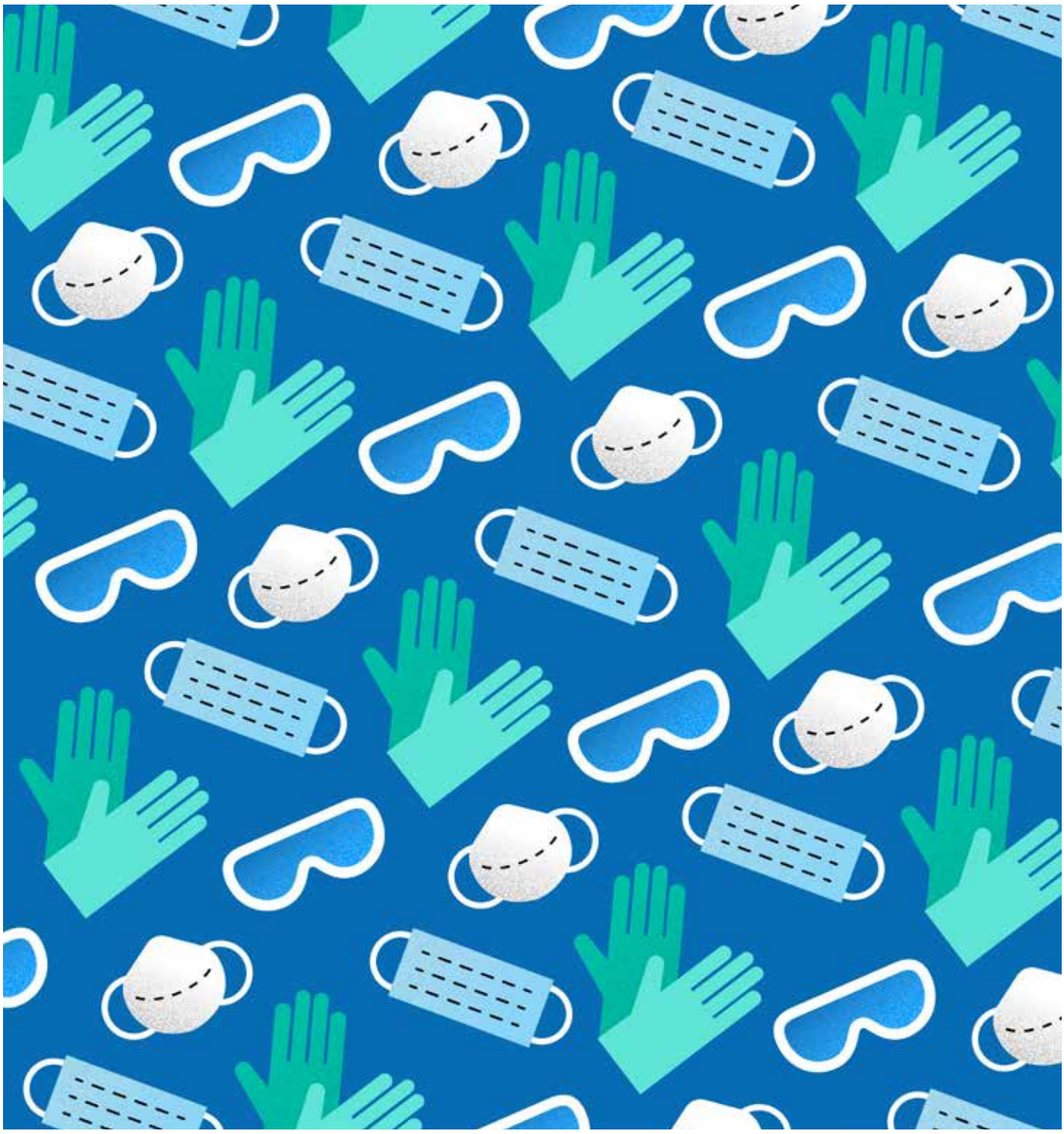
Survey Insights:
An analysis of the 2020 NZNO PPE Survey



This research is a collaboration between the NZNO, Stickybeak and the McGuinness Institute.

Te Rūnanga o Aotearoa NZNO
NEW ZEALAND NURSES ORGANISATION | TŌPŪTANGA TAPUHI
Stickybeak
MCGUINNESS INSTITUTE TE HONONGA WAKA

Survey Insights: An analysis of the 2020 NZNO PPE Survey

May 2020

The PPE Survey was conducted by The Tōpūtanga Tapuhi Kaitiaki o Aotearoa, New Zealand Nurses Organisation (NZNO) and the McGuinness Institute using the Stickybeak platform.

He waka eke noa, we are all in this together

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Preface

Tēnā koutou katoa

He waka eke noa, we are all in this together

As the leading professional nursing association and union for nurses in Aotearoa New Zealand, Tōpūtanga Tapuhi Kaitiaki o Aotearoa, New Zealand Nurses Organisation (NZNO) represent the health, safety and wellbeing and integrity of 51,000 nurses, midwives, healthcare workers, kaimahi hauora and students on professional and employment related matters. NZNO embraces te Tiriti o Waitangi and contributes to the improvement of the health status and outcomes of all peoples of Aotearoa New Zealand through influencing health, employment and social policy development enabling quality nursing care provision.

Firstly, I would like to mihi to all those brave nurses caring for our whānau, hapū, iwi and communities. Kia kaha koutou katoa. I take heed and solace in the work of Te Puea Herangi during the 1918 influenza outbreak, as she nursed flu cases, cared for orphans, while her husband helped bury the dead. The resilience of Te Puea gives me courage that, as a profession, we can advocate for change and improvements in our current failing health system.

Ensuring the health, safety and wellbeing of nurses, midwives, healthcare assistants and kaimahi hauora and their whānau is a priority for NZNO. We advocate that long-term emergency response planning should be prioritised across healthcare settings in Aotearoa New Zealand. This is vital to ensure the health, wellbeing and safety of healthcare workers and their whānau.

Our ‘normal’ everyday work and life has been changed forever by the impacts of the global COVID-19 pandemic. This invisible pandemic has incited fear and has brought down economies, caused deaths and dying across borders worldwide. In Aotearoa NZNO has been advocating for the safety of frontline healthcare workers responding to COVID-19 pandemic and ensuring they have the right PPE to protect them and their whānau from the virus.

On behalf of NZNO, I wish to thank the McGuinness Institute and Stickybeak for the opportunity to collaborate on this survey, which was sent to a randomly selected number (15%) of NZNO membership. The opportunity to hear nurses voices, to hear their truths and stories about their experiences with access, availability and distribution of PPE has been captured.

Together, we hope that this information will make Aotearoa New Zealand’s health system stronger and more able to withstand pandemics in the future.

Ngā mihi mahana

Kerri Nuku
NZNO Kaiwhakahaere

Preface

Pandemics are not uncommon. The COVID-19 pandemic is the fifth global pandemic in just over a century (previous pandemics began in 1918, 1957, 1968 and 2009). When looking back over time, pandemics can be seen as part of the normal cycle of events, what the Institute calls 'The Long Normal'. In this context, taking the time to reflect on Aotearoa New Zealand's performance in responding to the COVID-19 pandemic to date may not only reduce further healthcare shocks during this pandemic but also help the country prepare for the next.

Project PandemicNZ (of which this survey forms part) aims to help Aotearoa New Zealand prepare for future pandemics, as well as manage and learn from the current COVID-19 pandemic. Learning the lessons about personal protective equipment (PPE), its reserve supply, ongoing logistics, appropriate use and access, are important components to managing the risks of the current and upcoming pandemics.

The McGuinness Institute hopes this *Survey Insights* paper will be used as a tool to inform policy makers. We have outlined our key findings and recommendations in terms of results, but there is still a great deal more to learn from the data. This will be discussed in future reports and papers. As we expect to undertake further work in this field of study, we would also appreciate your feedback and observations.

This *Survey Insights* paper is part of a collaboration between the NZNO, Stickybeak and the McGuinness Institute. The McGuinness Institute would like to acknowledge the important role that the NZNO has in working on behalf of its membership, which forms such an important part of the wider healthcare sector.

Thank you to all the healthcare workers who completed the survey. We appreciate many of you were under a lot of work and family or whānau pressures at this time. Thank you for taking the time to share your observations on PPE.

Ngā mihi aroha ki a koutou,

Wendy McGuinness
Chief Executive
McGuinness Institute

1.0 Thank you, Ngā mihi aroha ki a koutou

Thank you, ngā mihi aroha ki a koutou, to all the healthcare workers that completed the survey; we appreciate many of you were under a lot of work and family or whānau pressures at this time. Thank you for taking the time to share your observations on PPE.

2.0 Why the survey was conducted

Reasons for conducting the survey included:

- The risk of COVID-19 to Aotearoa New Zealand increased dramatically from late February to early April 2020 (about ten weeks ago). Many New Zealanders were concerned about the ability of the healthcare system to withstand a pandemic. While an empirical survey of views was not conducted at that time, there was strong anecdotal evidence that healthcare providers were concerned about the capacity of Aotearoa New Zealand's healthcare system. There were particular concerns about the provision of PPE to healthcare providers.
- This survey aims to highlight the experiences of healthcare workers (nurses, midwives, kaimahi hauora, healthcare workers and students) that are members of NZNO, bringing together their ideas and lessons learnt to help inform both the wider nursing community and the organisations that they work with (such as the Ministry of Health [MoH] and District Health Boards [DHBs], primary healthcare providers, Māori and Iwi health providers). Taking a long term view, this survey aims to make Aotearoa New Zealand's health system stronger and more able to withstand pandemics in the future.
- The survey was a collaboration between the NZNO and the McGuinness Institute. The opportunity to collaborate with NZNO to learn more about what healthcare workers were thinking and learning at this time was a privilege.

