitted patients were transferred to open bays on the MMW pending results of routine tests, which could take up to 24 hours. During this time, other patients in the bay were at risk of exposure to COVID-19 if the test of the admitted patient was positive.
- All haematology patients who were admitted to the hospital were initially isolated in a single room pending a COVID-19 screening result.
- At the time of the outbreak, regular screening of in-patients and HCWs was not recommended in Northern Ireland. Absence of such screening prevented earlier detection of the outbreak.
- Consultants reduced their own visits and those of associated HCWs to the ward to reduce 'foot fall' and the potential transmission of COVID-19 to patients and key workers.

- Consultants conducted virtual clinics and telephone consultations to protect vulnerable patients by avoiding their exposure to hospital and ward environments.
- Transfer of infected patients to “COVID” wards, while necessary for clinical management, caused anxiety among patients and their families particularly when transfers happened overnight. The Panel acknowledged that the limited provision of rapid COVID-19 tests, screening results being returned late in the evening and the need for transfer by ambulance to CAH, all contributed to patient transfers occurring during the night.
- When COVID-19 positive patients were transferred from MMW at DHH to the COVID-19 ward (2 North) at CAH, their care was handed over to the appropriate consultant in CAH. Some patients and families felt that there was a loss of continuity of care for the original condition for which they were admitted. However, consultants from Haematology and 4 South wards continued to provide care for COVID-19 positive patients.
- When alerted to the outbreak, the Occupational Health Department acted promptly and carried out extensive screening of exposed HCWs and excluded from work those who were COVID-19 positive.
- During the outbreak, some patients were discharged and allowed to travel home in transport provided by family members who did not live with the patients. This may have resulted in a further spread of infection in the family.

6.1.2 Lessons Learned

- Limited or non-availability of point of care COVID-19 tests at the time of admission may lead to the incorrect placement of infected patients in non-Covid wards/areas. This may expose other patients to infection.
- Exposed patients and HCWs may develop symptomatic or asymptomatic infection.
- Asymptomatic patients and healthcare workers play an important role in transmission of COVID-19 in hospitals.

- Absence of routine surveillance of COVID-19 testing of inpatients leads to the delayed detection of HA-COVID-19 infection and the institution of control measures.
- Medical and nursing staff may not recognise atypical symptoms and signs of COVID-19.
- Transfers of infected patients can cause considerable anxiety among patients and their families and affect their continuity of care

6.2 Infection, Prevention and Control

6.2.1 Findings

- Although admission swabbing was in place it may have been missed for one patient. In line with national and local guidance, post admission screening for COVID-19 was not in place at the time, nursing staff deferred to medical staff for a decision on sending a COVID-19 swab, even if the patient had symptoms of COVID-19.
- There was no designated medical microbiology lead for Infection Prevention and Control within the SHSCT.
- Patients were moved around wards for safety, but also for operational purposes, for example, to comply with same sex accommodation guidance.
- A variety of terms were used for IPC practice for COVID-19 confirmed/suspected patients, which may have led to confusion over the precautions required.
- There was an example of good practice in the Haematology Ward with the introduction of a checklist for nursing specific equipment.
- Limited space in the Haematology Ward led to difficulties in managing the social distancing of patients.
- Fans were used for patients' comfort on the Haematology Ward because of poor ventilation and cooling.
- Visits by the IPCT were recorded in nursing records, but the outcome of the visit and advice given was not always documented.

- The members of the IPCT were stretched due to the multiple demands of rebuilding of hospital services, managing the outbreak, and supporting care homes.
- At the time of the outbreaks, visiting of patients on the wards was reintroduced in line with national recommendations despite the concerns of the IPCT and healthcare workers on the Haematology Ward.
- Some visitors did not comply with the guidance on social distancing and PPE use.
- The absence of formal reports on the outbreaks by the IPC team did not facilitate reflection and learning at ward level.

6.2.2 Lessons Learned

- Segregation and social distancing for patients is not achievable on wards where there are few toilets and bathrooms leading to a large number of patients inappropriately sharing these facilities.
- Regular auditing of admission and post admission screening will help improve outbreak management.
- Clear guidance for ordering COVID-19 tests is necessary.
- Patient movement between wards and bays should be reduced to only that which is necessary for their clinical care. Patient movement should be regularly monitored to confirm there is minimal unnecessary patient movement.
- The absence of formal outbreak reports by the IPC team can impede early reflection and learning at ward level.

6.3 Communication/information

6.3.1 Findings

- Communications were good overall but there were some examples of inconsistent or inadequate information provided to patients and families regarding the outbreak.

- The Trust provided general information regarding COVID-19 but did not always provide specific information to patients regarding the outbreak on the wards and the implications for the patient, families or their visitors.
- Communication of positive COVID-19 test results or the content of what was communicated was not always recorded in the patient's notes. However, there were some examples of good practice.
- With the exception of the Haematology Ward where all the results were communicated by the doctor on the ward, in the MMW and 4 South, there was lack of clarity whether a doctor or nurse should communicate the results to the patient.
- Some patients and their families were unhappy about the information they received during the outbreak.

6.3.2 Lessons Learned

- Lack of timely, accurate and appropriate communications is an important cause of patient dissatisfaction and concern during outbreaks.

6.4 The hospital estate

6.4.1 Findings

CAH and DHH were constructed in the late 1960s/early 1970s. Since then there has been little major capital investment and any work has mostly been for preventive maintenance. The Trust recognises that there are several deficiencies in the existing estate in terms of physical condition, functional suitability, compliance with statutory standards and space utilisation:

- Wards have few single rooms - single room provision within a 36 bed ward is less than 30%, with few of these rooms having en-suite facilities.
- Toilets and shower facilities are limited.
- Multi-bed bays have insufficient spacing between beds and do not reflect current standards –spacing between beds would need to be increased by at least 50%

from a 2.4m to 3.6m to minimise transmission of infection between patients in adjacent beds.

- There are insufficient negative pressure/isolation rooms.
- Most wards are naturally ventilated making it difficult to moderate temperatures as ventilation and air changes rely on openable windows. Local air-conditioning cannot be used due to COVID-19.
- Mechanical ventilation systems are under pressure with little scope to significantly enhance ventilation rates due to the age of the equipment.
- Infrastructure within wards including wiring, pipework, heating and gases, whilst being continually maintained and repaired, require replacement as a whole. Oxygen supply constraints are particularly pertinent during the current pandemic.
- There is a lack of clinical accommodation including insufficient beds, theatre, day surgery and endoscopy space and ED accommodation. From an IPC perspective, it is important that there is sufficient or spare bed capacity. In the absence of such capacity, patients are frequently moved within and between wards leading to an increased risk of infection transmission.

6.4.2 Lessons Learned

- Hospital environments that do not meet Health Building Notes (HBN) and Hospital Technical Memoranda (HTN) Standards make it even more difficult to prevent outbreaks of Hospital Acquired (HA) Infections, specifically COVID-19.

6.5 Facilities for isolation

6.5.1 Findings

- The IPC team, ward healthcare workers and the Trust management took appropriate IPC steps to segregate affected patients and protect exposed patients after the outbreak had been recognised. There was no evidence of continuing transmission following the implementation of control measures.

- In line with existing guidelines, the Trust aimed to treat all COVID-19 affected patients at CAH and maintain DHH as a 'COVID-19 free' hospital. This was done to minimise transmission of infection between patients. As part of this strategy, all emergency admissions were triaged to a 'respiratory' or a 'non-respiratory' ED, both located at CAH.
- The facilities for isolating patients and social distancing in the ED department at CAH were reported by the IPCT to be inadequate. It is likely that there were several opportunities for transmission in the ED department despite segregation of 'respiratory' and 'non-respiratory' patients.
- Facilities for isolation and segregation of immunosuppressed patients were limited on the Haematology Ward and did not meet required standards.
- Natural ventilation was poor on the affected wards. There was no air conditioning or cooling in any of the wards and high temperatures, up to 37°C, were recorded in the Haematology Ward. As a result, portable fans were used for the comfort and the reduction of pyrexia in some immunosuppressed patients.
- Facilities for isolation and segregation of patients were limited on MMW.
- Overall, the affected wards did not meet the currently recommended Health Building Notes (HBN) and Health Technical Memoranda (HTN) Standards.

6.5.2 Lessons Learned

COVID-19 is a highly transmissible infection, especially in areas that are confined, crowded and have inadequate ventilation.

6.6 Experiences of patients and families

6.6.1 Findings

The Liaison Officer initially contacted 31 of the 32 patients and families and continued to have regular contact with 29 of them. The patients and families were given an opportunity to comment on the ToR and describe the impact of the outbreaks on their care and wellbeing during and after hospital stay.

Many of the patients praised the hard working healthcare workers for their efforts, especially in the Haematology Ward. Patients also complimented the excellent care provided by medical and nursing staff and the sensitive handling of the needs of the patients and their families.

However, feedback received from some patients and families highlighted a number of concerns including:

- Poor communication.
- Delays in responding to the outbreaks.
- Lack of continuity of clinical care for infected patients who were transferred between CAH and DHH.
- Failure to regulate the number of visitors to the wards.
- Inconsistent use of PPE by visitors.
- Poor cleaning and hand hygiene.
- Limited toilet facilities.
- Excessive use of agency employees.
- Delayed hospital discharge.
- Emotional impact on the family as a result of not being able to see their ill relatives or to perform final rites when their relative died.

6.6.2 Lessons Learned:

- Lack of or inadequate communication with patients and their families is of concern.
- Patients and their families are aware when healthcare workers do not observe good hygiene practice and don't use PPE appropriately when on the ward or when elsewhere in the hospital.
- Patients and their families are concerned about the continuity of care when patients are transferred to other wards and hospitals and placed under the care of different clinical teams.
- Highly restrictive regulations in relation to visiting, especially those patients who are terminally ill or have died, causes considerable emotional distress to families.

