

Incident Review Report

COVID-19 Staff Infections Waitakere Hospital April 2020

Review Panel Members:

Mark Shepherd, Director, Provider Healthcare Services, Waitematā DHB (Chair)

Dr Penny Andrew, Clinical Director of Quality, Director of the Institute for Innovation and Improvement, Waitematā DHB

Geraldine Kirkwood, NZNO representative, Manager of Outpatient Services, Waitakere Hospital, Waitematā DHB

Sue Hayward, Chief Nursing and Midwifery Officer, Waikato DHB

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Glossary

ADU	Acute Assessment and Diagnostic Unit
ARC	Aged Residential Care
ARPHS	Auckland Regional Public Health Service
AT&R	Assessment, Treatment and Rehabilitation
CIMS	Coordinated Incident Management System
CNM	Charge Nurse Manager
COVID-19	Coronavirus disease 2019
CTAG	Clinical Technical Advisory Group
DHB	District Health Board
ED	Emergency Department
ID	Infectious Diseases
IMT	Incident Management Team
IPC	Infection, Prevention and Control Team
Level 4 alert	The highest level of alert of New Zealand's COVID-19 four-level alert system
NRHCC	Northern Region Coordination Centre
NSH	North Shore Hospital
PPE	Personal Protective Equipment
SARS-CoV-2 coronavirus	Severe Acute Respiratory Syndrome Coronavirus 2
WTH	Waitakere Hospital

EXECUTIVE SUMMARY

Purpose

1. Between 25 - 30 April 2020, three nurses working at Waitakere Hospital (WTH) tested positive for the SARS-CoV-2 coronavirus, the virus that causes coronavirus disease 2019 (COVID-19). In the week prior to testing positive, the nurses had been working on a ward caring for a group of elderly patients with COVID-19. The patients were from CHT St Margaret's Hospital and Rest Home (St Margaret's), an aged residential care (ARC) facility in West Auckland.
2. In response to concerns about this adverse event, Waitematā District Health Board (Waitematā DHB) requested an investigation to understand the circumstances around how these staff members may have become infected. A panel was appointed to conduct the investigation. The panel members comprised: a New Zealand Nurses Organisation (NZNO) representative, who was supported by a non-panel NZNO member; the Chief Nursing and Midwifery Officer from Waikato District Health Board; and two senior Waitematā DHB executives. The panel was asked to review and assess relevant policies and processes in place at WTH to protect and keep staff and patients safe when caring for positive COVID-19 patients; identify any systems issues that may have contributed to the staff becoming infected with COVID-19; and identify and make any recommendations about improvements that could help to prevent similar incidents from happening again.¹ This report summarises the findings of the investigation panel.
3. A statement of some observations of Sue Hayward, Chief Nurse and Midwifery Officer, Waikato DHB, is attached at **Appendix Two**.
4. The panel has not made any finding as to the origin or chain of transmission of the nurses' infections, as this is the role of the Auckland Regional Public Health Service (ARPHS). A report from ARPHS on 11 May 2020: *St Margaret's Private Hospital COVID-19 Outbreak: Source and Transmission among Cases in Waitakere Hospital*, is attached at **Appendix Three**.

Method

5. The investigation process included:
 - Reviewing documentation including policies, protocols and training material
 - Speaking with a range of people: members of the COVID-19 Incident Management Team (IMT); Waitakere Hospital senior managers; the Charge Nurse Manager (CNM1), the three infected nurses, other nurses, and the geriatrician working on the ward; nurse educators and trainers; the Infectious Diseases (ID) and Infection Prevention Control (IPC) IMT leads and the IPC Team
 - Three open forums with the charge nurse managers and nursing staff from adjacent wards at WTH
 - Considering regional, national and international information and what is being learnt about the challenges of managing and caring for COVID-19 patients

¹ Terms of Reference for the investigation panel are attached at **Appendix One**.

6. At the time of finalising this report, further WTH nursing staff have tested positive for COVID-19 virus. These staff were contacts of the three infected nurses; they have not been spoken to nor included as part of this report.