3.0 How the survey was conducted

- The survey of NZNO members was conducted between Wednesday 22 April and Monday 4 May 2020 (13 days).
- The survey was distributed by the NZNO via email on 22 April 2020 to a random sample of 15% of members (n=7198). In addition, the survey link was provided to Te Rūnanga o Aotearoa, NZNO (Te Rūnanga) for circulation (approx. n=3000) to ensure that the voices of Māori healthcare workers were captured in sufficient numbers. A reminder was sent to the primary NZNO cohort (n=7198) on 29 April 2020.
- There were 589 survey respondents in total. See Appendix 1 for a list of the survey questions.
- The Survey itself was conducted through Stickybeak, an online platform designed to replace traditional public opinion and quantitative research.
- The Stickybeak report is a preliminary report of the survey data that is both interactive and searchable.[1] All of the links below refer to the Stickybeak report.
- In addition to the Stickybeak report, the Institute has prepared this report.

4.0 Survey context

To understand the survey results, it is important to understand the survey's context.

1. This survey took place after the major crisis period had passed and recovery was well in sight.
2. Notably, the survey was released shortly after announcements that:
   a. the New Zealand Government had ordered 41 million masks from overseas (and delivery was expected in the following six weeks);
   b. the number of active cases had reduced significantly; and
   c. the New Zealand Government was shortly moving from Alert Level 4 to Alert Level 3.
3. The day after the survey was released to NZNO members, the World Health Organization (WHO) reported zero confirmed cases for New Zealand (a first since the first case was confirmed).
4. The time band that the survey was undertaken in is illustrated in Figure 1 overleaf.
5. Although undertaking a survey earlier in April would have been useful, that would have put an additional burden on the nursing community at a time when it was already under significant pressure. Conversely, a survey in June or July 2020 would risk losing its usefulness, with many concerns being forgotten as Aotearoa New Zealand moves to focus on the economic disruption caused by the virus (both nationally and internationally).
6. Given the purpose and context of this survey, its timing and length were felt to be both appropriate and useful.

5.0 How to search the raw data

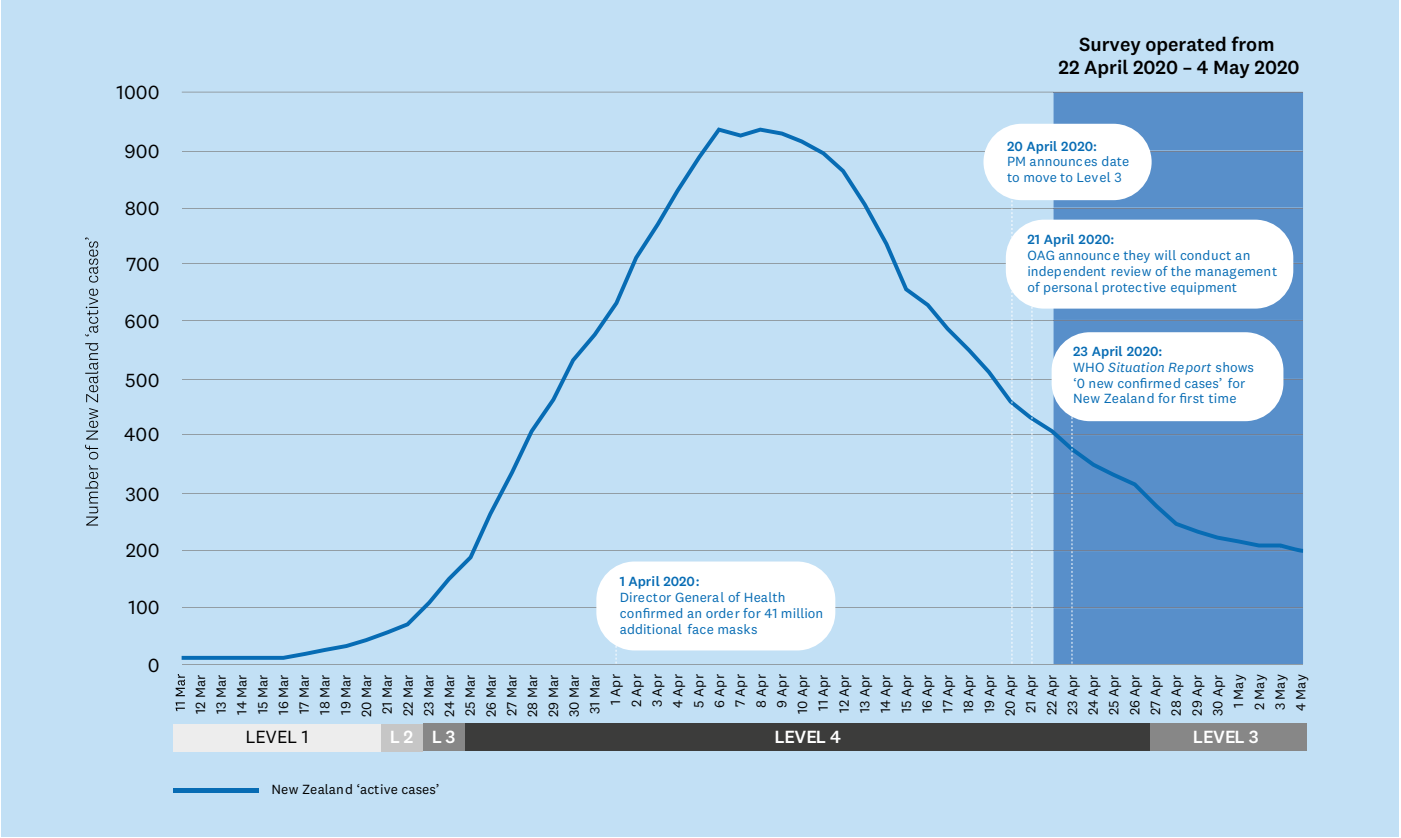
The original survey questions and responses can be viewed in the preliminary Stickybeak report.[2] Follow these instructions below to refine the raw data as required.

1. Navigate to the question you are interested in (e.g. Question 8: How confident are you that New Zealand has the necessary PPE stock?).

1 See the Stickybeak report here https://datastudio.google.com/u/0/reporting/1uofkYQvwM4UyrW6UeBvAMt68iLP99onf/page/RjXNB.

2 See the report here https://datastudio.google.com/u/0/reporting/1uofkYQvwM4UyrW6UeBvAMt68iLP99onf/page/RjXNB.

Figure 1: Timeline: NZNO PPE survey (setting the context)



2. In the row of filter options underneath the question, go to 'Workplace' (other options are 'nurse type', 'ethnicity' and 'DHB').
3. In the dropdown box that appears, all answer options and combinations appear and are ticked. This will give you the default data 'Average (all)'.
4. To drill down into specific data (e.g. responses from hospital-based respondents only) choose a specific category by first clearing the ticks using the top box sitting on the left of the word 'Workplace'. Then scroll down the categories and click 'only' on the category you want to focus on (if just one category), or tick the categories you want to focus on (if more than one).
5. The graph (bar or pie chart, depending on the question) will change to reflect the data selected. To see the whole bar graph, click on a space outside the search bar, and the bar goes away.

6.0 How this report will be used

In addition to the graphs from the Stickybeak report, the Institute has prepared some additional graphs from that report and also listed selected (and edited) respondent comments at the back of this report (*Survey Insights: An analysis of the 2020 NZNO PPE Survey*). While the Stickybeak report lists quantitative data prepared by aggregating respondents' choices to Questions 1 to 11, this report (*Survey Insights* report) dissects the data and analyses what the survey results mean in practice more deeply, particularly in light of the comments provided by respondents.

This was considered the best way forward by NZNO, Stickybeak and the Institute. The NZNO may decide to publish both the Stickybeak and/or McGuinness Institute reports on their website, but this is yet to be decided. NZNO may also decide to publish their own report in the future. There is a great deal of information that can be obtained from analysing the data, hence there could be value in three reports being produced, ideally building on each report over time.

7.0 How to read this report

The Institute has used two colours in the graphs to generally illustrate what the reader might like to focus on: red and blue.

- The red zone implies that action was/is needed and is divided into two subgroups.
    - The darker red sums the percentages from scales 1

and 2 where respondents feel unsafe, unprepared or unconfident (the scale refers to choices offered to respondents – see Appendix 1 for further detail).

- The lighter red refers to the middle ground, scale 3, where respondents feel unsure or undecided.

- The blue zone implies respondents were happy with the status quo. Importantly, the Institute believes the goal should be for all respondents to be in the blue zone (e.g. to feel safe, prepared and confident.

Appendix 1 contains a list of survey questions. Appendix 2 contains four graphs from a respondent perspective (Questions 1 to 4 from the survey); these are similar to what is shown in the Stickybeak report. Appendix 3 shows a series of graphs from a DHB perspective (Questions 5 to 10); these were not easy to see in the Stickybeak report and required more detailed research to present in this format. Likewise, Appendix 4 contains a table of PPE from a DHB perspective (Question 11).

Finally, Appendix 5 contains a list of comments from respondents (Question 12), Appendix 6 contains a list of comments from respondents working in aged care facilities, and Appendix 7 contains a poster of the MoH *Guidelines for personal protective equipment use in healthcare settings including care provided in homes*. This poster was published on the 25 April 2020 (four days after the survey was sent to a random sample of 15% of members (n=7198). The poster is included here to enable respondents comments to be understood in terms of guidelines existing at the time the survey was conducted.

Responses in Appendix 5 were categorised by the issue(s) they address. Where comments address issues in another table or elsewhere in the same table, they are recorded in both.

The respondent comments have been selected to illustrate a wide variety of views and observations. If a comment simply repeated an answer to an earlier question it was excluded, however, if it added a new insight, not covered previously, it was included. We note that some similar points made by different respondents are included to enable the reader to understand whether a comment was a one-off observation or represented a more systemic problem.

There were some cases where healthcare workers had answered previous questions very positively only to make a comment or observation in Question 12 that was negative or in conflict with their previously positive responses. This was surprising. However, on reflection, this likely demonstrates the dominant nursing culture to be positive, which explains the positive safe/prepared/confident responses to the earlier finite questions. That said, the subsequent comments to the open question illustrate that healthcare workers are equally committed to enhancing care for their patients and colleagues, which includes outlining faults in the current system and suggesting improvements.

The comments were very insightful and it is hoped that policy makers will take the time to read and ponder their observations and suggestions. Approximately 300 of the 589 respondents (51%) wrote more than the standard 'no feedback' or 'thank you' type of comment, and about half of the 300 (i.e. just under 150) are included in Appendix 5. These responses are grouped in three tables, see Box 1 below.