6.7 Experience of healthcare workers

6.7.1 Findings

- The outbreaks affected not only patients but also many HCWs and their contacts. Some of the HCWs were themselves infected with COVID-19 while others had to care for patients affected with COVID-19, including some of whom died with the infection.
- Prior to and during the outbreaks the workload on the affected wards was not excessive and staffing levels were generally adequate to deal with it. Although some temporary nursing staff were employed, these healthcare workers were generally drawn from a pool of healthcare workers employed by the Trust who volunteered to do extra hours and were therefore familiar with its IPC procedures.
- The Trust had taken steps to ensure healthcare workers were adequately trained to protect themselves and patients from COVID-19. There was no shortage of PPE.
- Most healthcare workers felt that there was good IPC support but a few felt that there was inconsistent and changing advice.
- The Trust has a variety of methods to communicate with the healthcare workers including emails, staff briefings, newsletters, videos, podcasts, and WhatsApp groups. The communications covered a range of topics including IPC. In addition, there were daily ward briefings. The senior managers of the Trust were actively engaged in these communications.
- The Trust also sought feedback from all the healthcare workers in a survey regarding COVID-19 conducted in July 2020 (before the outbreaks). The Trust also participated in a national healthcare workers survey “10,000 more voices” which concluded in October 2020. The panel noted the issues raised by the HCWs in those surveys and the steps taken by the Trust, or that it intended to take, to address the issues raised.
- During the outbreak, there were regular meetings where communications with patients, visitors and external agencies were discussed. However, the panel did not find a clear strategy or plan to communicate with the healthcare workers on the affected wards and other healthcare workers in the Trust. Information provided to the healthcare workers during the outbreak was not consistent. Similarly, healthcare workers were not always advised about the content of information that should be

communicated to the patients on the ward. This led to variable and inconsistent information provided.

- The Trust Board, senior and middle management of the Trust were actively involved in the prevention and control of COVID-19 in the Trust. We found evidence of the pragmatic structural and operational measures taken by the Trust to comply with the national guidance to protect patients and healthcare workers before, during and after the outbreak. These measures took into consideration the constraints of Trust's estate, availability of PPE and diagnostic tests. The Medical Director attended many of the outbreak meetings. While the Occupational Health department was available to provide support to healthcare workers, the panel was particularly pleased to see that the Trust management made arrangements for clinical psychologists to provide support to all healthcare workers who were affected by the outbreaks. However, a few healthcare workers felt unsupported.
- A survey of healthcare workers conducted by the Panel in March- April 2021 identified issues with social distancing, especially in areas outside the ward such as the canteen and designated healthcare workers eating areas, inconsistent wearing of PPE by visitors, excessive number of visitors and ineffective communications during the outbreaks.
- Many healthcare workers commented on the poor ventilation on the wards and lack of adequate toilet facilities for the patients.

6.7.2 Lessons Learned

- There is potential for misinformation, when healthcare workers learn about outbreaks by hearsay.
- Nurses and healthcare workers may not feel confident or empowered to tell patients about their test results, especially regarding hospital acquired infections such as COVID-19.
- It is important to ensure social distancing is maintained, especially in overcrowded Emergency Departments, on wards and in staff facilities.
- Poor ventilation on the wards and other clinical areas potentially exposes patients and healthcare workers to airborne infections. COVID-19 is now recognised to be spread by airborne transmission in droplets and aerosols. Fomites can also be involved.
- Hospital acquired infections and outbreaks not only impact on patients but also affect staff, both physically and emotionally.

7.0 Recommendations

The SAI Panel have included a number of recommendations within this report. It is worth noting that currently unequivocal evidence has emerged that airborne transmission is the principal method of spread of COVID-19. Therefore, wherever feasible, windows in all clinical areas should be opened as often as possible and integrated as a key COVID-19 control measure.

Recommendations for the Southern Health and Social Care Trust.

1. The SHSCT requires the creation of an Intra-Trust Patient Transfer Policy with guidance in relation to patients with COVID-19 and any other infections with a high risk of transmission.

The Intra-Trust Patient Transfer Policy and guidance should include and apply to transfers between all SHSCT departments, wards and hospitals.

The SHSCT Intra-Trust Patient Transfer Policy should provide guidance in relation to screening, isolation, management in the event of absence of isolation capacity and the

roles and responsibilities of staff to communicate to the patient and family (where applicable) the decision to transfer. A compliance audit should also form part of this policy with procedures to provide continuous assurance, measure performance and highlight any persistent barriers.

Linked to Level 3 COVID-19 Serious Adverse Incident Lessons Learned 5.2.2, 6.1.2, 6.2.2 and 6.6.2.

2. The SHSCT urgently needs to provide a form of audit which provides regular assurance that all relevant staff are aware of standardised IPC guidance and protocols in relation to Personal Protection Equipment, cleaning of single rooms, cleaning of reusable equipment, appropriate use of single-use equipment, the use of fans in inpatient settings and when to complete relevant Infection Prevention and Control (IPC) risk assessments in relation to reusable equipment or fans.

Linked to Level 3 COVID-19 Serious Adverse Incident Lesson Learned 5.3.2 and 6.6.2.

3. The Southern Trust should ensure that IPC Policies and guidelines are in line with regional IPC policy and include the following information for users:
 - Any SHSCT variation from Regional IPC policy and guidelines.
 - Staff responsibilities in relation to hand hygiene and wearing appropriate PPE.
 - PPE requirements for visitors.
 - Who can request COVID-19 testing.
 - When, where and who can use COVID-19 Point of Care testing.
 - When COVID-19 screening/testing is required for inpatients and staff.
 - Circumstances when repeat COVID-19 testing is required including screening for patients following discharge from hospital.
 - Standardised IPC terminology when applying IPC precautions.

- Record keeping standards in relation to IPC screening, testing, results management and communication with patients, relevant staff and families.
- Recognising atypical signs of COVID-19.
- Use of IPC Risk Assessment tool in relation to reusable equipment/fans.
- Standardised template for compiling IPC post-outbreak reports to capture and reflect learning at ward/department and Trust level.

The provision and receipt of this updated guidance by all appropriate staff should be captured and recorded by all relevant teams to provide regular assurance of operational recognition of SAI Lessons Learned.

Linked to Level 3 COVID-19 Serious Adverse Incident Lessons Learned 5.1.2, 5.2.2, 5.3.2, 6.1.2, 6.2.2, 6.3.2 and 6.6.2.

4. The SHSCT IPC Outbreak Policy and Guidance should include a comprehensive IPC Communication Strategy to ensure relevant staff are aware of their roles and responsibilities in relation to communicating screening and testing results. The IPC Communication Strategy should also provide guidance on how to convey other IPC concerns or IPC Management issues including limiting or restricting access of visitors.

The IPC Communication Strategy should include guidance on when and how to share information with patients, staff, families, wards, hospitals or on a Trust-wide basis. It should include roles and responsibilities specific to managing and communicating information about an outbreak of infection affecting patients, staff or hospital access/services. Consideration should be given to including patient or family representatives as part of the working group tasked with developing the IPC Communication Strategy.

The operational implementation of the SHSCT IPC Communication Strategy should be supported by training for all relevant staff that ensures clarity of role, responsibility, and improving communication skills. Managers and staff should be empowered to

provide potentially sensitive information to patients, families, and SHSCT staff in a timely, sensitive and transparent manner.

The provision and receipt of this guidance should be supported by training for all appropriate staff and should be captured and recorded by all relevant teams to provide regular assurance of operational recognition of SAI Lessons Learned.

Linked to Level 3 COVID-19 Serious Adverse Incident Lessons Learned 6.3.2, 6.6.2 and 6.7.2.

5. The SHSCT should consider creating a bespoke IPC Communication Strategy for managers of healthcare workers in the Trust during an inpatient/ward outbreak of infection. Consideration should be given to including patient or family representatives as part of the working group tasked with developing the Strategy.

The Strategy should include operational guidance on the manager's role, and responsibility for informing and updating staff.

All associated learning in relation to outbreaks should be shared within wards and across divisions on a regular basis.

The communication guidance for Managers, should be supported by training that ensures clarity of role, responsibility, and develops communication skills to empower managers to provide information to staff in a sensitive, clear and consistent manner.

Training for managers should also be provided in relation to supporting staff and ensuring they are aware of SHSCT support through occupational health, and gives details on how to access/refer to all portals of health and wellbeing support provided by the Trust and within the Region.

Linked to Level 3 COVID-19 Serious Adverse Incident Lessons Learned 6.3.2, 6.6.2 and 6.7.2.

Recommendations for the Southern Health and Social Care Trust, collaboration **with** the Northern Ireland Department of Health, PHA and Health and Social Care Board

6. The absence of a NI Infection Prevention and Control (IPC) Framework has resulted in the variation of investment in the Regional IPC workforce, IPC workforce resources, IPC Policy and IPC Management within Trust's in Northern Ireland.

Northern Ireland should implement a NI Infection Prevention and Control Framework to provide consistency as soon as possible. This framework should ensure recurrent investment into developing a sufficient Infection Prevention and Control leadership, management and workforce within the Northern Ireland and specifically the SHSCT. Consideration should be given to a regionally funded Regional IT platform that facilitates and standardises the collection of Regional IPC data, IPC data analysis, epidemiology including the analysis of whole genome sequencing as well as tracking and tracing inpatient movement.

The Framework should accommodate variation in IPC outbreak management when there is a significant rise in local community infection rates unique to specific Trust areas.