Key Findings

- The nursing staff provided exemplary care to the six patients on the ward; they were compassionate, professional and worked to ensure the patients were provided with the best care possible.
- The decision to transfer the residents was made quickly on a Friday, and staff had a short time to plan and respond putting together a COVID-ready ward.
- The patients required full nursing care and deteriorated relatively quickly. Consequently, nurses needed to spend long periods of time at the patients' bedsides.
- There was no way for nursing staff to communicate with staff outside the patients' rooms which increased the frequency of donning and doffing PPE.
- Full PPE was available to staff at all times. However, there were problems with the usability of the PPE and changes in types of PPE provided, which was stressful for staff.

INTRODUCTION

Background

7. In response to the global COVID-19 pandemic, Waitematā DHB made preparations to receive and care for patients with COVID-19 at its two hospitals, North Shore Hospital (NSH) and Waitakere Hospital (WTH). Preparations in March 2020 included setting up an IMT, identifying areas patients with COVID-19 would be placed, ensuring equipment and resources were in place, and staff training.
8. At WTH, two wards were identified to take COVID-19 patients: a ward area with negative pressure and side rooms and an 'overflow' ward that would take patients if the first area was full or negative pressure rooms were not required. A model of care was agreed with patients to be admitted under the care of the acute medical team. A charge nurse manager (CNM1) was appointed to manage the two areas. CNM1 worked with senior managers to ensure the wards were ready to take COVID-19 patients. Planning was detailed and included renovations, ensuring equipment, including personal protective equipment (PPE) as per the policy for a COVID responsive ward, was stocked and available, ready to be used. The Infection, Prevention and Control Team (IPC Team) and clinicians from the IMT walked through the areas to confirm readiness. These areas were prepared for management of patients via the Emergency Department(ED)/Assessment and Diagnostic Unit (ADU). Three other COVID-19 patients were

admitted to WTH in late March and early April and were managed, without incident and in accordance with the plans.

9. On 07 April, Waitematā DHB was notified of an outbreak of COVID-19 at St Margaret's ARC. The IMT was asked to support the facility in partnership to manage the situation. Daily incident management meetings were held with representatives from the facility, the Auckland Regional Public Health Service, (ARPHS) and Waitematā DHB staff to plan and address issues, which included supply of equipment and staffing. Senior managers and nursing staff from WTH were asked to volunteer to support the facility given it is an organisation independent of the DHB. Over the following 10 days it became difficult to staff the facility in increasing numbers. There was a shortage of bureau nursing staff, the DHB had to rely on its staff to volunteer, and there was a reluctance to work at the facility. By the evening of Thursday, 16 April it became evident that it would be very difficult to safely staff the ARC facility over the weekend.
10. On Friday, 17 April a series of incident management meetings were held over the morning to assess the staffing situation at the facility. At 13:00 hours a decision was made to move up to 20 residents out of the facility. Waitematā DHB's IMT with senior managers and senior geriatricians working with the IMT, considered the options of transferring the patients to WTH or NSH. It was agreed that up to 20 residents would be transferred to WTH, six positive (confirmed) COVID-19 residents would be transferred to WTH that afternoon to be admitted directly to the overflow ward under the care of the geriatric team with a further group of residents to be transferred the following day. Staff on the ward at WTH had approximately three hours to prepare for the arrival of the six positive COVID-19 residents. Waitematā DHB's geriatrician based at WTH, who had overseen the care of the residents at St Margaret's since 15 April, would take over the care of the residents at WTH and the other geriatricians at WTH would manage the care of the other patients on the assessment, treatment and rehabilitation ward (AT&R ward).
11. The rationale for the decision to transfer the six residents to the overflow ward at WTH included that the residents were from West Auckland and would be nearer to their families to allow compassionate visiting; Waitematā DHB's geriatrician based at WTH would look after the patients on the ward -the geriatrician knew the residents and had been overseeing their care; the ward had been designated as an overflow ward for COVID patients, it was empty and was configured to cohort patients; and there was not a high need to use individual side rooms, as the residents did not need to be isolated from each other as all were COVID positive and none were unwell enough at the time to need aerosol generating procedures/negative pressure rooms. At the time it was considered the residents were not acutely unwell and did not require acute hospital care; they needed to be transferred to WTH in order to address the evolving outbreak and shortage of staffing at St Margaret's. Discussions with residents and their families were undertaken about their treatment and care prior to transfer.
12. CNM1 was advised that the six residents would be transferred to WTH at approximately 17:00 hours and admitted directly to the overflow ward. CNM1 worked with a senior manager to form a roster for nurses to staff the ward. A roster was developed with nursing staff from the adjacent wards – acute medicine and AT&R nursing staff. The ward was mainly staffed by geriatric rehab medicine nurses with approximately eight registered nurses (RNs) and three Health Care Assistants (HCAs) agreeing to the majority of the shifts. It was not possible with the available nursing staff to create a 'nursing bubble' roster with the staff working only on the COVID-19