8.0 What did we learn

Box 1: Appendix 5 Table of Contents

Table 1: Comments regarding PPE products

A: Good PPE access

B: Poor access to PPE

C: Poorly fitting or inappropriate PPE

D: Re-use of existing PPE

E: Expired PPE

Table 2: Comments regarding PPE protocols

A: Poor or conflicting guidelines and practice

B: Not enough information and/or training on use of PPE

Table 3: Comments regarding PPE strategic issues

A: Not enough transparency around supply and distribution of PPE

B: Lack of preparedness

C: Insufficient staffing levels and wages

D: Disconnect between MoH and DHBs

Confidentiality

All respondents were promised confidentiality. Comments have been lightly edited for confidentiality, clarity and grammar (e.g. question marks, capitals or commas have been removed or added as appropriate). Any comments that might indicate a specific DHB or might identify a respondent has either not been published or 'xxx' is used to replace identifying text.

A: Respondents believe that they know how to use PPE gear appropriately

Most respondents believed they were confident in using PPE gear appropriately, with the exception of those from the first two DHBs (Wairarapa DHB, West Coast DHB with two respondents each) in the Question 6 bar graph (Appendix 3).

If these are removed, the results would indicate that although there is work to do for some DHBs (e.g. South Canterbury DHB, Waikato DHB, Taranaki DHB, Auckland DHB, Capital & Coast DHB and Canterbury DHB), healthcare workers overall generally have confidence that they know how to use PPE.

That said, the Institute noted that the general comments in response to Question 12 indicate conflicting guidance on use of PPE (see Appendix 5, Table 2), with varied experiences based on where respondents worked. As such, we considered that both the use of PPE gear and PPE protocols should be reviewed, checked and assessed across Aotearoa New Zealand and that regular training in the use of PPE gear should take place as a matter of good practice.

'Need consistent information on how long the PPE lasts once worn...two hours or full eight hours? Surgical masks, when do they need to be changed?'

B: Health care workers had a diverse range of experiences

This appears to have been driven by whether respondents were working in large hospitals, and more specifically, whether they worked in hospital areas where PPE was part of their normal role.

Those working outside of hospitals tended to have a more uncertain experience. Some respondents that were positive still noted issues in their feedback, but acknowledged that their employer had done an amazing job under difficult circumstances.

Question 7 (see Figure 2) illustrates that the level of confidence with regard to access to PPE stock provided by 'your DHB/employer' and by New Zealand was felt differently depending on where respondents worked within the larger healthcare system. For example, home-base care, disability care, primary care, aged care, Māori and Iwi healthcare providers and corrections had more concerns than those inside the hospital system or closely connected with the hospital system (e.g. hospitals, private surgical/specialist setting, hospice and GP-based care. It is interesting to compare responses in terms of access to PPE stock by 'your DHB/employer' with whether 'you were confident' that New Zealand has the necessary PPE stock. Respondents who worked in hospices and in general practice held different views – moving from a high-level of confidence in their employer to low levels of confidence in New Zealand's supply of PPE.

Appendix 6 contains a list of comments directly from aged care facilities workers. We thought this was important to set out in a separate appendix given the number of COVID-19 deaths connected to this particular group of healthcare providers.

There may be a number of reasons for this. For example, this may be due to DHBs' supply chain with hospitals is stronger than with other healthcare providers. It is also possible that the responsibility of DHBs to provide PPE to other organisations in the DHB region (other than hospitals) was unclear and/or poorly managed.

The contrasting views, as illustrated in the comments, were surprising. Some healthcare workers believed that those raising concerns should not do so and that, those who did, were letting their side down. There was even some angry at media coverage. This was surprising but also speaks to how some healthcare workers do not believe it is appropriate or culturally acceptable to speak up. In some of the comments (not published) there was even concern that they may lose their job if they were identified.

'It is difficult to get supplies of masks, gloves, hand sanitiser, antibacterial wipes and liquid soap from our usual suppliers as this has all been earmarked for the hospitals (DHBs) as priority. Despite the fact that we are swabbing COVID-19 people and are on the front line. People come to GPs first.'

However, even in the hospital setting differences existed. Comments in Appendix 5 indicate that respondents for whom PPE use was part of their regular pre-pandemic practice were generally more confident in its provision than those who did not need to use PPE as part of their typical pre-pandemic work.

'I do not work in the COVID-19 ward, however we have had patients admitted to our ward who were later transferred to the COVID-19 ward. The damage is already done; there is not enough or nil PPE equipment available (or just masks) and we were told that we did not need to wear a mask on this particular ward. The patient was later returned to the ward. Fortunately the patient was negative following the swab.'

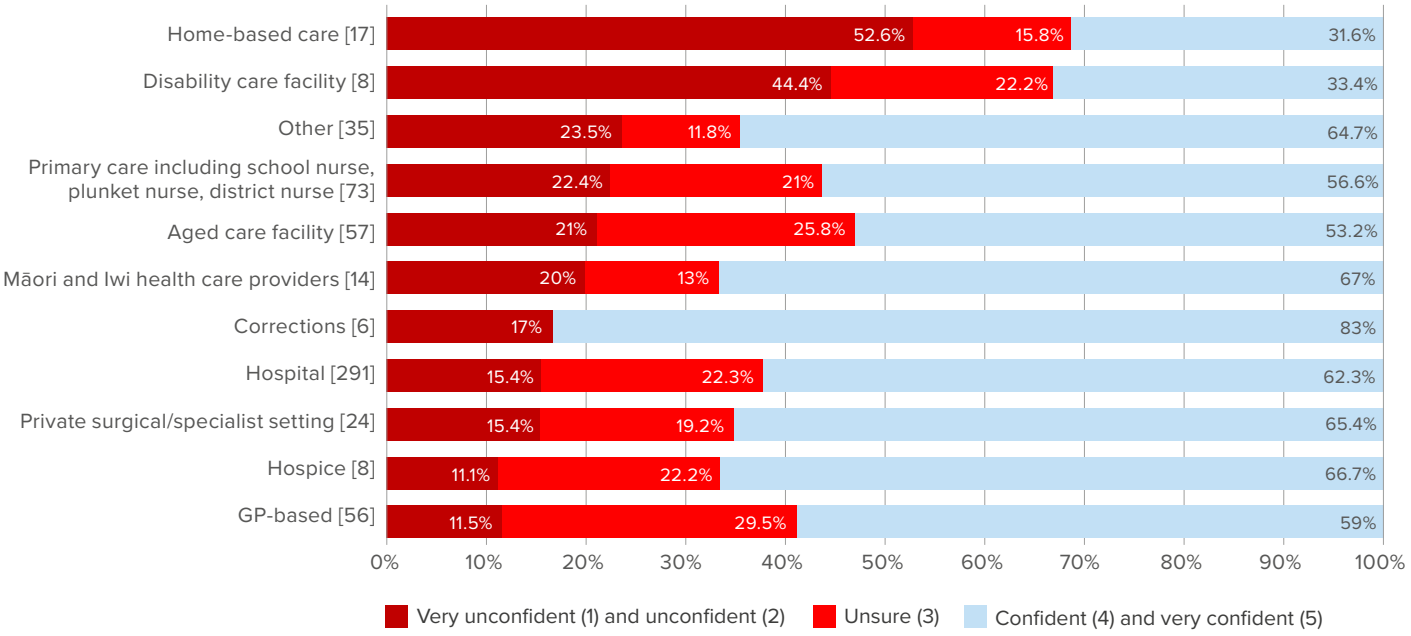
C: Many respondents knew about, or experienced, shortages in PPE

Many respondents (45%) were aware of shortages in P2/N95 masks (see Figure 3 and Appendix 4). Other key items known to be in short supply were face shields (40%), goggles (27%), hand sanitiser (26%), surgical masks (23%),

Figure 2: Survey results by workplace – Questions 7b and 8b

Question 7b (all respondents by workplace): On a scale of 1–5 where 1 means 'low confidence' and 5 means 'high confidence', how confident are you that your DHB/Employer can provide the PPE you need?

[Out of 589 respondents]



Question 8b (all respondents by workplace): On a scale of 1–5 where 1 means 'low confidence' and 5 means 'high confidence', how confident are you that NZ has the necessary PPE stock?

[Out of 589 respondents]