The NI Infection Prevention and Control Framework should support the application of Regional Guidance in relation hand hygiene and the wearing of PPE by staff and visitors and allow variation of access for visitors when there are higher than average community infection rates within Trust areas.

Linked to Level 3 COVID-19 Serious Adverse Incident Lessons Learned 5.2.2, 5.3.2, 6.1.2, 6.2.2 and 6.6.2.

7. The SHSCT should be supported in providing Covid-19 point of care testing for all patients attending SHSCT Emergency Departments to ensure appropriate placement and management.

Linked to Level 3 COVID-19 Serious Adverse Incident Lessons Learned 5.2.2 and 6.1.2.

8. The SHSCT should be supported in securing sufficient investment to ensure the provision of accommodation for Haematology patients and all other augmented care settings in the SHSCT that meets Health Building Note (HBN) and Hospital Technical Memoranda (HTN) Standards. This accommodation needs to contain specialist ventilation, en-suite toilet and shower facilities for each patient.

Linked to Level 3 COVID-19 Serious Adverse Incident Lessons Learned 5.1.2, 5.3.2, 6.2.2, 6.3.2, 6.4.2 and 6.5.2.

9. The SHSCT should be supported in securing sufficient investment to ensure the provision of improved ward ventilation within all inpatient accommodation. Consideration should be given to the creation of a Ventilation Safety Group in each Trust. There needs to be a significant increase in the number of isolation wards with access to en-suite toilet and shower facilities in all inpatient settings. Investment is also needed to increase the number of patient toilets and showers at ward level in-line with Health Building Notes (HBN) and Health Technical Memoranda (HTN) Standards.

Linked to Level 3 COVID-19 Serious Adverse Incident Lessons Learned 5.1.2, 5.3.2, 6.4.2, 6.5.2 and 6.7.2.

10. The SHSCT requires urgent support and investment to address the issue of overcrowding particular in the Emergency Departments as this increases the risk of exposure to and transmission of infection for SHSCT patients.

Linked to Level 3 COVID-19 Serious Adverse Incident Lessons Learned 6.2.2, 6.4.2, 6.5.2 and 6.7.2.

Recommendation for the Southern Health and Social Care Trust and collaboration **with** the Northern Ireland Department of Health, Health and Social Care Board and the Belfast Health and Social Care Trust (BHSCT).

11. The NI Regional Virus laboratory in BHSCT should provide whole genome sequencing (WGS) and interpretive support for all positive Covid-19 samples, as part of the investigation of suspected inpatient outbreaks.

Linked to Level 3 COVID-19 Serious Adverse Incident Lessons Learned 5.1.2 and 5.3.2.

8.0 Conclusions

The COVID-19 pandemic that started in early 2020 has posed several unique and unprecedented challenges to healthcare in the UK and worldwide. One such challenge is the prevention of spread of COVID-19 in hospitals. Since the onset of the pandemic, several outbreaks of hospital acquired COVID-19 (HA-COVID-19) have been reported in Northern Ireland and the UK. Hospitals have highly vulnerable or elderly patients who are not only particularly susceptible to COVID-19 but also to developing severe forms of the infection, which may be fatal. In principle, HA-COVID-19 infection is preventable.

The COVID-19 outbreaks in CAH and DHH occurred when COVID-19 infection in the community was relatively low but rising. The impact of the outbreaks was catastrophic, with profound implications for the patients, families and healthcare workers involved. It resulted in the loss of loved ones, treatment delays, extended admissions and prolonged effects in some patients and healthcare workers. Patients, families and healthcare workers also reported ongoing emotional impacts of the outbreak.

At the time of the outbreak, in keeping with national guidance, patients were screened for COVID-19 on admission. However, there was no screening of inpatients or healthcare workers at regular intervals. The absence of such screening hampered early detection of HA-COVID-19 and the implementation of control measures in advance of the spread of infection. Furthermore, symptoms of sepsis and fever occur commonly in immunosuppressed haematology patients making it difficult to clinically diagnose COVID-19 in these patients.

Insufficient and inadequate isolation facilities, poor ventilation on the wards, overcrowding and inadequate space for social distancing in the ED at CAH and on the affected wards, relaxing of restrictions for ward visits at the time of the outbreaks and the use of fans are likely to have contributed to the outbreak.

The panel identified several deficiencies in the existing estate including the physical condition, functional suitability, compliance with standards and lack of effective space utilisation, that all contributed to the likelihood of transmission of infection on the wards.

Wards have few single rooms, with only some having en-suite facilities. There are insufficient negative pressure isolation rooms. Toilets and shower facilities are limited. With the exception of Haematology Ward, where the space between the beds was adequate, multi-bed bays in other wards have poor bed spacing and do not reflect current standards. This was the case particularly in the MMW and 4 South. While there is scope for improving infection prevention and control, and the capacity of the Infection Prevention Control team (IPCT), the panel concluded that infection control was overall satisfactory within the constraints set out in the above paragraphs. The panel found no association between nursing staffing levels and the outbreaks.

Investigation of the outbreaks by the IPCT was satisfactory and the control measures put in place were appropriate. Screening of healthcare workers was also initiated promptly. The panel found that the nursing and medical care provided to manage patients with COVID-19 was also satisfactory.

The panel found instances of inconsistent and inadequate communication with patients, families and healthcare workers. In many cases, there were no records of communication of COVID-19 test results to the patients or their families. Similarly, both patients and their families were provided with little specific information regarding the outbreaks, which may have led to confusion regarding isolation requirements and visiting restrictions.

The Panel concurs with the Trust's strategy to establish COVID-19 and Non COVID-19 hospitals to segregate patients and prevent the spread of COVID-19 as was the practice across the rest of the UK. However, the panel observed that patient transfers between hospitals (separated by nearly 25 miles) had an impact on the continuity of patient care for conditions unrelated to COVID-19 and also adversely impacted on the patient and family experience.

In the panel's view, at the time of the outbreak, incomplete and evolving understanding of the transmission of COVID-19, together with limited availability of rapid point of care diagnostic tests, inadequate isolation facilities, poor ventilation, absence of routine in-patient and healthcare workers screening for COVID-19 and the non-availability of vaccines, made it difficult to prevent transmission of COVID-19 in the affected wards.

The panel hopes that the findings and recommendations set out in the report will reduce the likelihood of COVID-19 outbreaks in hospitals in the future and minimise the impact of outbreaks if they occur.

Throughout this review, the panel has considered the evolving knowledge regarding the prevention, control, and treatment of COVID-19. The panel has identified the following areas as critical in the prevention of future outbreaks of COVID-19 within hospitals:

- Control of the virus within the community by the vaccination of vulnerable patients and the general population subject to the availability of effective vaccines.
- The vaccination of all HCWs.
- Compliance with infection control recommendations. This includes early detection of patients and HCWs with COVID-19 by a regular testing program together with isolation of infected patients or exclusion of infected HCWs.
- Improvement in ventilation and provision of substantially more isolation and toilet facilities in all areas of the hospital.

The panel wishes to acknowledge the tragic consequences that the outbreaks have had on patients, their families and healthcare workers and to thank them for their contribution to this review during these difficult times.

Appendix 1

The COVID-19 Outbreaks at Craigavon Area Hospital, (CAH) and Daisy Hill Hospital (DHH) between August and October 2020.

Examples of Patient and Family Experience and Feedback

1.0 Introduction

During the SAI process, patients and their families have been receptive and open to communication and sharing their feedback and experience with the Panel through the trust's Liaison Officer.

An SAI review of this nature is complex and would not be possible without the support of the patients and families involved in the COVID-19 outbreaks. The feedback and experiences provided, have been considered by the panel and inform the findings and recommendation of the report.

2.0 Patient engagement and support arrangements

The Trust Liaison Officer has provided a support service to the patients and families involved in the COVID-19 SAI review.

The primary aim of the liaison service is to be open and transparent whilst guiding patients and families through the SAI process.

Key aims of the Liaison Officer are:

- To ensure effective and clear communication.
- To provide and share information in a transparent and timely manner.
- To provide opportunities for patients and families to share their experiences with the SAI Review panel whilst being mindful of the impact of trauma and ongoing grief.

Given the impact of COVID-19 and the need for social distancing, this support has been primarily provided via telephone calls. All patients and families were offered home visits, however due to ongoing COVID-19 restrictions, social distancing and promoting and respecting personal choice, the Liaison Officer has carried out only six home visits to date. The Liaison Officer and the panel were mindful that the restrictions have been a potential barrier to face-to-face communication.

3.0 Level of patient engagement and involvement

Initial contact was made with 31 of the 32 patients and families. One patient within this cohort had been transferred to a UK Specialist Centre with a non-COVID-19 related issue. Contact was made with the UK based clinical team and advised that the patient remained in a critical condition and has sadly since died of a non-COVID-19 related condition. A second patient did not wish to have any

involvement with the SAI review and a third made an informed choice to take no further part in the process for ongoing health reasons.

Where initial direct contact was made, there has been ongoing consistent communication with 29 of the 32 patients and families involved throughout the SAI process. The type and frequency of communication was led by the patients and families.

For support, the opportunity of a home visit remained open to all patients and families at any point during the SAI process.

The Liaison Officer has actively promoted individual advocacy support via the Patient Client Council (PCC) and a small number of families have availed of this support.

During the process, the Liaison Officer, through ongoing communication, has been able to signpost patients and families to appropriate and relevant services.

These have included:

- Independent advocacy.
- Bereavement support.
- Carers rights, services and support.
- Counselling.
- Mental health services.
- Community and voluntary services for financial/benefits advice.