cohort ward. Staffing challenges were exacerbated by exclusion of some staff as they are vulnerable workers and unable to work on the ward. It was acceptable for staff to work between wards so long as they remained on the ward with the COVID-19 patients for the entire shift, only working on a different ward on another shift. The Northern Region Health Coordination Centre has since published guidance² that reinforces this advice³.

13. Mid/late afternoon of 17 April, the IMT Clinical Lead, IMT ID Lead, and IPC clinical advisors were informed of the decision to transfer the residents to the cohort ward at WTH; prior to this they were not involved in discussions about where the St Margaret's residents should be placed. The clinicians discussed the options for placement: transfer to NSH ward 11 or ESC or one of the two wards at WTH. However, at this stage arrangements had been made to transfer the six confirmed cases to WTH and they were in transit. The clinicians recommended the further nine cases not be transferred to the same ward at WTH as initially planned, rather they be transferred to NSH the following day. This recommendation was made on the basis that the confirmed and probable cases should not be cohorted on the same ward.
14. For the medical staff a 'medical bubble' was developed with one senior geriatrician being involved with the patients and on-call over the entire period and the geriatrician taking measures to physically distance from colleagues. This was important to ensure the geriatrician team could be sustained and was available to support elderly patients in WTH and the community. The resident medical officers (registrars and house officers) were instructed not to attend the ward without speaking first with the senior geriatrician. Consequently, medical staff were not physically available on the ward to assist nursing staff, particularly after hours. The nursing staff described having to leave patients' rooms several times per shift in order to telephone and speak to the geriatrician. This practice was time consuming for the nurses and not standard practice. RMOs were not readily available to respond as is usual standard practice.
15. At 17:00 the residents (patients) were transferred and admitted directly to the ward. A nurse practitioner and registrar were on the ward ready to receive and clerk the patients. Four patients were placed in a four-bedded room and two patients in individual side rooms. All the patients required a high level of (full) nursing care, there were skin integrity issues and signs of dehydration. One of the patients required oxygen via nasal prongs. Over the following 48 hours the patients deteriorated becoming lethargic, confined to their beds, they were incontinent, all were coughing and were unable to follow instructions. Patients were all fully dependent on staff for their personal care.
16. All staff entering the patients' rooms used full (level 3) PPE: gloves, fluid repellent gowns, eye protection and a N95 mask, and followed the donning and doffing process that had been set up: donning outside the patients' rooms before entering, doffing gloves and gown in the bathroom (inside the patients' room), followed by removal of mask and eyewear outside the room. There was clear PPE signage inside and outside the rooms to guide staff; nursing staff had been fitted with N95 masks and trained to use PPE. The nurses informally observed each other donning and doffing to ensure the equipment was fitted correctly and removed. The geriatrician covering the ward advised the nursing staff to wear N95 masks in the patients' rooms on the basis that all

² Guidance to reduce the risk of COVID-19 transfer for health care workers employed across multiple work environments. Northern Region Health Coordination Centre.

³ Waitemata DHB subsequently changed this policy, see Appendix 4.

patients were coughing – some considerably, patients were requiring oxygen and there were four patients in one room which increased the viral load.