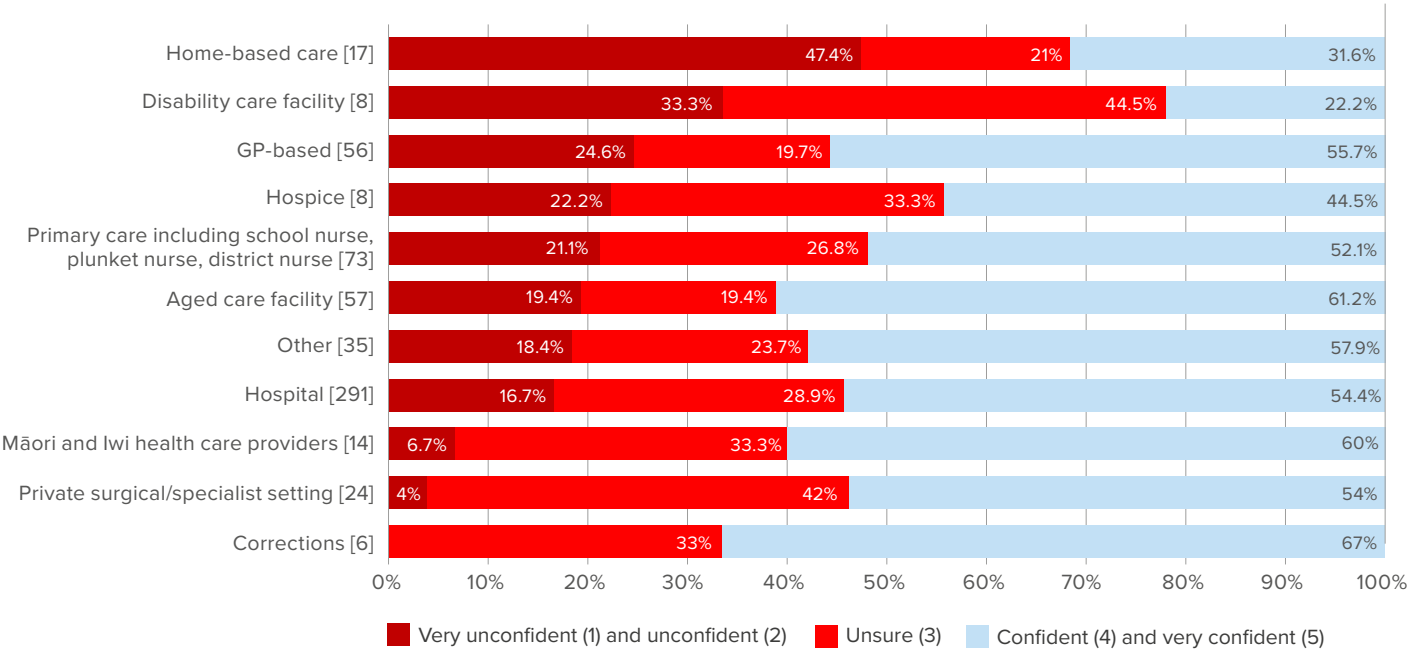
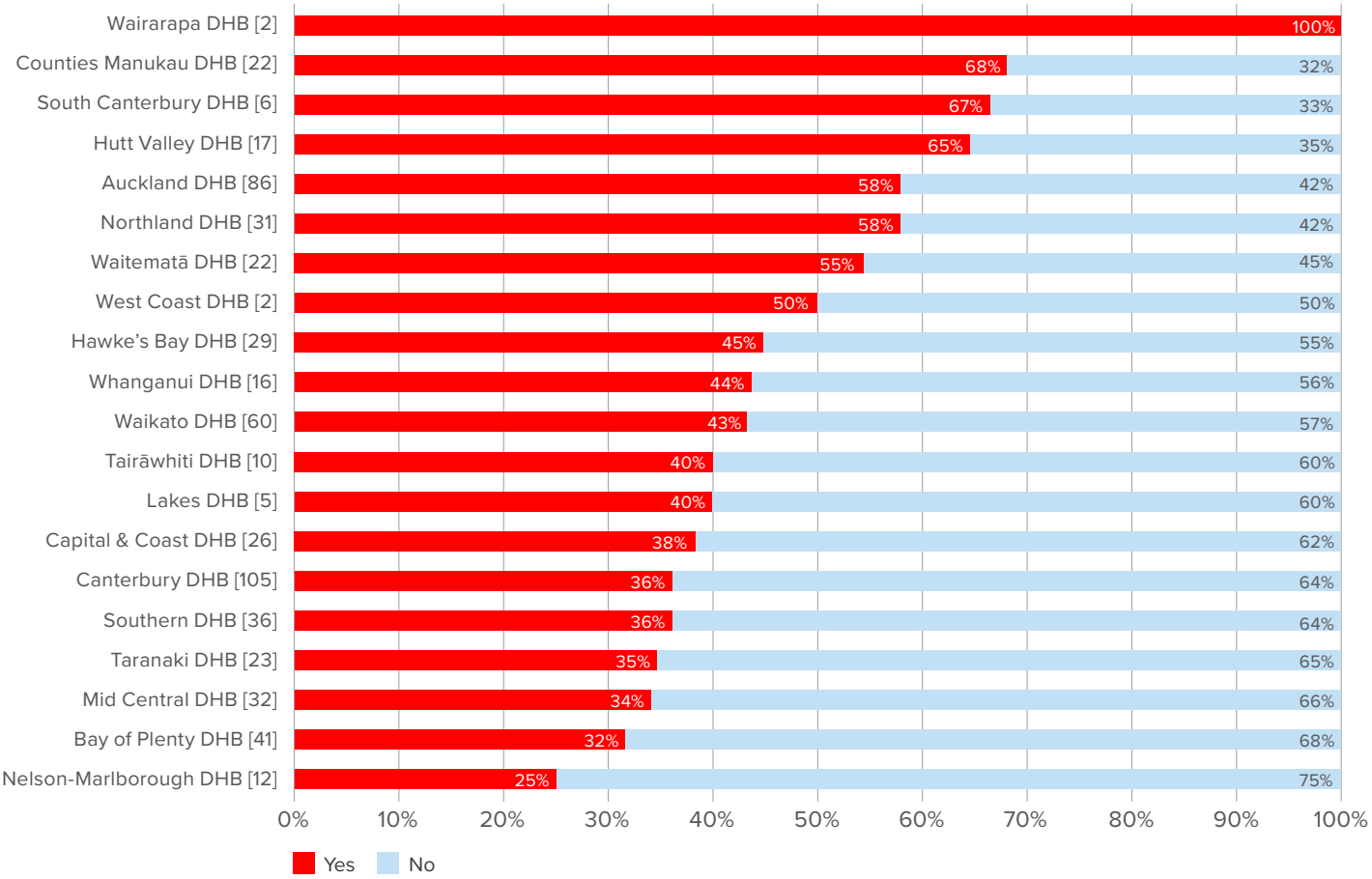


Figure 3: Survey results by DHB for P2/N95 masks

Question 11b (by P2/N95 masks): Are you aware of shortages of P2/N95 masks?

[583 survey responses. Please note we have excluded 17 responses, where respondents did not select a DHB]



gowns (21%), antibacterial wipes (20%), scrubs (17%), slip-on shoe covers (17%) and hairnets/head hoods (15%). See the table in Appendix 4.

These are high percentages. Shortages in these items would put patients and healthcare workers at risk.

'I tested positive from work due to not having time to come out of the ward and change my mask/gown when saturated in the very early stages. This has improved now according to staff working on the ward.'

'I would like to have the option to use PPE when I deem it necessary (not to have it secured behind locked doors).'

'My employer has locked masks and gowns away from us. We have been short of hand sanitiser. Nurses have been re-using face masks when treating those with suspected COVID-19.'

Appendices 3 and 4 takes a deep dive into each of the DHBs. Results indicated that, although some DHBs were 'better than others', overall supply of PPE was a common problem across all DHBs. See for example, Appendix 3 (Question 7). If you remove South Canterbury DHB and Hutt Valley DHB from the mix, the red band of colour sits between 25 to 50% of DHB responses.

Although there were some outliners, many DHBs sat within a similar range across questions 7 to 10. For example, when comparing the ranking over all four questions, South Canterbury tended to sit at the top end, Capital & Coast DHB tended to sit around the middle and Bay of Plenty DHB tended to sit at the lower end. There were, however, exceptions.

For example, in Appendix 4 (Question 11), 40% (4/10) of Tairāwhiti DHB respondents had heard about shortages of P2/N95 masks (see Figure 3 and Appendix 4), but in Appendix 3 (Question 9) the same respondents had felt 100% supported in the move from Alert Level 4 to Alert Level 3 and were the only DHB to question whether a national monthly audit of PPE was useful (50%), see Appendix 3 (Question 10). This is an example of why the comments contained in Appendix 5 are so useful.

Further, we note that these comparisons can be difficult. For example, 'better than other' DHBs might have meant a DHB that was better at keeping the healthcare community unaware of shortages in say P2/N95 masks (not being transparent) might rate higher than another DHB that communicated existing shortages (being transparent) and shared with healthcare workers the problem and the actions they were taking to remedy the situation. As noted in the comments in Appendix 5, those DHBs that shared the problem, were highly praised by respondents.

D: Many respondents were concerned about the lack of preparation

'This is yet another debacle from the Government and MoH. Last year it was measles outbreak with very little MMR vax. This year its COVID-19, no PPE and no or limited flu vax. What happened to the pandemic procedures that were supposed to be in place after the SARS virus in early 2000s. Why is PPE gear not being made in NZ? Why is it supposedly $80 a kit? I order supplies for our clinic. We are the frontline. This is like sending a soldier to war without his rifle and dumping him in enemy lines and saying 'pick me'. I am lucky at my clinic because our employer cares and they have said no PPE no clinic.'

Although only a few respondents mentioned expired stock, the Institute is aware that this is not an isolated case.

E: A small number of respondents were concerned about the media's role and the impact on the profession's public image

While many respondents were mainly concerned about the actual lack of PPE, we note that others were also concerned about the narrative being played out in the media impacting negatively on their public image.

'Our staff are very safe when compared to overseas colleagues as our government's strategy has been to protect the people and the health system. Going to the media is not helpful. Staff are now coming in anxious after listening to news about PPE. Are the media going to help us with managing the hysteria they cause on PPE? We need to be practical and constructive and not destructive. Our public image will suffer since we cannot solve these by using proper escalation methods.'

F: Many respondents were concerned that if they or their colleagues were non-symptomatic, they could risk passing the virus onto patients

See Appendix 5 (Question 12). It is not simply about getting PPE to healthcare providers, but also being clear on who should wear it, when and how it should be disposed of or recycled. There should also be clear consistent guidance on how healthcare workers sanitise themselves (e.g. access to showers) and their PPE (e.g. wash scrubs at home). This seems to be an area that requires work.

'Our DHB recommendations for ward nurses (so not ICU or theatre): eye shields (have not seen goggles yet), surgical masks, gown and gloves, as appropriate, when nursing COVID-19 positive patients and does not have the aerosol producing procedures. I cared for a suspected COVID-19 patient in a negative pressure room who was symptomatic who later tested positive. I was able to wear a N95 mask.'

'However, the recommendations for suspected patients does not include hair covering or shoe covering or face shields. This patient was coughing. PPE is at the discretion of the manager who is able to access supplies. The staff on our ward are so concerned that we have purchased face shields with our own money, I am considering making my own head gear. There are very limited changing facilities for taking off uniforms at start and end of shifts, let alone shower facilities.'

G: Many respondents were unclear as to the role DHBs had in terms of providing PPE to healthcare providers in their district

This was mentioned many times in the comments; who is responsible for what (see Appendix 5). One respondent had a clear view, but this was unique:

'The one thing I haven't heard mentioned is all employers (and this includes self-employed such as midwives) have a responsibility to hold sufficient supplies to keep themselves and staff safe during a pandemic. This has always been the responsibility of the self-employed (to look after own health and safety) but it has obviously been long forgotten.'