4.0 How patient and family feedback has influenced the findings and recommendations of the SAI report

- During contact with patients and families, discussion and feedback has been exchanged in relation to the SAI Draft Terms of Reference.
- With informed consent from patients and families, the Liaison Officer has provided the view of the patients and families to the SAI panel to ensure their experiences were included as part of the review panel discussions.

5.0 The patient and family's experience and feedback of the COVID-19 outbreaks are documented below:

The feedback has been themed into the following areas of concern, and has been used to inform the panel's findings and recommendation found within the main body of the SAI report:

- Patient safety, quality and care.
- Communication and information.
- Infection Prevention and Control.
- Emotional and ongoing impact of the COVID-19 outbreak.
- Positive experiences.

5.1 Patient safety, quality and care

- Transfer of COVID-19 positive patients from DHH to COVID-19 Ward at CAH may have resulted in limited continuity of care for conditions unrelated to COVID-19 from their treating consultants and medical staff.
- One family advised strongly that their family member was exposed to the infection because of delays in discharge, despite them being medically fit for discharge.
- Families observed nursing staff and students not adhering to social distancing at ward central desks.
- One family felt strongly that their family member was neglected clinically whilst an in-patient.
- Families commented on the use of multiple agency healthcare workers working in different wards and hospitals potentially contributing to the spread of infections in the two hospitals. However, the panel was informed that only HCWs already employed by the Trust and who had volunteered to do additional duties were used to fill temporary shortfalls in staffing on the wards. Agency staff were generally not used.

5.2 Infection, Prevention and Control

Visitors

- Visitor numbers were very high with strong views that visitor numbers should have been reduced more rapidly or suspended.
- Inconsistent use of PPE by visitors.
- Visitors continued to be allowed on to wards following outbreak notification.

Hygiene

- Poor cleaning regime and potential cross contamination on the wards.
- Inconsistent use of hand sanitisers by nursing staff when moving between patients.
- A number of patients were unaware of the reasons for swabs being taken.
- Patients and family's perception of a lack of communication between healthcare workers and management, especially at weekends.
- Inconsistent use of PPE by healthcare workers.

Equipment

- Continued use of fans on wards during the outbreaks.
- Patients on the wards were not provided with masks.
- Observations of inconsistent use of PPE by healthcare workers. This declined when visiting was facilitated on the wards.

5.3 Estate and isolation

- Limited number of toilet/bathroom facilities on wards, resulting in an increase in shared use.
- Observations of non-essential external contractors on the wards.
- Reduced emphasis on COVID-19 diagnosis by clinical healthcare workers who tended to focus on underlying health conditions.

- One family felt their loved one's clinical treatment options were extremely limited due to contracting COVID-19 which they felt directly resulted in her untimely passing.
- Standard of care within CAH 'would not inspire any confidence'.

5.4 Communication

- One family was made aware of the outbreak on the Haematology ward via relative gaining information from a social media platform.
- One patient felt communication was very poor between healthcare workers and patients and had concerns when the Trust was made aware of the outbreak 'they never did one thing to protect patients'.
- The Liaison Officer from the SAI team was the first point of contact with patients and families in relation to those affected by the COVID-19 outbreak in the Male Medical Ward of DHH.
- One patient overheard information regarding the outbreak and his COVID-19 result from the nursing station as his bed was located next to this area.
- One patient's family were misinformed of their exposure in the outbreak, this was rectified within two days.
- One family was made aware of the outbreak in DHH via the testing and contact tracing service.
- The lack of effective communication was 'appalling'.
- Pertinent information regarding the outbreaks was learned via the news.
- A number of patients were discharged home with no knowledge of the outbreak, resulting in family members contracting the infection.
- Difficulties accessing the ward/healthcare workers for up to date information on family members.
- How robust was the escalation procedure and communication when the outbreak was identified?

5.5 Emotional and ongoing impact of the COVID-19 outbreaks

- Anger and distress that families never got to say goodbye to their loved one.
- Distress that they could not get to see their loved one following their passing.
- One family member described the emotional impact of the knowledge that their loved one was put 'into two body bags' and they were unable to change the dress of their loved one from hospital clothing for their funeral because of COVID-19 restrictions.
- Feeling their loved ones were contaminated.
- Funeral rituals were unable to be followed and this traumatically impacted on their grieving and bereavement.
- Families who wanted a church service were unable to have it if desired.
- Traumatic emotional impact on patients and their families 'dreadful, horrendous, heart breaking'.
- One family strongly advocated that the death of their loved one be reported to the coroner as a hospital acquired infection, and should be subject to a public inquiry.
- One family felt the SAI was being held behind closed doors.
- A number of patients were suffering from long COVID-19 symptoms.
- A number of patients had their cancer treatments postponed due to their COVID-19 diagnosis and for two patients, delays continue.
- Detrimental ongoing impact on physical and emotional health.
- One patient tested positive for a prolonged period resulting in a lengthy stay in hospital under isolation and further social isolation was recommended on discharge.
- Detrimental impact on families where patients have long term physical effects from infection, increased carer role and carer stressors.

5.6 Positive experiences

- Healthcare workers in the Haematology Ward were 'fantastic'.
- Haematology Ward healthcare workers contacted a number of patients and families to advise of the outbreak and isolation requirements.
- One family 'had nothing but good things to say about the haematology healthcare workers and the care they provided.
- The haematology healthcare workers did the best they could with the facilities they had.
- There was specific praise for a nurse on ward 4 South and her level of care, reassurance and contact with family members.
- One family felt the end of life care/journey was very supportive in 4 South.
- Treatment from healthcare workers from one patient's initial diagnosis, , in the haematology and Mandeville Units was exemplary and 'everyone did their absolute best'.
- One patient felt they had excellent treatment from healthcare workers in CAH.
- DHH were quick to identify the infection and transfer patient to CAH.
- Excellent care provided by medical and nursing healthcare workers. Family member was well looked after and healthcare workers were very sensitive to their and the family's needs.
- A number of patients and families did not wish 'the finger to be pointed at healthcare workers' as they were very caring.
- ICU healthcare workers' level of communication was excellent.

Appendix 2

The COVID-19 outbreaks at Craigavon Area Hospital, (CAH) and Daisy Hill Hospital (DHH) between August and October 2020.

Examples of Healthcare workers Experience and Feedback

Section One

1.0 Introduction:

The COVID-19 outbreaks affected not only patients but also many healthcare workers (HCWs) and their contacts, both inside and outside of work. Some of the HCWs were themselves infected with COVID-19 while others had to care for patients infected with COVID-19, including some of those who died.

The panel felt it was important to consider healthcare workers' experience and feedback as part of their review. This approach provided the panel with an insight and understanding of the impact of COVID-19 on healthcare workers, their working practices, and the care of patients.

The panel also wished to explore in greater depth the working environment, training provided, communications and experiences of HCWs regarding COVID-19, both generally and during the outbreaks. The panel has taken the healthcare workers' experience feedback into consideration in the findings and recommendations of the report.

1.1 Methods used to obtain healthcare workers feedback

Following consultation with the Trust, a self-completion anonymised survey was sent to all HCWs in the two affected hospitals. Thirty- three healthcare workers responded to the questionnaire. The panel sought guidance from the Trust's legal and human resources departments to ensure the confidentiality of healthcare workers who responded to the survey.

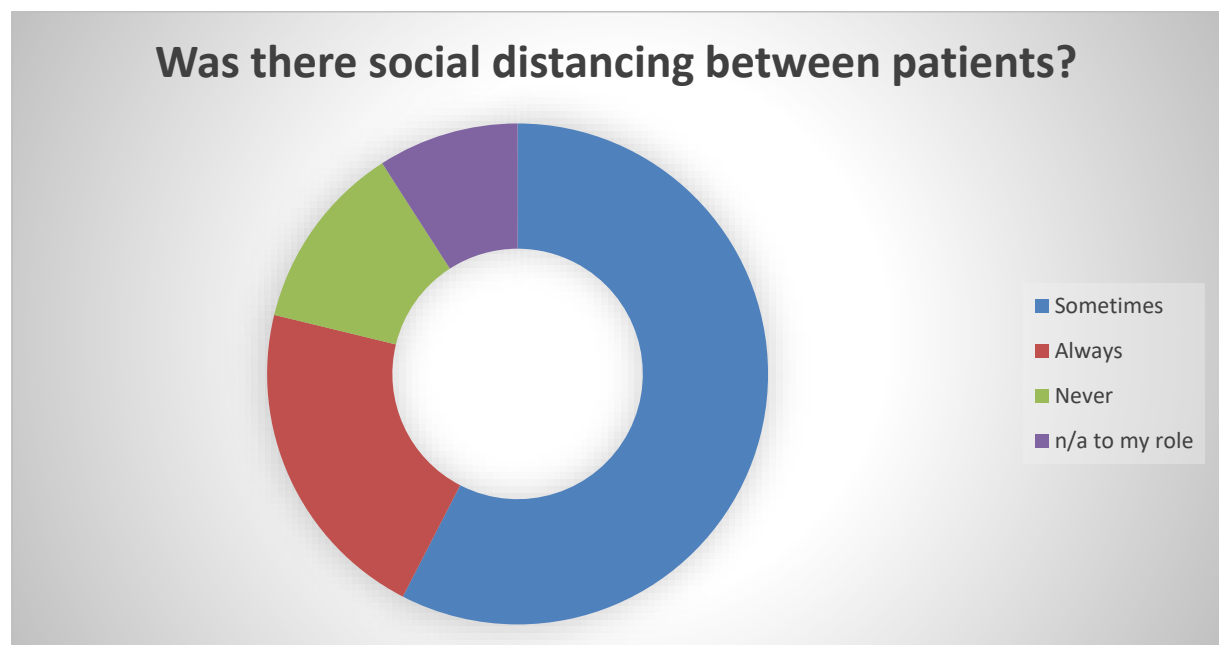
In addition, the panel had access to previous healthcare workers surveys regarding COVID-19 conducted by the Trust in July 2020 (before the outbreaks) and October 2020 (after the outbreaks). The panel also received anonymised feedback from healthcare workers that had tested positive for COVID-19 during the outbreaks.