17. An IMT IPC clinical advisor reviewed the situation on the evening of 17 April and advised that the placement of the patients was a safe environment for all deployed staff following recommended IPC practices. An escalation management plan for the patients was needed if acute medical involvement was required. As planned, the IPC team visited the ward over the weekend to confirm IPC practices were in place and being followed. There was ongoing, daily PPE auditing that commenced in the week after this weekend. The auditing is undertaken by nurse educators and involves observation of donning and doffing with teaching and learning so that any issues are addressed at the time of observation.
18. Some senior medical staff and nursing staff at WTH raised concerns about the placement of the patients at WTH and the rostering of nursing staff to work between wards. This was reviewed by IMT clinical leaders who advised that it was acceptable for staff to work between wards so long as they remained on the ward with the COVID-19 patients for the entire shift, only working on a different ward on another shift; they maintained procedures for 'dirty' (PPE) and 'clean' (non-PPE) areas; they observed hand hygiene, wore scrubs, showered before leaving work, and left scrubs at work to be laundered. Shower facilities were available on the ward. Scrubs were not provided initially on Friday 17 April, however they were available and used from Saturday, 18 April. Although this enhanced PPE requirements it did create some difficulty identifying staff professions with all staff in scrubs. These practices were maintained by the staff.
19. There was a structured cleaning programme for the ward that was followed with cleaning staff using the recommended PPE. A register was arranged to log all staff entering the COVID ward area, in case contact tracing was required at a later date.
20. The nursing staff allocation was three nurses (registered and enrolled nurses) and a health care assistant, for the six patients. The patients' high care needs and deterioration meant nursing staff had to leave the patients' rooms multiple times per shift to get equipment/supplies, medications and speak to the geriatrician on the phone. This resulted in donning and doffing PPE several times per shift (some describing eight times per shift).
21. Monday, 20 April, was a particularly busy and challenging day for the staff, with one patient deteriorating rapidly over the day with oxygen needs progressively increasing. One of the patients died and had to be placed in a waterproof body bag, which was a different bag than the standard body bag. This was a particularly stressful time for the staff as some patients were unwell, confused, incontinent and requiring full care. This was the only time that the three nurses who tested positive for COVID-19 all worked on the ward on the same day.
22. There were problems with the usability of the PPE equipment that was regionally supplied: the gowns' velcro tabs loosened easily creating gaps at the back. The initial eyewear provided was a frame with removable lens. The lens was a hard plastic that could flick when removed. Initially the eyewear lens needed to be cleaned, with alternate eyewear provided some days later that contained a disposable lens. The eyewear was changed to goggles that didn't fit some staff with staff using a tie to hold the goggles in place. An alternate brand of N95 mask was supplied to replace the initial masks being used following an order for more N95 masks made by CNM1 on 22 April. The staff had not been fitted with the new masks and preferred the original mask. Nursing

staff were also concerned about the exposure of their hair and shoes as these areas were not required to be covered. The supply of PPE is provided through a regional procurement process which can limit individual, specific or preferred choices of PPE. Brochures came with the new PPE describing its use and cleaning instructions.

23. CNM1 advocated on several occasions for the re-supply of the original N95 masks and was advised that according to policy N95 masks were not necessary and were being reserved for high risk areas where aerosol generating procedures would be used, and surgical masks were appropriate. An alternate brand of N95 mask was supplied and CNM1 showed the nursing staff how to put the new masks on and test the masks for air leaks. The nurses continued to use N95 masks on the ward and N95 masks were available at all times.
24. On 22 April a PPE audit programme was introduced in response to a recommendation from Canterbury DHB who was also managing an outbreak of COVID-19 in an ARC facility. Daily auditing in the ward showed practice was generally very good. Some inconsistencies were identified in the teaching of PPE, particularly the buddy system; changes were made to the auditing and teaching with the support of the nurse educators. The role of the buddy was formalised, supervising the donning and doffing of PPE was introduced with additional resources provided to facilitate this function.
25. When the three nurses became symptomatic they followed the recommended practice reporting their symptoms and being tested for COVID-19. They have remained away from work. Immediate steps were taken to address the risk to patients, staff and the community including: closure and deep cleaning of the affected ward; contact tracing and testing of all potential contacts; standing down of staff; reconfiguration of patient placement; symptom screening of staff on arrival at work; and introduction of screening for people entering and exiting the affected area.

FINDINGS

26. The panel acknowledges that the situation faced by the DHB was exceptionally challenging. It was a situation it had not faced before or planned for. The situation arose from the unique, COVID-19 related need to support an ARC facility – providing up to 85 per cent of St Margaret’s staff, and having to make rapid decisions in a constantly changing environment.
27. Staff worked very hard to manage the rapidly evolving situation. The panel acknowledges the nursing staff in particular for the exemplary care they provided to the six patients; these staff volunteered to work in the COVID ward and should be commended. They were compassionate, professional and worked to ensure the patients were provided with the best care possible.