H: Most respondents believed PPE stock should be audited (almost 80%)

See Appendix 3 (Question 10). Although respondents could see that supplies were improving, their experience indicated that a transparent solution to concerns would be an audit. They knew that an audit would remove any lingering doubts that stocks levels were inadequate.

'Government is not being truthful in the media about PPE (and assistance to all medical staff) or availability of the Flu Vax (as medical centres are saying they are not available to them).'

9.0 Where to next

9.1 Background

The New Zealand Public Health and Disability Act 2000, which created the DHB system, is now 20 years old. See Box 2 overleaf:

Box 2: New Zealand Public Health and Disability Act 2000

Section 3: Purpose

(1) The purpose of this Act is to provide for the public funding and provision of personal health services, public health services, and disability support services, and to establish new publicly-owned health and disability organisations, in order to pursue the following objectives:

(a) to achieve for New Zealanders—

(i) the improvement, promotion, and protection of their health:

(ii) the promotion of the inclusion and participation in society and independence of people with disabilities:

(iii) the best care or support for those in need of services:

(d) to reduce health disparities by improving the health outcomes of Māori and other population groups:

(e) to provide a community voice in matters relating to personal health services, public health services, and disability support services—

(i) by providing for elected board members of DHBs:

(ii) by providing for board meetings and certain committee meetings to be open to the public:

(iii) by providing for consultation on strategic planning:

(d) to facilitate access to, and the dissemination of information to deliver, appropriate, effective, and timely health services, public health services and programmes, both for the protection and the promotion of public health, and disability support services.

The 2017 *New Zealand Influenza Pandemic Plan* and the 2013 *National Health Emergency Plan: National Reserve Supplies Management and Usage Policies* make it clear the MoH is responsible for mobilising PPE to DHBs, but it is unclear who DHBs are responsible for (or not for) and to whom. The 2013 *National Health Emergency Plan: National Reserve Supplies Management and Usage Policies* states, as excerpted in Box 3 below:[3]

Box 3: 2013 National Health Emergency Plan: National Reserve Supplies Management and Usage Policies

2.1 Part one – usage policies

2.1.1 P2 respirators and general purpose masks

National reserve respirator and mask stockpiles will be mobilised in health emergencies if or when normal supply chains cannot meet demands. The Ministry will expect the general order of use of supplies noted above to have been followed before releasing supplies from DHB or bulk stores.

Requests for P2 respirator or mask supplies should be consistent with usage guidelines in the relevant NZIPAP section, NHEP Infection Prevention and Control document, or with the type and nature of the emergency.

2.1.2 Other personal protective equipment (PPE) and clinical equipment

These supplies consist of gowns, gloves, IV fluids, giving sets, and associated clinical equipment. The stockpiles will be mobilised in health emergencies if or when normal supply chains cannot meet demands.

The Ministry does not hold bulk supplies of these items off DHB sites. All national reserve supplies of these items are in DHB stores.

The MoH website explains the relationship between DHBs, PHOs and general practices or other primary care services, but we are unsure what that means in terms of the supply of PPE from the NRS (see Box 4):[4]

Box 4: MoH website: District health boards

DHB functions include both funding and planning of services, and provision of services.

DHBs hold contracts and agreements with organisations that provide the health services required to meet the needs of the DHB's population. For example, primary healthcare services (such

3 See p. 6 of the Plan. Download from https://www.health.govt.nz/publication/national-health-emergency-plan-national-reserve-supplies-management-and-usage-policies-3rd-edition.

4 See https://www.health.govt.nz/new-zealand-health-system/key-health-sector-organisations-and-people/district-health-boards.

as GPs and practice nurses) are funded by DHBs through primary health organisations (PHOs).

These services are then provided by general practices or other primary care services belonging to that PHO.

It is well acknowledged that many, if not all, countries have had to manage shortages in PPE. The solution, as recommended by WHO, is to develop 'a centralized request management approach' (see excerpt in Box 5 below).[5] In contrast, Aotearoa New Zealand has a decentralised request management approach for all PPE.

Box 5: WHO: *Rational use of personal protective equipment for coronavirus disease (COVID-19) and considerations during severe shortages* (6 April 2020)

The management of PPE should be coordinated through essential national and international supply chain management mechanisms that include but are not restricted to:

- Using PPE forecasts based on rational quantification models to ensure the rationalization of requested supplies;
- Monitoring and controlling PPE requests from countries and large responders;
- Promoting a centralized request management approach to avoid duplication of stock and ensuring strict adherence to essential stock management rules to limit wastage, overstock, and stock ruptures;
- Monitoring the end-to-end distribution of PPE;
- Monitoring and controlling the distribution of PPE from medical facilities stores.

9.2 Recommendations

Given the background, the McGuinness Institute recommends:

(i) An inquiry into what went wrong is essential

The NZNO survey makes it clear that for many frontline respondents something went badly wrong. There has been clear systematic failings, indicating that a stronger, more robust system needs to be developed.

Furthermore it is concerning that something as basic as PPE stock has been so problematic given that it is a management, not medical, problem. Put bluntly, isolating the population and closing the borders was the only option open to Aotearoa New Zealand as the healthcare system was unable to deal with a surge in cases – patients (and their families or whānau) and healthcare workers (and their families or whānau) could not be protected with PPE alone.

Importantly DHBs, as the Institute understands them, were established under the New Zealand Public Health and Disability Act 2000, to apply a business approach with regard to the delivery of healthcare services. This approach is in contrast to the centralised NHS approach operating in the UK. Stocktakes and supply logistics are business management skills (not medical skills). A failure of this magnitude calls into question what other issues DHBs are not managing effectively.

Two main questions that should form the basis of such an inquiry include:

1. In terms of masks, did the MoH fail to mobilise masks (i.e. a logistic problem) or was the stock simply not there (i.e. an inventory problem)? Or was it both?
2. In terms of other PPE, did the DHBs fail to mobilise 'other PPE (other than masks)' (i.e. a logistic problem) or was the stock simply not there (i.e. an inventory problem)? Or was it both?

It is unclear, even today, who failed and how they failed. However, what is clear is that PPE stock did not reach all home-based care, disability care facilities, aged care facilities, primary healthcare providers, hospices, GPs, Māori and Iwi healthcare providers and many others (as intended under the MoH plans).

The problem needs to be identified so that it can be resolved. The very people who were put on the frontline without the recommended PPE deserve an honest answer and a clear solution, otherwise the same mistakes may happen again.

(ii) MoH reviews, consolidates and updates its pandemic planning

A core problem is Aotearoa New Zealand has too many disjointed plans and policies. Many of the respondents' comments illustrated how this lack of clarity delivered confusion for those on the frontline.

5 See p. 3. Download from https://www.who.int/publications-detail/rational-use-of-personal-protective-equipment-for-coronavirus-disease-(covid-19)-and-considerations-during-severe-shortages.

(iii) Consider a more systemic review of New Zealand's healthcare system

The survey findings may indicate a more systemic review of New Zealand's healthcare system is necessary. For instance, are there other areas where MoH and DHBs are failing to meet the purpose for which the New Zealand Public Health and Disability Act 2000 was established?

From a management perspective, running 20 DHBs of different sizes across the country must be expensive. The MoH website states that '[a]lthough they may differ in size, structure and approach, all 20 DHBs have a common goal: to improve the health of their populations by delivering high quality and accessible healthcare.'[6] Yet time and again inequalities are evident. For example, the Institute understands Queenstown hospital has only one medical ventilator and no maternity facilities (the nearest being in Invercargill). Issues also exist in other areas, such as Northland and Gisborne.

We also wonder whether the health system's current culture is not conducive to inviting worker feedback. In particular, we note there were concerns about responses being kept confidential as respondents did not want to put their jobs at risk by speaking publicly about their concerns.

Read together, the comments show communities under pressure with no shared understanding of the issues they face as a group, and little stewardship in terms of feeling able to share their concerns with management (whether it be their employer, their DHB, or the MoH). The exceptions were praised as if to suggest their employer was in the minority. This is not a culture that will lead to change. Rather, without effective feedback mechanisms, there will simply be more of the same.

(iv) Publish a comprehensive composition of the NRS every month on the MoH website

The national reserve supply (NRS) list should include expiry dates and sizes of PPE, for both the MoH held pandemic stock and DHB held pandemic stock.

(v) During a pandemic, audit the composition of the NRS every month and make the audit statement public

At all other times, the NRS should be audited annually.

(vi) Integrate and design 'a co-ordinated package' of PPE products and protocols, which then set minimum NRS stock levels and guarantee Aotearoa New Zealand manufacturing of critical PPE

The Institute appreciates that officials will be concerned about the number of patients (in healthcare facilities) and healthcare workers (while at work) that contracted the virus. The NZNO does not have the figures of nurses infected at work, but the total number of nurses infected was approximately 52 (as at 11 May 2020).[7]

(vii) Investigate and report on what went wrong

MoH will know the number of healthcare workers infected at work. We expect all of these will have been investigated; how workers were infected is likely to be related to effective access and use of PPE. We are only aware of one such report being made public, see the *Incident report* discussed in the next section. It is important that all such investigations are public and that the key question/s are answered: was it a failure of protocols, a training issue, an access issue, a stock issue, a product quality issue or a physical cleaning issue? Knowing the answers to these questions should help in the development of better protocols and training. Timeliness and transparency are both important; learning these lessons now will prevent people getting infected.

(viii) Investigate and report on why PPE was locked away

Locking up PPE in a hospital in order to prevent healthcare workers wearing PPE during a pandemic seems negligent, particularly for those dealing with possible or confirmed COVD-19 patients (see comments in Appendix 5). It is important to understand why locking up PPE was considered necessary or appropriate. Further investigation is needed to understand on what basis such a policy was deemed acceptable practice. It must have created a great deal of concern for the healthcare workers involved.