The panel also interviewed the clinicians and nurse managers on affected wards, clinical psychologists and the Head of Occupational Health who provided support to HCWs during the outbreaks.

Section 2.0 Anonymised healthcare workers survey results

Question 1 - Do you feel that social distancing (2m) was maintained between patients between 10/08/2020 and 16/10/2020?

- Healthcare workers reported that social distancing between patients was generally observed.



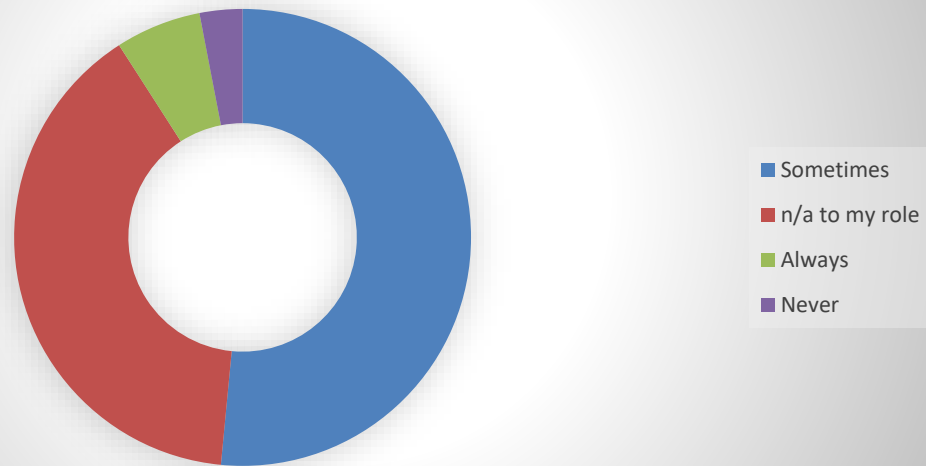
Some examples of Healthcare workers comments to this question are set out below:

- Unable to achieve 2 metre distance due to lack of space and beds.
- Limited toilet facilities on wards, being used by multiple patients.
- Patients were not wearing masks at this point, as it was not hospital policy.
- In the main ward block in CAH the bays are too small and unable to maintain the social distancing required.

Question 2 - Did you witness visitors complying with social distancing?

- Visitors did not always comply with social distancing with only two healthcare workers reporting that this always happened.

Did staff witness social distancing by visitors?

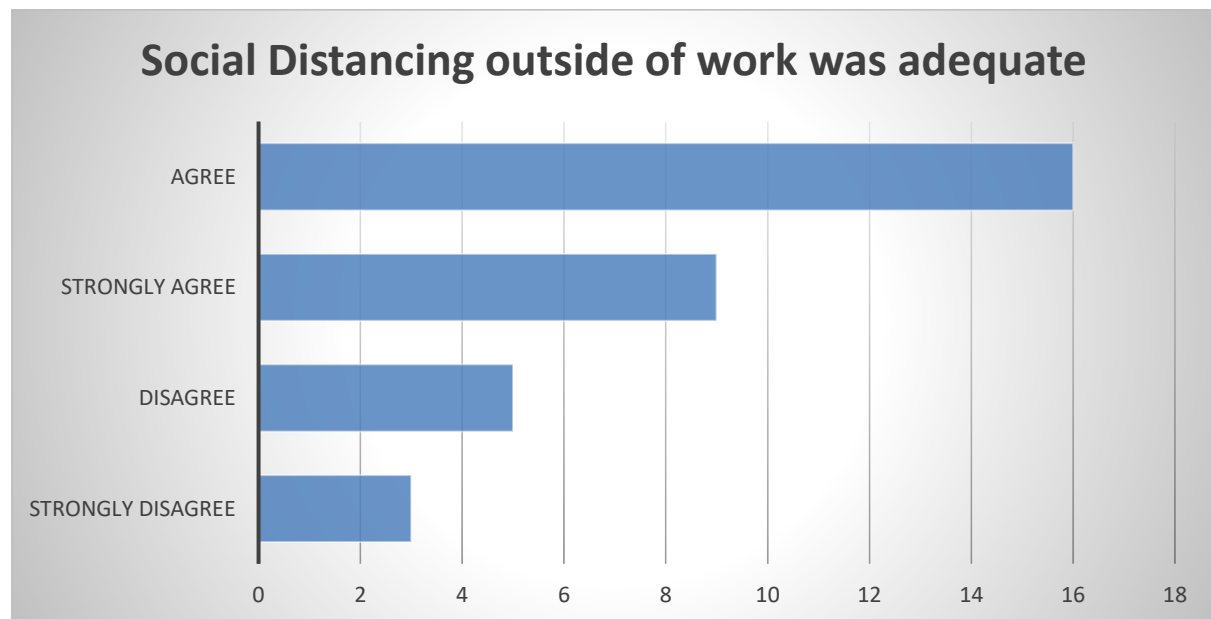


Examples of Healthcare workers comments on this question are set out below:

- Visitors sat on chairs that were 'taped off' with signage 'do not to sit on this seat.'
- Visitors to other patients and getting too close to healthcare workers despite requests not to do so. However, our bed spaces are so small you could see how difficult it was for everyone.
- In the summer when visiting was relaxed, there were queues of people at the front door waiting to get into the hospital. Would have been difficult to always maintain social distancing.
- On a number of occasions visitors attended for appointed visiting without masks and on occasions had to be prompted to wear their masks properly at the bedside (mask under nose/mask under chin). When challenged, family members were visibly annoyed.

Question 3 – Do you agree that there was adequate social distancing when not providing direct patient care?

- Most healthcare workers felt that there was adequate social distancing outside of work, however, eight (24%) of healthcare workers disagreed that it was adequate.

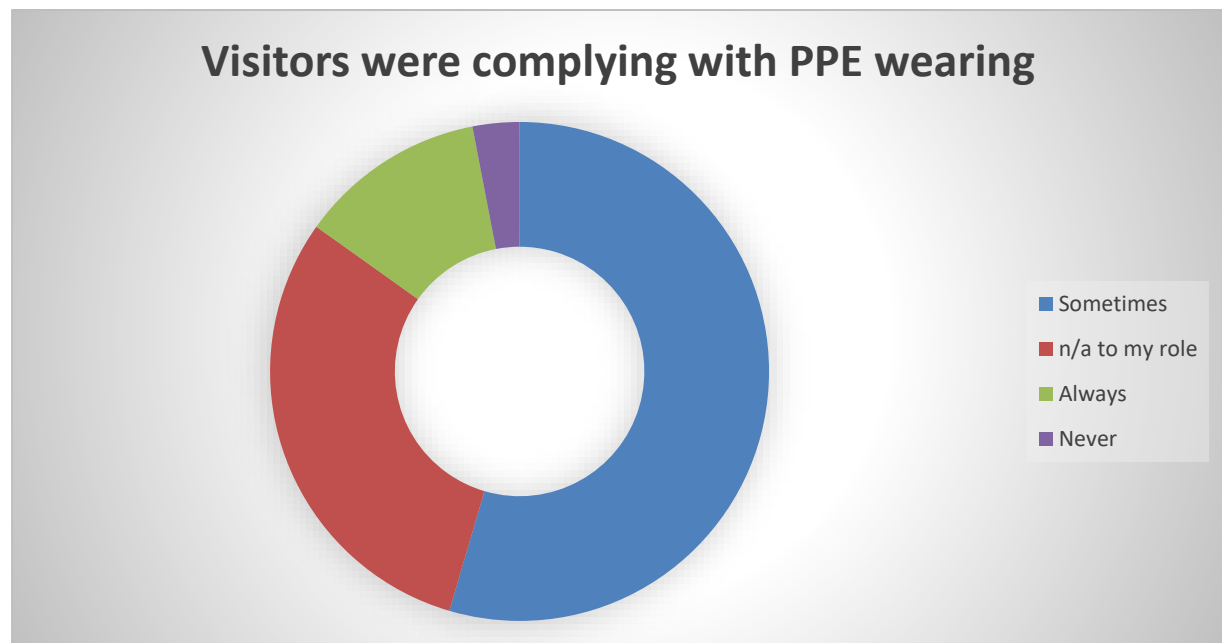


Healthcare workers comments on this question included:

- Not adhered to in canteen initially then enhanced measures put in place e.g. reduced capacity at table, screens up.
- Break facilities are poor. More indoor, warm comfortable space is required with adequate facilities. Sometimes difficult to get a seat. Eating in your car is not an acceptable alternative.
- When visiting resumed, large queues of people in the foyer mixing with healthcare workers.
- Weather conditions encouraged healthcare workers go to their cars for breaks.

Question 4 - Did you witness visitors complying with PPE recommendations?

- Most healthcare workers reported that visitors were sometimes complying with PPE wearing.