Planning

28. Planning to manage COVID-19 patients was focused on large patient volumes needing ICU capacity and pathways were designed for this scenario. As the situation evolved with Alert level 4 lockdown, the large volumes did not occur. Sporadic COVID-19 cases presented to NSH and WTH and were well managed using the planned processes. The need to support an ARC facility was

unexpected, unprecedented, and challenging. It required the DHB to provide a lot of support and resources to the facility over more than two weeks, including IMT leaders, IMT clinical advisors, a charge nurse manager, registered nurses and health care assistants (up to 27 on one day), and additional nursing staff from WTH to swab residents. A lot of the senior manager and nursing staff support came from WTH, which made it particularly challenging for the hospital.

29. From the time of notification of the outbreak at the facility planning was focused on keeping the residents at the facility, there was no back-up plan by St Margaret's management nor by the DHB's IMT which was meeting daily, for how patients should be managed if it became unsafe to manage the patients in the facility. The safety concern was mainly due to the rapidly changing staff availability with ARC staff standing down due to contact with COVID patients.
30. As a result, the decision to transfer the residents had to be made quickly on a Friday, which is not ideal. The planned admission pathways to WTH and NSH were not followed for reasons that were explained to the panel (the residents were from West Auckland and would be nearer to their families to allow compassionate visiting; Waitematā DHB's geriatrician based at WTH would look after the patients on the ward -the geriatrician knew the residents and had been overseeing their care; the ward had been designated as an overflow ward for COVID patients, it was empty and was configured to cohort patients; and there was not a high need to use individual side rooms, as the residents did not need to be isolated from each other as all were COVID positive and none were unwell enough at the time to need aerosol generating procedures. At the time it was considered the residents were not acutely unwell and did not require acute hospital care; they needed to be transferred to WTH in order to address the evolving outbreak and shortage of staffing at St Margaret's). However, this rationale was not clear to staff; it was confusing and stressful for staff with rosters having to be made very quickly, pulling staff from different wards to work together for the first time. Not all IMT clinical leaders were involved in the decision making. In fact, the patients deteriorated quickly and required fully nursing care. Earlier back-up planning could have helped manage this situation. For example, the ward team could have been configured, become familiar with processes on the ward and practised scenarios.

PPE Usability and Supply

31. There were a number of issues with the usability of the PPE that have been described, which increased the risk of viral transmission. There were also a number of changes made to the supply of the PPE from the regional provider, which made it challenging and stressful for staff having to learn ways to fit and use various brands of PPE. In a stressful environment, consistency of quality and supply of essential equipment is very important.
32. The panel commends CNM1 and the geriatrician for advocating for the nursing staff to have a consistent supply of high quality PPE. It should be noted that while CNM1 provided feedback in order to receive another supply of N95 1870 masks that staff had been fitted for, this was initially not supported as the ward was considered to be low risk. The CNM1's advocacy resulted in N95 masks continuing to be supplied in good quantities, and they were always available. These were the 1860 style and came in two sizes.

33. The high level of patient needs and acuity of care required resulted in the nursing staff having to change PPE multiple times during a shift. It is well recognised that donning and doffing PPE, particularly doffing, is high risk for viral transmission, and it is therefore important to try and minimise the number of times this occurs. This needs to be balanced with the need to ensure staff are not exposed for prolonged periods unnecessarily in enclosed rooms with confirmed COVID-19 patients.
34. The organisation's understanding of fit testing and fit checking N95 masks has matured as evidence and expertise in COVID has evolved.

Staffing Levels and Rostering

35. There was general consensus among staff that the levels of nursing staff were reasonable. It was also noted that there was a good skill mix of nurses with acute medicine and elderly rehabilitative medicine experience. Given the high acuity and level of care required, more staff may have enabled there to be fewer PPE changes with nurses remaining in the room with the patients and staff undertaking tasks for them outside the patients' rooms.
36. The impact of staffing and managing the ARC facility while simultaneously standing up a COVID-ready ward, and deployment of WTH management staff to the IMT, contributed to the stress of the hospital's environment, which had not been contemplated prior to COVID-19.