(ix) Treat PPE as a uniform

There seemed to be a failure to focus on PPE as a uniform; there are many components that need to work together to protect a healthcare worker and their patients. Respondent comments suggest goggles, hairnets and shoe covers were not consistently provided to front-line workers. One solution might be for MoH (or DHBs) to create a two-tier delivery system in accordance with MoH guidelines (e.g. see Appendix 7). Tier 1 would be a special full 'head to toe disposable kit' to last a shift, prepared in advance for those engaged in 'aerosol generating procedures' (e.g. ventilators), ideally available in sizes S, M, L, XL and XXL). Tier 2 would be on a product by product basis, where DHBs order and supply specific products (e.g. x number of surgical masks, x number of gloves etc). Given the pressure nurses and doctors are under, a prepacked kit that contains the full uniform might be a useful mechanism to keep healthcare workers safe when under time pressure and give workers confidence that they have the necessary equipment. There are clearly a number of options, but whatever the solution is, understanding that components need to work together as a uniform seemed to be lost in the MoH plan and the wider narrative.

6 See https://www.health.govt.nz/new-zealand-health-system/my-dhb.

7 See https://www.health.govt.nz/new-zealand-health-system/my-dhb.

(x) PPE protocols should drive PPE inventory (not the other way around)

The PPE uniform on its own is not enough. Protocols and guidelines (including how to put on/remove PPE,[8] when and where to shower, how to clean scrubs and sanitise a room) and products (including access, fit, quality and quantity) form part of the same system. Arguably, the protocol and guidelines should dictate the product (not the other way around); many of the comments implied the products (according to what was available) determined the protocols. Appendix 7 contains a poster of the latest MoH PPE guidelines.

While this survey provided an insight into the demand side for PPE in New Zealand as experienced by healthcare workers, it is also important to review MoH guidelines as they work in practice to set the level of demand. Comparing New Zealand guidelines with those from other countries is important, particularly if New Zealand's healthcare workers are more prone to infection in comparison with countries with guidelines that require a higher level of PPE.[9] If New Zealand's guidelines require lower levels of PPE than other countries, it would be important that this is based on science, rather than on a limited supply of PPE (or one component of PPE such as a P2/N95 mask).

The amount of PPE that Aotearoa New Zealand would have required if the country had not gone into lockdown was significant. For example, the Institute's early modelling in March indicated that Aotearoa New Zealand would need approximately 40 million masks (if 20% New Zealanders were infected) and 100 million masks (if 50% were infected) if lockdown did not happen. The Institute did not go so far as to model the full PPE kit, but this early modelling for masks gave a useful indication of the amount of inventory that would be needed.

In terms of quality, many of the respondent comments directly or indirectly refer to New Zealand PPE practices being below international best practice. A cursory look indicates that New Zealand has adopted the existing WHO guidelines. However, this raises questions whether the WHO protocols (which are likely to be the minimum acceptable standard) should be the goal, or whether, as a developed country, Aotearoa New Zealand should be aiming for a higher standard that includes items like hair nets and shoe covers. It was also noticeable that the Public Health England guidance released 3 May 2020 states that 'all healthcare settings are reminded that where their risk assessment has identified the requirement for a tight-fitting respirator users must pass a face fit test for that respirator model before it can be used' and that 'employers and users of respirators need to be assured protective equipment is protecting the wearer'.[10] It is beyond the purpose of this *Survey Insights* report to complete and compare New Zealand's guidelines with those adopted overseas, but the respondent comments do raise questions about the capacity of PPE 'to protect the wearer'.

In terms of quantity, we expect MoH staff will have modelled the amount and type of PPE required to meet COVID-19 outbreaks under Alert Levels 2 to 4. These requirements will no doubt have been assessed against existing inventory levels. However, what pandemic inventory exists and who pays for this additional PPE gear remains unclear. The Institute has made a number of OIA requests to learn more about the supply side of PPE. We are particularly keen to understand how minimum stock levels are determined and who is responsible for this stock.

(xi) A novel virus needs a novel PPE assessment

It is also necessary to proactively understand the virus's unique characteristics. When a new virus emerges, it is important that Aotearoa New Zealand quickly ascertains what makes this virus unique. In the case of this coronavirus it was the spread (the reproduction number R_0) and the fact that it was a respiratory disease – both characteristics that mean PPE would be critical in the battle to manage the spread. Put bluntly, respiratory diseases mean that healthcare providers require good quality product that fits well, with the proviso that healthcare workers have access and know how to put PPE on and take it off safely. Ideally, the MoH's next pandemic will make it clear that Aotearoa New Zealand needs to engage early with a novel virus and respond quickly to reviewing and purchasing the PPE that healthcare workers might need.

(xii) Guaranteed Aotearoa New Zealand production

The protocols and products need to work together to help keep patients (and their families or whānau) and healthcare workers (their families, or whānau and colleagues) safe. The goal must be to have both the right type of stock and the right amount of stock to manage a pandemic. Having the ability to accelerate production in Aotearoa New Zealand

8 See for example, the World Health Organization resource How to put on and take off Personal Protective Equipment (PPE) (22 April 2020) https://www. who.int/csr/resources/publications/putontakeoff-PPE/en.

9 The UK guidelines can be found here https://www.gov.uk/government/publications/wuhan-novel-coronavirus-infection-prevention-and-control/managing-shortages-in-personal-protective-equipment-ppe. The UK guidelines appear on first glance to be higher than the WHO: Rational use of personal protective equipment for coronavirus disease (COVID-19) and considerations during severe shortages (6 April 2020), which can be downloaded from https://www.who.int/publications-detail/rational-use-of-personal-protective-equipment-for-coronavirus-disease-(covid-19)-and-considerations-during-severe-shortages.

10 See https://www.gov.uk/government/publications/wuhan-novel-coronavirus-infection-prevention-and-control/managing-shortages-in-personal-pro tective-equipment-ppe.

has played and will continue to play an important role in keeping Aotearoa New Zealand well-supplied in PPE for this and future pandemics. For example, the Government could provide guaranteed annual orders of masks from Aotearoa New Zealand-based manufacturing companies to replenish stock for the NSR (companies could include Auckland-based Lanaco and Whanganui-based QSi).

(xiii) Review and implement better cleaning regimes

To consider PPE in isolation would be a mistake. Face shields, scrubs and goggles need cleaning, as do surfaces and showers. As people with PPE are required to work loaded virus environment, trying to unload that environment by every possible means is an important part of keeping patients and healthcare workers safe.

Of particular concern is the disparity between the NZ MoH's *General cleaning information following a suspected, probable or confirmed case of COVID-19* guidance,[11] and that released by the WHO *Water, sanitation, hygiene, and waste management for the COVID-19 virus: interim guidance* (23 April 2020). A cursory review indicates that the WHO guidance contains a lot more detail. For example, the WHO guidance specifies the exact measure of sodium hypochlorite being '0.1% (1000 ppm) for disinfecting surfaces' and '0.5% (5000 ppm) for disinfection of blood or bodily fluids spills in health-care facilities'.[12]

Furthermore, the problem with sodium hypochlorite (more popularly known as bleach), is that its potency dilutes over the short term (approximately over a three-month period). Currently all domestic bleach comes from Australia, though there is a manufacturer of commercial bleach in New Zealand (the company is called IXON). The Institute believes a review of the cleaning regime of PPE and surfaces is required to keep patients and healthcare workers safe.

10.0 Final comments

The Institute considers COVID-19 not to be a '100-year event' severe pandemic, but a moderate pandemic (more like a '25-year event'). Based on our research, novel viruses, particularly human coronaviruses, are on the rise (see *Think Piece 33 – The Long Normal: Preparing the National Reserve Supply (NRS) for pandemic cycles* (April 2020).[13] The concern is that the next pandemic is a severe pandemic (e.g. more deadly with a higher reproduction number). With this context in mind, we felt it was important to contribute to the goal of creating a more robust Aotearoa New Zealand healthcare system – one that is able to withstand a severe pandemic.

In early March 2020, the Institute was contacted by approximately 15 healthcare providers over two weeks (this included nurses, specialists and GPs) – all were concerned about the lack of PPE. When we asked why they were contacting us, they said they did not have anywhere else to go. Reasons why they did not want to speak to the media was they 'might lose their jobs', 'it would not be good for their career', 'it would not be appropriate' and/or 'they did not have a mandate'. This led to the Institute creating a website and registration system for PPE purchasers, makers and suppliers.[14]

The comments (in Appendix 5), reinforced the Institute's March 2020 view that Aotearoa New Zealand's healthcare system is more hierarchical, power-orientated and reactive than organic, creative and proactive. Although all organisations naturally want to control the dialogue, it is also important to put in place systems that enable those on the frontline to be heard. For the healthcare system to improve, it will need to cultivate a better culture.

As this *Survey Insights* report is about to be published, three more confirmed or probable cases were announced on 11 May 2020. Two of the new cases are nurses at Waitakere Hospital and are linked to the St Margaret's Hospital & Rest Home cluster in Auckland. This means there have been seven confirmed cases to date from one cluster (six confirmed and one probable). An *Incident Review Report COVID-19 Staff Infections Waitakere Hospital April 2020* (13 May 2020) into the incident that led to the infection of the first three nurses was published by Waitematā DHB.[15] The report found that a lack of appropriately fitting PPE played a key role in infecting three staff. One of the recommendations suggested improvements to PPE procurement and supply chains to ensure that:

> *(a) PPE is available in a variety of sizes and styles to suit individual needs,*

11 See https://www.health.govt.nz/our-work/diseases-and-conditions/covid-19-novel-coronavirus/covid-19-information-specific-audiences/general-cleaning-information-following-suspected-probable-or-confirmed-case-covid-19. The Australian guidelines are also more specific than New Zealand – see https://www.health.gov.au/sites/default/files/documents/2020/03/coronavirus-covid-19-environmental-cleaning-and-disinfection-principles-for-health-and-residential-care-facilities.pdf.

Lastly, although the Institute has no chemical expertise, we suggest that this comment in the New Zealand guidelines should be clarified: 'Recommended cleaning product should be a 2-in-1 product (containing both cleaning and disinfectant properties) to increase efficiency.' We understand it is never wise to mix cleaning products.

12 See p. 5. Download from https://www.who.int/publications-detail/water-sanitation-hygiene-and-waste-management-for-covid-19.