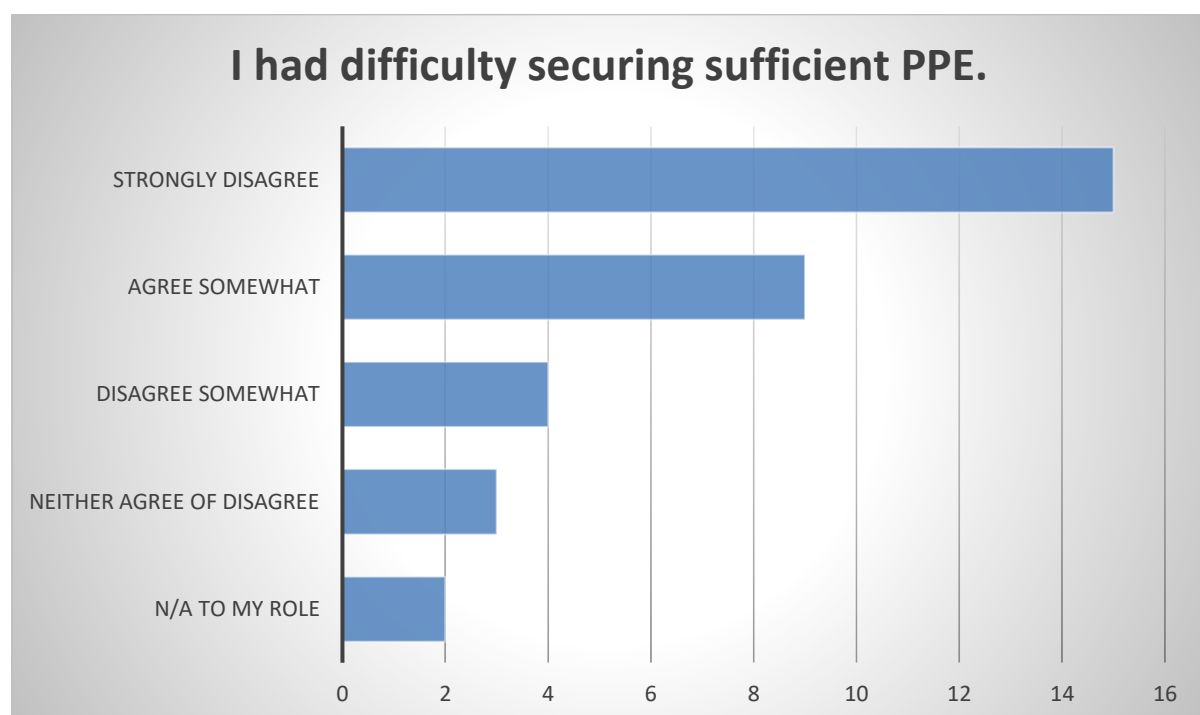


Healthcare workers comments on this question included:

- Visitors kept touching their masks - removing them to talk on their phone or putting them on top of their head.
- On a number of occasions visitors attended for appointed visiting without masks and on occasions had to be prompted to wear their masks properly at the bedside (mask under nose/mask under chin). When challenged, family members were visibly annoyed.
- Patient's family member just ran straight through the donning area.
- Some refused to wear it or didn't believe in COVID-19. On a couple of occasions visitors took off PPE when they went into a side room thinking it was safe.

Question 5 – I experienced difficulties securing PPE

- Most healthcare workers did not experience difficulties with securing PPE, however, nine (26%) of healthcare workers who responded to the survey did have difficulties.

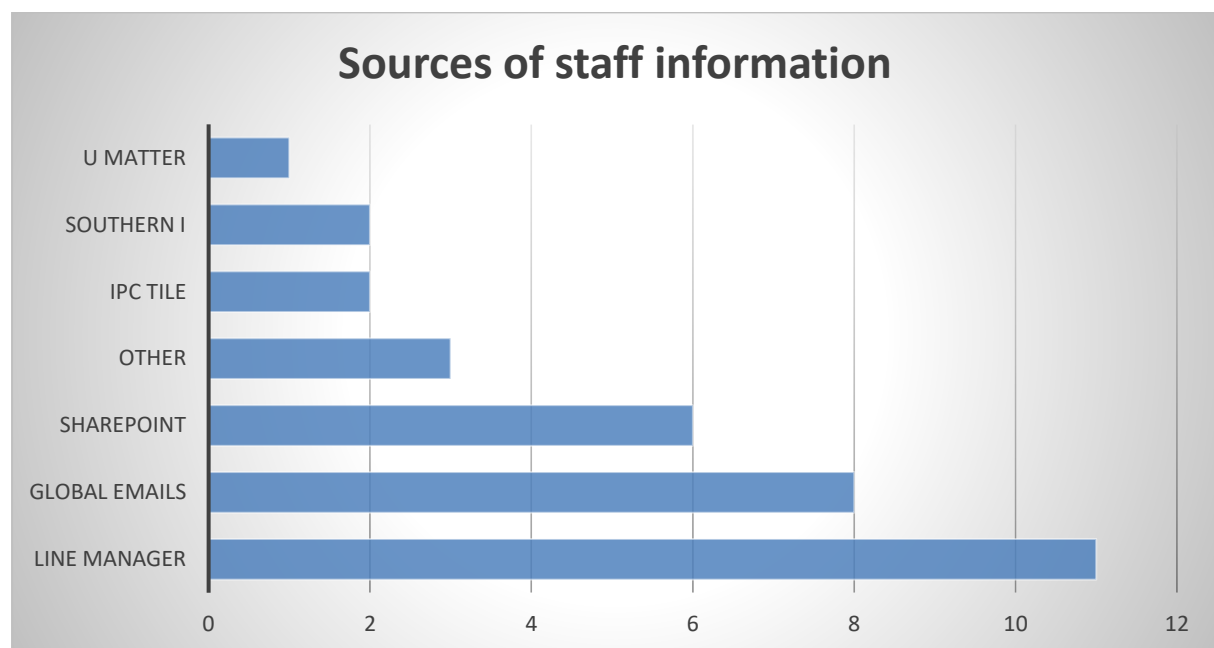


Healthcare workers comments on this question included:

- Quality of PPE leaves a lot to be desired, especially aprons.
- There were shortages of surgical gowns and masks at ward level, but these were rectified after a few hours on these occasions.
- Correct masks not always available and having to be fit tested on multiple occasions for masks.
- PPE that was advised by IPC at the start of COVID-19 then said it wasn't needed.

Question 6 - Where did you seek information on IPC and Pandemic related issues?

- Most healthcare workers used their line manager as the first point for seeking information on IPC and the pandemic.
- Other sources of information included:
 1. IPC nurses
 2. All of the above sources
 3. Regular medical education briefings
 4. COVID-19 training



Question 7 - The advice and guidance I received from the IPC and microbiology teams during the outbreak was adequate.

- Although most healthcare workers agreed that they had received adequate advice and guidance, 13 (39%) of healthcare workers disagreed that this was adequate.

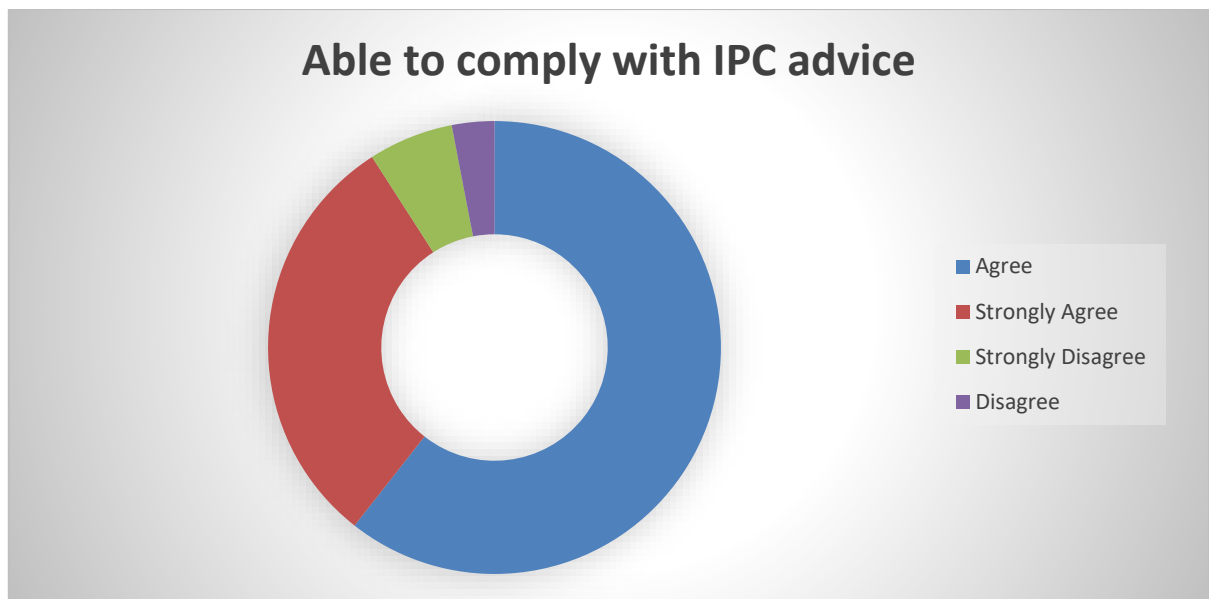


Examples of comments from healthcare workers on this question included:

- During the outbreak on the Haematology Ward, healthcare workers were not in RED PPE and I think we should have been.
- The advice, whilst accurate at time of giving, was often behind as in decisions had to be immediate but advice was given often days later.
- IPC nursing and microbiologists were available and involved in the management of the outbreak, however I feel that the national guidance at the time was not adequate or appropriate to our environment or patient cohort.
- Changed on a weekly basis.
- Their advice changed daily.