Information and Communication

37. The nursing and medical staff commended the training and education that was provided to them by the nurse educators and IPC team. They felt well prepared for using PPE and the processes that were established on the ward.
38. PPE training was provided to non-clinical staff. Cleaning staff commenced a programme in late March as part of COVID readiness. PPE training is now part of orientation for cleaners. Allied Health staff had adopted a buddy system to observe and correct PPE donning and doffing. However, a buddy system was not part of the formal PPE training and not universally practised across the clinical professions. A buddy system has now been recommended and included in the organisation's PPE training programme.
39. Information provided to staff about PPE and expected practice was not always consistent, was updated frequently and posted to the staff COVID site. This was stressful for staff and resulted in confusion about what to do. For example, nursing staff were told that they did not need to use N95 masks and N95 masks should only be used for aerosol generating procedures, while the COVID-19 policy states that N95 masks must be used if the patient has uncontrolled coughing. With the high viral load of unwell COVID patients coupled with their incontinence and full care needs, this area should have been considered a high risk area, automatically receiving N95 masks. Nurses on the ward always had access to, and wore, the appropriate PPE.

40. The panel acknowledges the challenges this pandemic presents with rapidly evolving evidence of recommended and best practice and insecurity of supply chains. Whenever possible, information provided to staff needs to be timely, clear, simple and consistent; and staff need to be listened to and responded to. This needs to be a constant, high priority for the DHB.

RECOMMENDATIONS

41. The DHB has made a number of changes since becoming aware of the infection the three staff nurses. These changes are summarised in **Appendix Four**. In addition to these changes, the panel makes the following recommendations.

Planning

42. Ensure a plan is in place to support ARC facilities during the COVID-19 pandemic. This is a national and regional issue and will need leadership and support from the Ministry of Health and the Northern Regions' DHBs.
43. Develop a plan for managing a cohort(s) of COVID-19 patients transferred from ARC facilities to WTH and NSH. The plan needs to ensure:
 - a. all relevant senior clinical advisors are included in advance planning and decision making
 - b. decisions to transfer allow staff time to prepare
 - c. wards /areas that will receive patients plan and prepare using simulation practise and team training
44. The DHB continues to support Coordinated Incident Management System (CIMS) training for a wide range of staff so that expertise is developed and widespread. This should include simulation training for a pandemic.
45. Review the plans to receive and place patients with confirmed COVID-19 at NSH and WTH to ensure that:
 - a. It is clear where and when patients should be placed, for example negative pressure rooms, side rooms, particular areas/wards
 - b. Staff in each area/ward are trained and prepared, have undergone simulation and team training/practice
 - c. Each area/ward is equipped and prepared to receive patients at any time
 - d. Where possible, staff can be rostered in accordance with the Northern Region Coordination Centre's guidance to reduce the risk of COVID-19 transfer for health care workers employed across multiple work environments.

PPE

46. Consideration be given to PPE procurement and supply chains to ensure that:
 - a. PPE is available in a variety of sizes and styles to suit individual needs
 - b. PPE is prioritised for high risk areas
 - c. There is consistency of style of PPE equipment and clinical expert advice is sought about what PPE is used

47. Identify and implement ways to minimise donning and doffing PPE, including:
 - a. A two-way communication system in single and in multi-bed rooms, to enable staff in a COVID patient (s) room to be able to call and get someone outside the room to undertake tasks for them⁴
 - b. A tablet/iPad that remains in the patient(s) room so that staff can record eVital signs directly in the tablet/iPad
 - c. the possibility of suits (reduce skin exposure and reduce frequency of donning and doffing)
 - d. a resource to receive and answer calls from family and whānau
48. Ensure PPE training:
 - a. is provided to all relevant staff, clinical and non-clinical
 - b. includes on-the-job, face-to-face training in a practical, teach and learn way
49. Add a buddy system to PPE guidelines and checklists.
50. Information about fit checking and fit testing needs to be clear and readily available for staff. The Northern Region Health Coordination Centre's (NRHCC's) Clinical Technical Advisory Group (CTAG) has provided advice on the use and fitting of N95/P2 respirators ('masks'), and clarity about fit checking and fit testing.⁵

Information and communication

51. Make communication and provision of information to staff that is timely, clear, and consistent, a priority.
52. Focus on multiple ways of providing staff information including notice boards in all areas, a resource to provide on-the-floor after hours communication, and a variety of digital formats that meets staff needs.
53. Ensure changes in information (policies/protocols/guides etc) is minimised as much as possible and managed carefully so that staff have time to take on board the information and adjust practice as required.
54. Develop feedback loops for staff so that staff can share their experience, are listened to, and are involved in decision-making.