13 See https://www.mcguinnessinstitute.org/think-pieces.

14 See https://supplynz.org.

15 See https://www.waitematadhb.govt.nz/assets/Documents/news/media-releases/2020/Waitemata-DHB-Incident-Review-Report-WTK-Hospital-April-2020.pdf.

(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 (para 46).*

There were concerns about the number of times nurses had to put on and remove PPE (donning and doffing) due to moving between wards – some describing as many as eight times per shift (para 20). Doffing in particular 'is high risk for viral transmission' (para 33). The *Incident report* supports the concerns raised by respondents. It illustrates, with significant clarity, that even when PPE is available and nurses have an 'excellent knowledge around infection prevention', this is not enough – well-fitting PPE is essential (Appendix 2). This is an insidious virus and it requires PPE uniforms to act like a shield; in this case supply of 'inappropriate' PPE was at fault.

Also on 11 May the Prime Minister announced that New Zealand will move from Alert Level 3 to Alert Level 2 on 14 May. What we know is that hand hygiene, cough and sneeze etiquette, physical distancing and the wearing of appropriate PPE (when physical distancing is not possible) continue to be the only significant mechanisms that reduce the reproduction number (the R_0). Unlike the first two, physical distancing and appropriate PPE come at a cost; however, there is little information in the public arena on the costs of PPE and the relationship between the cost of PPE and the cost of staying or moving back to a more significant Alert Level.

To date, the Institute is unsure who bears the cost of the additional PPE (e.g. MoH, DHBs, primary health organisations [PHOs] or primary healthcare services provider [such as GPs and practice nurses]) and who pays the healthcare workers if they become infected as a result of doing their job (e.g. MoH, DHBs, PHOs or primary healthcare service providers [such as GPs and practice nurses]).

Unpacking this question further, there is a direct relationship between the healthcare costs and the economic costs of a pandemic. If too little is spent on healthcare (e.g. the quality of PPE), the unintended consequence may be a move back to Alert Level 3 or Alert Level 4. In the Institute's view now is not the time to be too cheap in terms of the quality, quantity and accessibility of PPE.

To conclude, the Institute is concerned that lessons from this crisis will not be identified, and therefore not dealt with. Aotearoa New Zealand's healthcare system has, in colloquial terms, effectively 'dodged a bullet' and there will be forces that seek to retain the status quo and 'wallpaper over the cracks'. The borders may have been tested but the healthcare capability has not. The small number of cases that were able to spread within Aotearoa New Zealand proved that our healthcare capability was challenged (as indicated by the number of patients and nurses infected at various healthcare facilities). This is not a healthcare system success story.

Now is the time for New Zealanders to be sceptical, critical and curious, so that innovations that worked are embedded and or previous ways of working that did not work are discarded. Now is the time to build an Aotearoa New Zealand healthcare system that actively improves,

About

promotes and protects our health, and one that is better able to withstand the challenges that may lie ahead.

Thank you, Ngā mihi aroha ki a koutou

We wish to express our gratitude to the respondents, the NZNO and Brody Nelson from Stickybeak for making this survey possible.

About NZNO

The New Zealand Nurses Organisation (NZNO) represents more than 51,000 nurses and health workers.

- We are the leading professional body of nurses in Aotearoa New Zealand.
- Our members include nurses, midwives, students, kaimahi hauora, healthcare workers and allied health professionals.
- Our members are united in their professional and industrial aspirations.
- We are the nursing union in Aotearoa New Zealand.
- Te Runanga o Aotearoa is the arm through which our Te Tiriti o Waitangi partnership is articulated.
- Our members enhance the health and wellbeing of all people of Aotearoa New Zealand.
- We negotiate salary and conditions for nurses, midwives and hospital aides working in the public and private sectors, other health professionals and health sector workers. We provide professional support and leadership for nurses and midwives and clinical development through special interest sections and colleges.
- NZNO is committed to the representation of its members and the promotion of nursing and midwifery. NZNO embraces Te Tiriti O Waitangi and seeks to improve the health status of all peoples of Aotearoa/New Zealand through participation in health and social policy development.

About Stickybeak

Stickybeak is an online platform designed to replace traditional public opinion and quantitative research. Brody Nelson contacted the Institute in mid-April to offer his help. Over a long chat one night, it was decided that a survey of healthcare frontline workers would be an effective way to collect insights.

About McGuinness Institute

The McGuinness Institute is a non-partisan think tank doing the research others are not. We are committed to positively influencing public policy by empowering New Zealanders to have the uncomfortable, but necessary, conversations that are required to enable Aotearoa New Zealand to realise its potential as a country.

The Institute has studied the potential impacts of epidemics and pandemics since 2004. In 2005 we wrote the report *Managing the Business Risk of a Pandemic: Lessons from the Past and a Checklist for the Future* (2006)[16] and co-wrote the paper *Lessons from the West Ebola Outbreak in Relation to New Zealand's Supply Chain Resistance* (May 2015)[17]. The Institute's response to the COVID-19 pandemic can be found on the *PandemicNZ* website.[18] The recent think piece *Think Piece 33 – The Long Normal: Preparing the National Reserve Supply (NRS) for pandemic cycles* (April 2020) looks at PPE from a public policy perspective.[19]

Since February 2020 the Institute has, with others, prepared a range of Excel models to explore and understand both the demand and supply sides of key equipment such as medical ventilators and PPE. This includes collating an Excel document of PPE stock held by DHBs (this information is generated by OIA requests to DHBs). We hope to publish the DHB PPE stocktake as a working paper in late May 2020.

The aim of the Institute's work in this space is to ensure Aotearoa New Zealand does not become complacent, and that it continues to work hard to identify lessons from the current pandemic and apply these lessons in such a way to make the current healthcare system stronger and more robust, ready for the next pandemic. Many experts consider another pandemic is possible in the next 10 to 15 years; the Institute believes this is not only possible, but highly probable.

16 See http://www.mcguinnessinstitute.org/reports.

17 See https://www.mcguinnessinstitute.org/contributing-papers.

18 See http://pandemicnz.org.

19 See https://www.mcguinnessinstitute.org/think-pieces.

Appendix 1: List of Survey Questions

Respondents answered the NZNO PPE Survey as follows:

Kia ora. Welcome to the NZNO PPE Survey. Thank you for your support in completing this survey. Ngā mihi mahana, NZNO.

Your results will be anonymised and any personal details will be kept confidential.

Question 1: Which of these categories best describes you?

Multiple choice (single answer only)

- Enrolled Nurse
- Registered Nurse
- Nurse Practitioner
- Caregiver
- Student
- Kaimahi Hauora

Question 2: Which ethnic group or groups do you belong to?

Long list (multiple answers allowed)

- NZ European / Pākehā
- Other European
- NZ Māori
- Samoan
- Cook Island Maori
- Tongan
- Niuean
- Tokelauan
- Fijian
- Other Pacific
- Filipino
- Other South-East Asian
- Chinese
- Indian
- Other Asian
- African
- Other

Question 3: Select as many answers as apply. Which District Health Board are you working in?

Long list (multiple answers allowed)

- Auckland
- Bay of Plenty
- Canterbury
- Capital & Coast
- Counties-Manukau
- Hawke's Bay
- Hutt Valley
- Lakes
- Mid Central
- Nelson-Marlborough
- Northland
- Southern
- South Canterbury
- Tairawhiti
- Taranaki
- Waikato
- Wairarapa
- Waitemata
- West Coast
- Whanganui
- None of the above

Question 4: Select as many answers as apply. Where do you work?

Long list (multiple answers allowed)

- Hospital
- GP
- Aged Care Facility
- Disability Care Facility
- Private Surgical / Specialist setting
- Primary Care including school nurse, Plunket nurse, district nurse
- Home-based care
- Māori and Iwi healthcare providers
- Corrections
- Hospice
- Other

Question 5: On a scale of 1-5 where 1 means "very unsafe" and 5 means "very safe", how safe do you feel at work in regard to the human coronavirus?

Multiple choice (single answer only)

1 2 3 4 5

Question 6: On a scale of 1-5 where 1 means "not prepared at all" and 5 means "very prepared", how prepared do you think you are you to use PPE appropriately?

Multiple choice (single answer only)

1 2 3 4 5

Question 7: On a scale of 1-5 where 1 means "low confidence" and 5 means "high confidence", how confident are you that your DHB / Employer can provide the PPE you need?

Multiple choice (single answer only)

1 2 3 4 5

Appendix 1

Question 8: On a scale of 1-5 where 1 means "low confidence" and 5 means "high confidence", how confident are you that NZ has the necessary PPE stock?

Multiple choice (single answer only)

1 2 3 4 5

Question 9: On a scale of 1-5 where 1 means "not supported at all" and 5 means "very supported", how supported do you feel to move from Alert Level 4 to Alert Level 3?

Multiple choice (single answer only)

1 2 3 4 5

Question 10: Would you like to have the National PPE stock audited monthly?

Multiple choice (single answer only)

Yes

No

Question 11: Select as many answers as apply. Are you aware of shortages in any of the following PPE?

Long list (multiple answers allowed)

- Face shields
- Goggles
- Masks P2/N95
- Masks e.g. surgical
- Nitrile gloves
- Gloves
- Gowns
- Slip-on shoe covers
- Hair nets / Head hoods
- Scrubs
- Hand sanitiser
- Antibacterial wipes
- Bleach
- Medical Ventilators
- Oxygen Masks
- Oxygen Tanks
- Oxygen generators
- Thermoscans
- None of the above

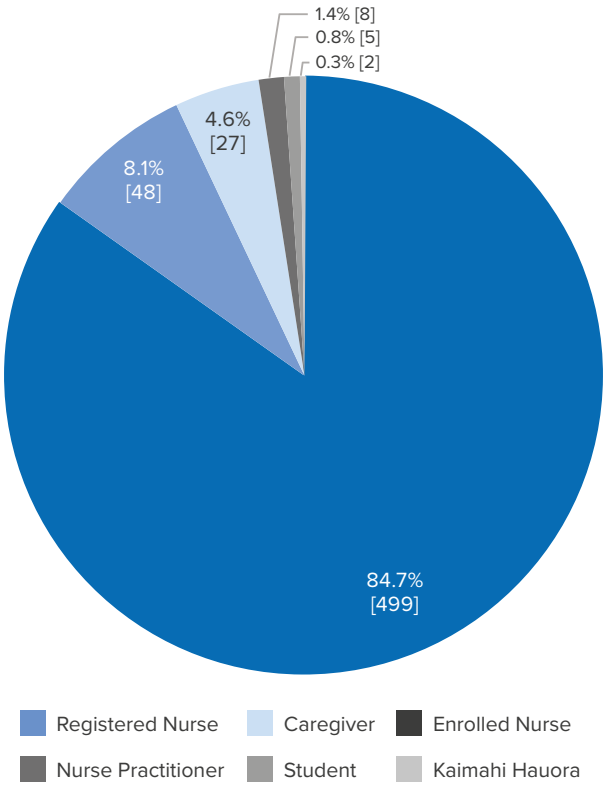
Question 12: Last question. Did you have any other feedback for us?