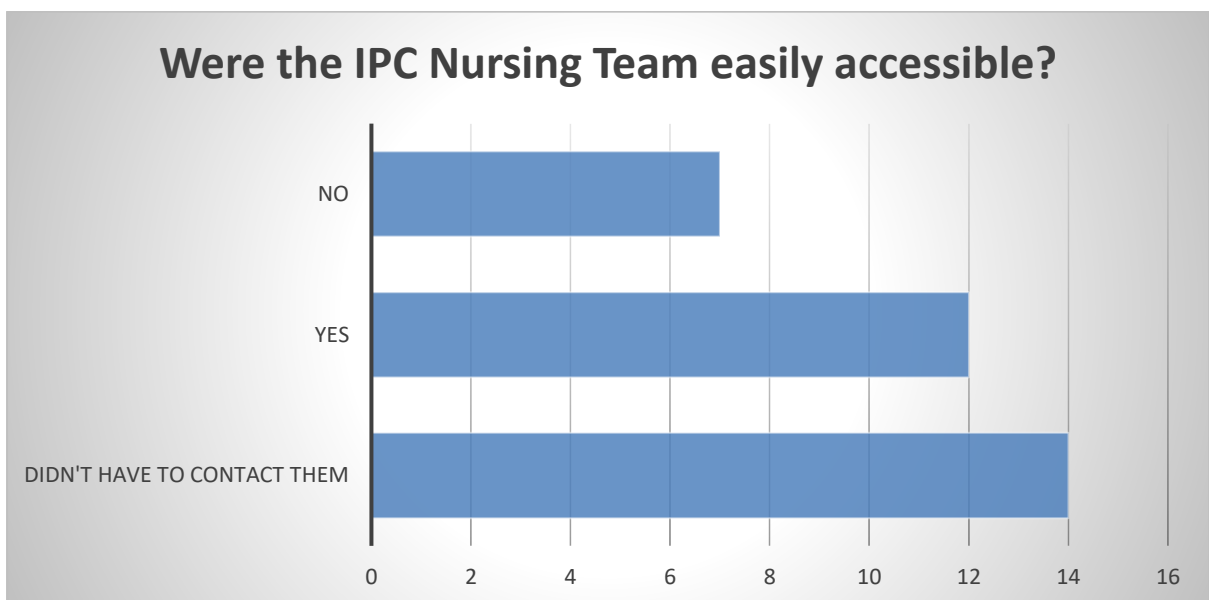
Question 8 - I was able to comply with IPC advice and guidance.

- Healthcare workers overwhelmingly reported that they were able to comply with advice and guidance.



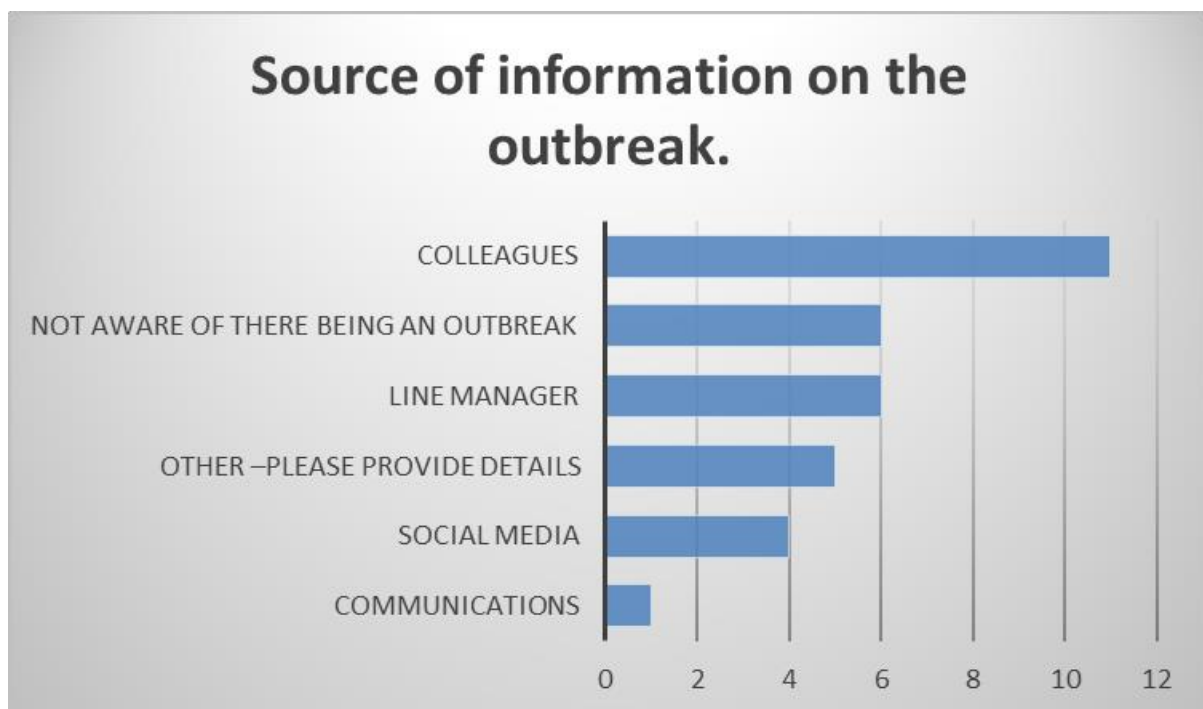
Question 9 - In your experience, were the IPC nursing team easily accessible?

- Most healthcare workers reported that the IPC nursing team were easily accessible.



Question 10 - If there was an outbreak on the ward you work on - How did you find out about the outbreak within the Ward?

- Most healthcare workers found out about the outbreak from their colleagues. Six healthcare workers (18%) said that they were not aware of there being an outbreak.

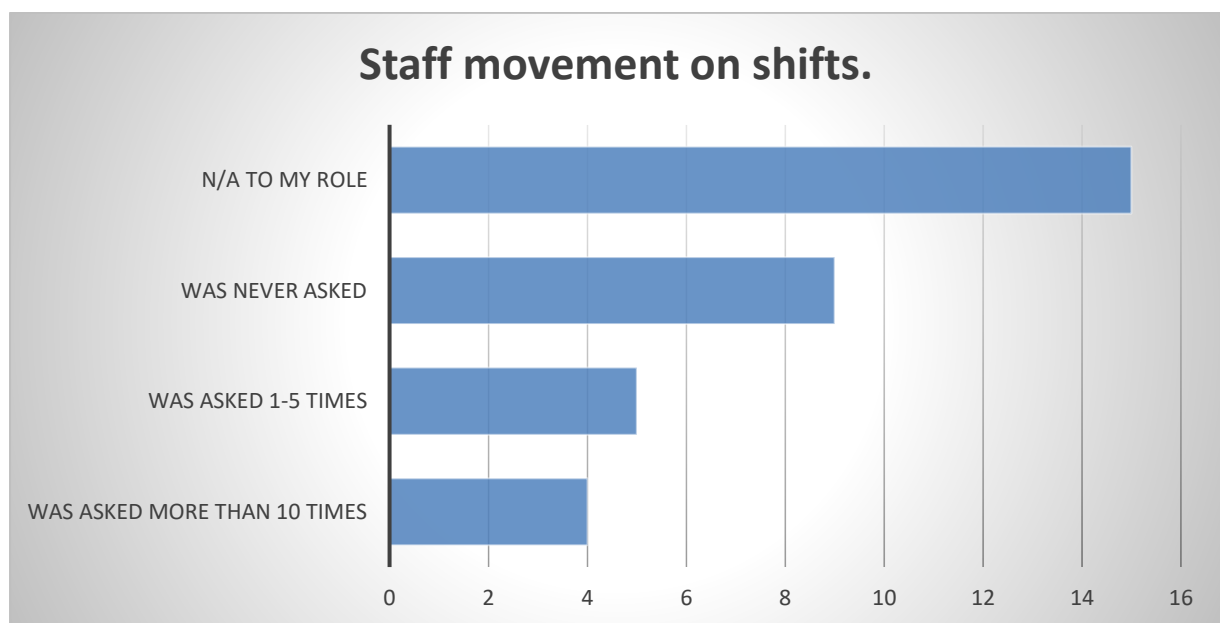


Comments from healthcare workers on this question included:

- Initial outbreaks were aired on social media before the wider healthcare workers group knew in the hospital - the communication from senior management improved as the pandemic continued.
- I was informed a number of hours after the first positive tests before my next shift.

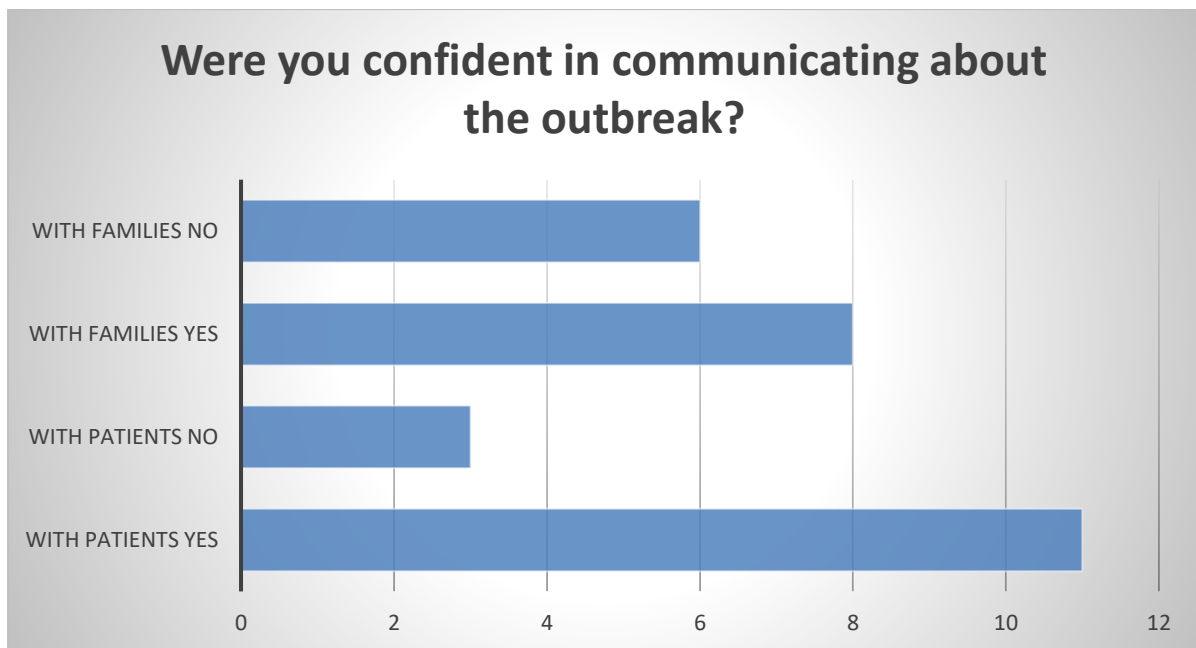
Question 11 - Immediately prior to a shift or during shifts between 10/08/2020 and 16/10/2020 were you asked to move your core location/department/ward to a different location/department/ward?