⁴ The DHB's Leapfrog Team is currently developing and testing a two-way communication system using mobile phones and magnets for the phone to be placed on a wall for easy access.

⁵ NHRCC CTAG Advice: use and fitting of N95/P2 respirators ('masks') as part of Personal Protective Equipment (PPE) in the context of COVID-19, 04 May 2020.

Appendix 1

Investigation Terms of Reference

COVID-19 Staff Infections Waitakere Hospital April 2020

Major Incident Review - Terms of Reference 04 May 2020

Three registered staff nurses (RNs) working at Waitakere Hospital (WTH) have tested positive for SARS-CoV-2 virus (COVID-19). All three RNs cared for COVID-19 positive patients.

Immediate steps have been taken to protect the staff and patients. Waitematā DHB's Infection, Prevention and Control Team and Occupational Health Team are working closely with the Auckland Regional Public Health Service (ARPHS) to undertake contact tracing, testing and follow up of staff, patients and contacts.

Waitematā District Health Board had an investigation underway after the first case was identified but is now extending the panel membership and updating the terms of reference. Changes have been put in place as a result of the positive cases, and further changes will be made as new information becomes available in the investigation rather than wait for the completion of the report.

1. Purpose

The purpose of the investigation is to:

- Understand the circumstances around how the three staff members may have become infected
- Review and assess relevant policies, protocols and processes in place at WTH to protect and keep staff and patients safe when caring for positive COVID-19 patients, including policies, protocols and processes relating to:
 1. Infection, Prevention and Control
 2. Personal Protective Equipment (PPE)
 3. Training
 4. Rostering and allocation of nursing staff
 5. Management of patients
- Identify any systems issues that come to light as part of the review process that may have contributed to the staff becoming infected with COVID-19
- Identify and make recommendations about improvements that could help prevent similar incidents from happening again
- Provide a report as a record of the investigation process

2. Exclusions

The panel is not investigating the potential origin or chain of transmission, as this is the role of ARPHS.

3. Process

- An adverse events framework will be used to undertake the investigation
- The panel will interview relevant people as necessary
- The panel will provide staff on the affected ward the opportunity to express any concerns and ask any questions they would like answers to as part of the investigation
- The panel may consider other reports into the incidents and other information it considers relevant to inform its investigation

4. Timeframe

A draft report will be completed by 8 May 2020.

5. Panel membership

- Mark Shepherd, Director, Provider Healthcare Services Waitematā DHB - chair
- Dr Penny Andrew, Clinical Lead of Quality, and Director of the Institute for Innovation and Improvement, Waitematā DHB
- Geraldine Kirkwood, NZNO Representative and Manager of Outpatients Services, WTH, Waitematā DHB
- Sue Hayward Chief Nursing and Midwifery Officer, Waikato DHB

6. Panel Support

- Angela Leech, Quality and Safety Lead, Waitematā DHB, to provide administration support
- Margaret Cain, NZNO Competency Advisor, to provide support to the NZNO representative
- Acting Director of Nursing, Waitematā DHB, to provide expert advice

7. Confidentiality

The report will be confidential until released by Waitematā DHB.

Appendix 2

Statement of Sue Hayward

In the role of an independent member (not employed by Waitematā DHB) the following are some my observations.

The panel commenced the investigation from a neutral stance with the aim to understand how the three nurses were exposed to transmission of the Covid-19 virus, and what could be done to reduce further risk. The ToR were clear and adhered too, and all members were very clear about wanting to explore whatever was needed to be explored in order to better understand processes and if possible improve on these.