- Four healthcare workers reported that they were asked to move at the start of a shift more than 10 times. Of the 18 healthcare workers who said this question was applicable to their role, half were asked to move.



Question 12 – Were you confident in communicating with patients/families regarding the outbreak situation?

- Healthcare workers were less confident communicating with families than with patients about the outbreak situation.

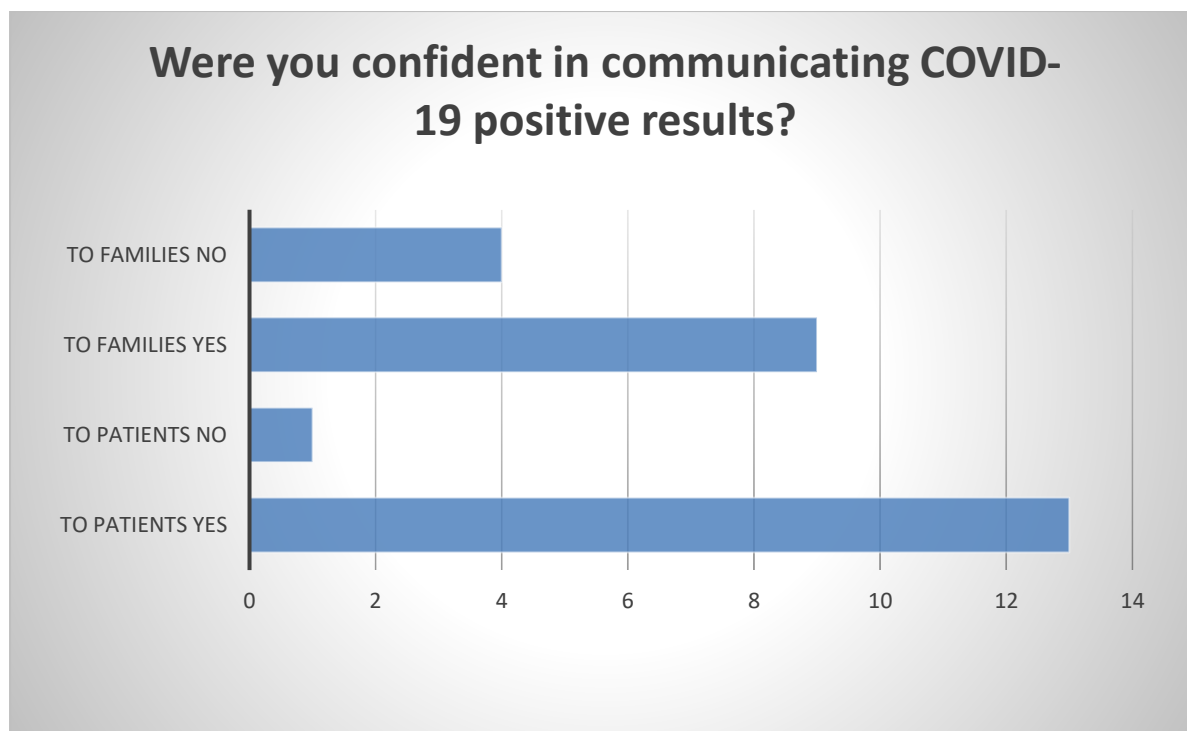


There was one healthcare workers comment on this question:

- There was no written guidelines/training provided on how to deal with this.

Question 13 - Were you confident in communicating advice to patients/families regarding the patient testing positive for COVID-19?

Healthcare workers were less confident in communicating with families than with patients when someone had tested positive to COVID-19.



Question 14 - What do you think worked well during the COVID-19 Outbreaks in the hospital?

- Communication across healthcare workers was good however the detail of that communication was not always consistent. i.e. who should isolate/ for how long/ who needed testing etc.
- Donning in main corridor was well run.
- Accessibility to IPCT when requested.
- Estates requests to facilitate isolation.
- IPC response was robust.
- PPE and support from colleagues.
- Share point keeping everyone informed.
- Team work.
- Improved healthcare workers team working.
- Greater usage of zoom improved communication and expedited some issues- should continue to a degree.
- Face time from senior management as pandemic progressed - good use of 'coffee with the chief' events.

- Nothing I would highlight specifically- the system worked as well as I would have hoped it to.
- Team work on wards.
- Hard working healthcare workers.
- Donning and doffing.
- The amount of PPE available when needed.
- Donning and doffing areas, the main tent also.
- Donning and doffing station at front of hospital.

Question 15 - What is your view with what needs to improve in relation to any of the points previously asked about?

- New estate for hospital!
- IPC walk-rounds and on the spot advice/challenge given there and then. Some healthcare workers continued to eat/drink at ward level.
- Need joined up approach to issues e.g. healthcare workers canteen, ensure compliance with social distancing + hand hygiene from day one, not post outbreak, process to clean tables/chairs between healthcare workers should have been in place from day one. Delegation of these roles from existing resources (regardless of healthcare workers constraints) until firmer healthcare workers methods available.
- Break times should be staggered with regard to certain disciplines that are less restricted in terms of delivering care changing their break times.
- I do not think the IPC management was to blame for any problems.
- Need to address the flow of patients/healthcare workers through the hospital so all entrances/exits can be more controlled e.g. for security/infection.
- Build on communication - feedback statistics when released were reassuring to healthcare workers and developed awareness of risk.
- Improved risk assessments.
- Signage on site overhaul - departmental and site.
- Increased use of patient/visitor feedback - Care Opinion etc.

- Environment (side rooms/ventilation/facilities) need to improve for haematology patient safety. This has been an ongoing problem for a number of years and has been highlighted by previous Coroners case 2016 following patient death during prior outbreak.
- Clearer messages from IPCT. IPCT who work with the team and not just criticise what we are doing wrong but instead find working solutions that keep the healthcare workers safe. It is difficult during a pandemic, however I think it is important that healthcare workers are listened to, that they feel their voice is heard.
- Should have had full PPE (mask and visor) at the start instead of conflicting advice. At the time my colleague and I were advised to wear a mask, visor and gloves and the next day were told it was not needed. Both my colleague and I contracted COVID-19 last year.
- Improve on adequate areas for healthcare workers breaks- some healthcare workers had to use cars. Long days; lonely sitting alone.

Section 3.0

3.1 Anonymized feedback from healthcare workers that tested positive for COVID-19 during the outbreaks.

A number of healthcare workers who tested positive for COVID-19 were asked by the panel to share their experiences and feedback in a 'story format'. Set out below are some examples of the information contained in their stories:

- Healthcare workers felt they were made to feel responsible for bringing COVID-19 to the ward by the press.
- Healthcare workers couldn't understand why the Trust appeared not to be correcting incorrect information and rumours circulating.
- Healthcare workers felt that it was the support they gave each other, that got them through this period.
- A number of healthcare workers said that infection, prevention and control questions were not answered.
- Healthcare workers felt blamed for bringing COVID-19 on to the ward.

- Healthcare workers questioned if a higher level of PPE was needed as they got COVID-19 even though they were wearing the PPE recommended.
- Healthcare workers felt that they received conflicting and changing infection prevention and control advice from a variety of sources.
- Healthcare workers also questioned whether regular healthcare workers testing should have been in place, particularly when caring for highly vulnerable patients.
- Healthcare workers gave examples of the huge impact on their personal lives with examples of having to make arrangements for vulnerable family members and living apart from family for months.
- Healthcare workers felt there was a slow response to informing healthcare workers when they needed COVID-19 testing meant that healthcare workers felt they had put their loved ones at risk.
- Healthcare workers reported that they are still dealing with the physical effects of COVID-19; several with ongoing physical effects having not yet made a full recovery.
- Healthcare workers reported that the last 18 months has been a 'horrendous' journey with them 'feeling guilt' at 'letting down (my) patients'. Caring for sick and frightened patients who did not make it home was 'heart-breaking'
- Healthcare workers were concerned that haematology patients were being cared for on a ward with ventilation that did not meet current standards and that was known to be unfit for purpose before the pandemic.
- Healthcare workers felt that there was a link between the outbreaks and the recommencement of visiting, observing that there had been no further outbreaks on their ward, even though the community COVID-19 figures are high. This left them 'frightened' for when visiting is once again allowed.
- Healthcare workers observed visitors and relatives were not adhering to PPE requirements, for example removing masks once on the ward, and when asked by healthcare workers to wear PPE correctly most were 'not pleased'.

Appendix 3

COVID-19: Guidance for maintaining services within health and care settings

Infection prevention and control recommendations

This document was previously supplied with the Independent Serious Adverse Incident Draft Report in 2021. There have been no amendments to this document and has not been reprinted. If you require a copy of this guidance, contact Southern Trust Liaison Officer Beverley Lappin at 07768 278387.

Appendix 4 – Patient summary (separate attachment)