The investigation which followed the serious event process was inclusive and engaging with those key staff who were the decision makers and clinicians providing direct care. The panel gave time for staff to present their perspective and give opinions on what could be improved. This, combined with a comprehensive timeline, enabled constructive panel discussions and agreed outcomes.

During the investigation what was apparent was the leadership displayed, as nurses were pulled from other areas into the Covid-19 ward. The effective planning to ensure all nurses were competent to use full PPE, understood their roles and how to work in a Covid-19 positive ward is to be commended. The three nurses who did test positive had an excellent knowledge around infection prevention and described in detail the donning and doffing of PPE. They articulated well how they worked as an effective team, and considering they had not worked together prior to this event, this indicates a level of professionalism that needs to be acknowledged.

Sue Hayward

Chief Nursing & Midwifery Officer
Waikato DHB

7 May 2020

Appendix 3

ARPHS Report from 11 May 2020



St Margaret's Private Hospital COVID-19 Outbreak: Source and Transmission among Cases in Waitakere Hospital

11 May 2020

The purpose of this paper is to describe what is currently known about the source and transmission pathways of COVID-19 illness amongst people in Waitakere Hospital.

Timeline

The first case in the St Margaret's outbreak was notified on 4 April 2020. As of 11 May there have been 50 cases associated with the outbreak amongst staff of the facility, residents of the facility, Waitemata DHB staff and household contacts.

Some residents of St Margaret's were transferred for care at Waitakere and North Shore Hospitals on 17 April.

Cases of COVID-19 amongst staff at Waitakere Hospital subsequently occurred, with the date of onset for the first case being 24 April. As of 11 May there have been 11 cases in Waitakere Hospital, of whom 7 are staff (6 confirmed, 1 probable) and 4 are household contacts (2 confirmed and 2 probable). The most recent 2 cases amongst staff were reported on 10 May.

Investigation and Findings

Detailed scoping of cases, including investigation of the likely source of exposure, is carried out by ARPHS working closely with WDHB.

Often in outbreak investigations the source of exposure and pathways of transmission cannot be determined with certainty. Hypotheses for transmission are generated by combining epidemiological data (onset of illness and infectious period), history taking for possible exposures (staff rosters, contacts with known cases and other activities), and laboratory testing.

The results of investigations to date suggest that, for each of the seven cases, either or both of working shifts on the Overflow ward or close contact with an infectious colleague are the exposures of concern.

Noting that this outbreak investigation is on-going and based on the data available the most plausible hypotheses for exposure and transmission are:

- St Margaret's patients on the Overflow ward are considered to be the initial source of the virus, and
- cases most likely arose from a mixture of exposure in the Overflow ward or person-to-person spread.

Appendix 4

Changes Made

Prior to notification of staff infections

- PPE audit process daily audits using observational audit tool and teach and learn approach, for all ward staff

Immediate actions on notification of infections:

- Closure of the affected area to further admissions
- Standing down of staff for 14 days
- Swabbing of all potential contacts
- Contact tracing of close and casual contacts
- Isolation of close contacts
- Screening of people entering and exiting affected areas

Further actions /changes:

- Formal buddy system and inclusion of buddy system in PPE training
- Reinforcement of recommended IPC principles (Northern Region Clinical TAG lead)
 - meticulous use of all appropriate PPE
 - maintaining good hand hygiene
 - physical distancing within the workplace
 - daily self-monitoring for any potential symptoms by staff and not attending workplace if unwell.
- Temporary “bubble” system - aim of working to achieve Waitematā DHB wards with COVID-19 patients, or confirmed close contacts, are staffed exclusively by a dedicated pool of nurses who will not work subsequent shifts elsewhere.
- Publication of Northern Region Health Coordination Centre guidance: *Guidance to reduce the risk of COVID-19 transfer for health care workers employed across multiple work environments*
- Publication of the Northern Region Health Coordination Centre Clinical Advisory Group advice on PPE dated 04 May 2020: NHRCC CTAG Advice: use and fitting of N95/P2 respirators (‘masks’) as part of Personal Protective Equipment (PPE) in the context of COVID-19
- Voluntary COVID-19 testing to all DHB staff irrespective of symptoms/asymptomatic
- Psychology sessions for staff
- Employment assistance programme (also includes free psychology services), including on-site service at WTH
- PPE helpline (0800) and dedicated PPE email