Free text

Appendix 2: Types of respondents (Questions 1 to 4 by graphs)

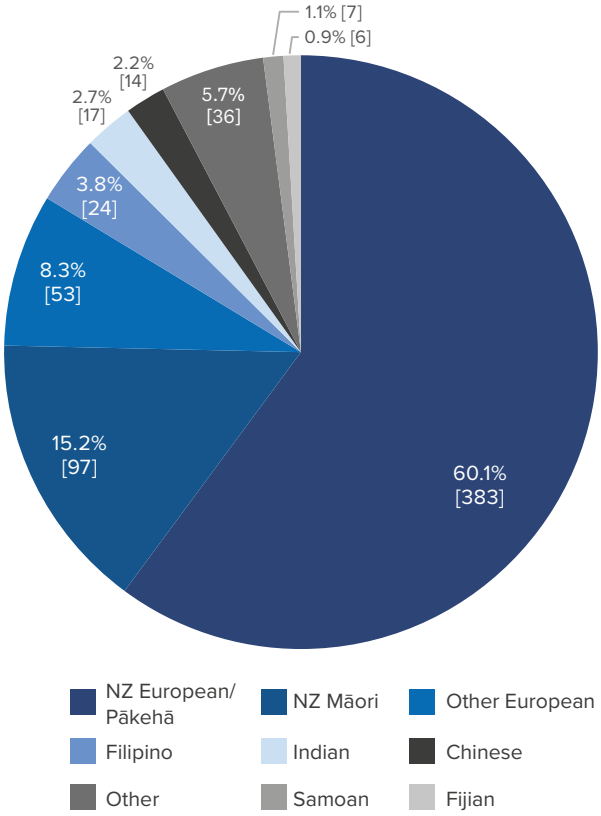
Question 1: Which of these categories best describes you?

[589 survey respondents answered this question]



Question 2. Which ethnic group or groups do you belong to?

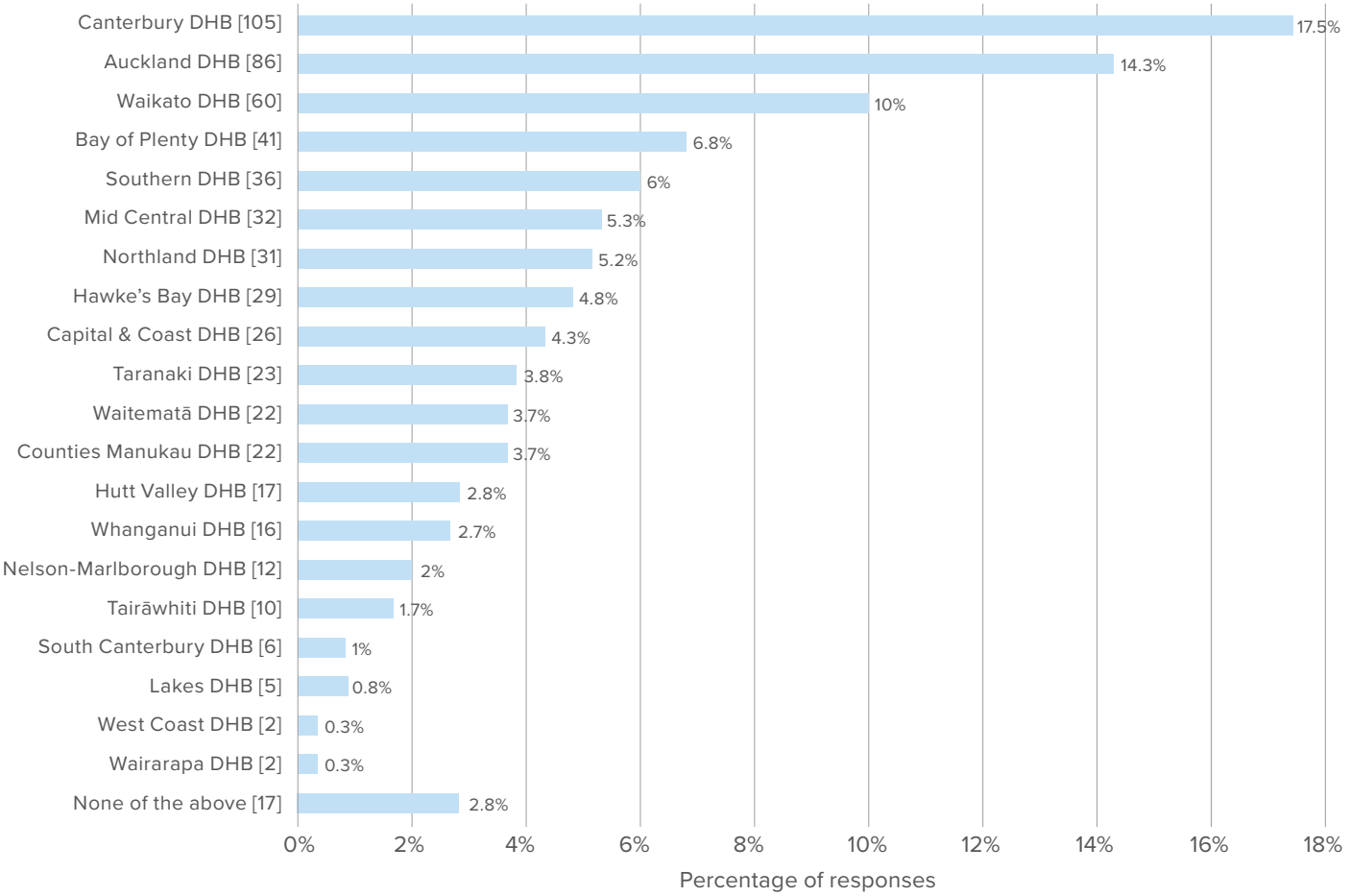
[637 survey responses made by 589 survey respondents]



Appendix 2

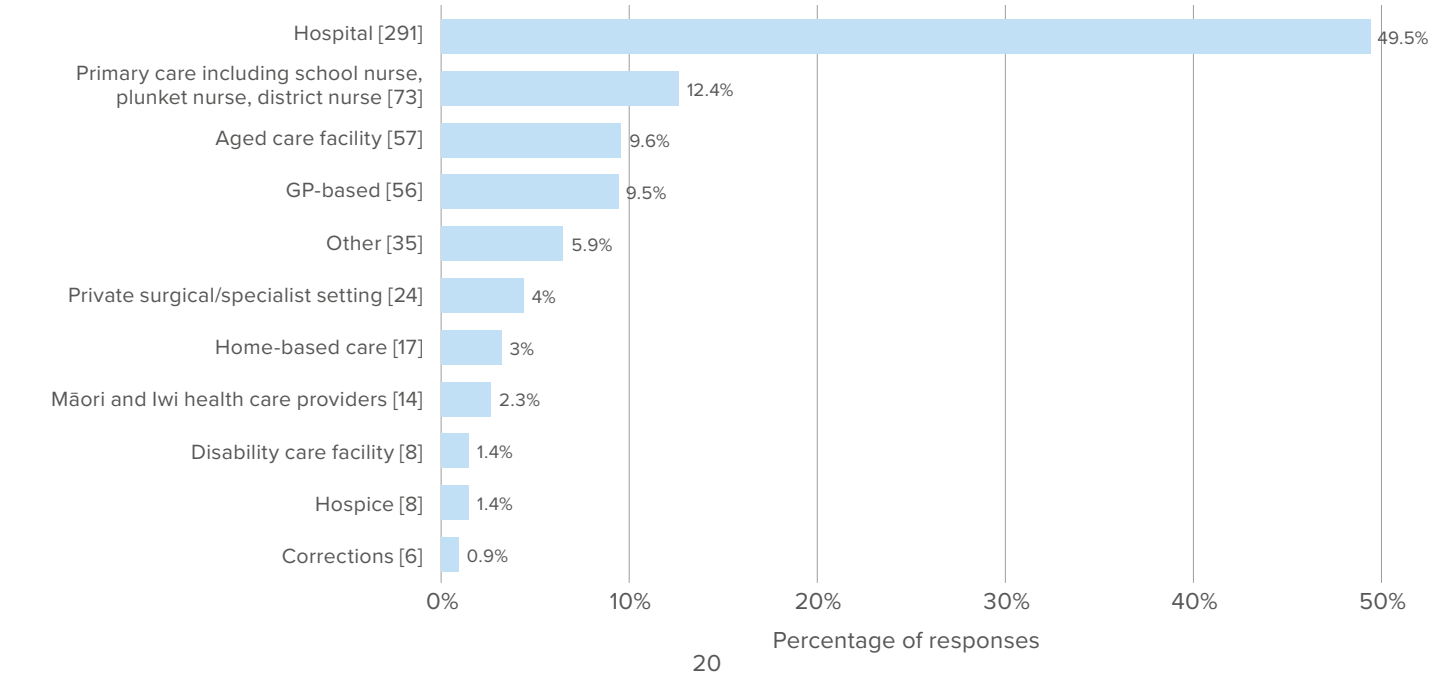
Question 3. Select as many answers as apply. Which District Health Board are you working in?

[600 survey responses made by 589 survey respondents]



Question 4. Where do you work?

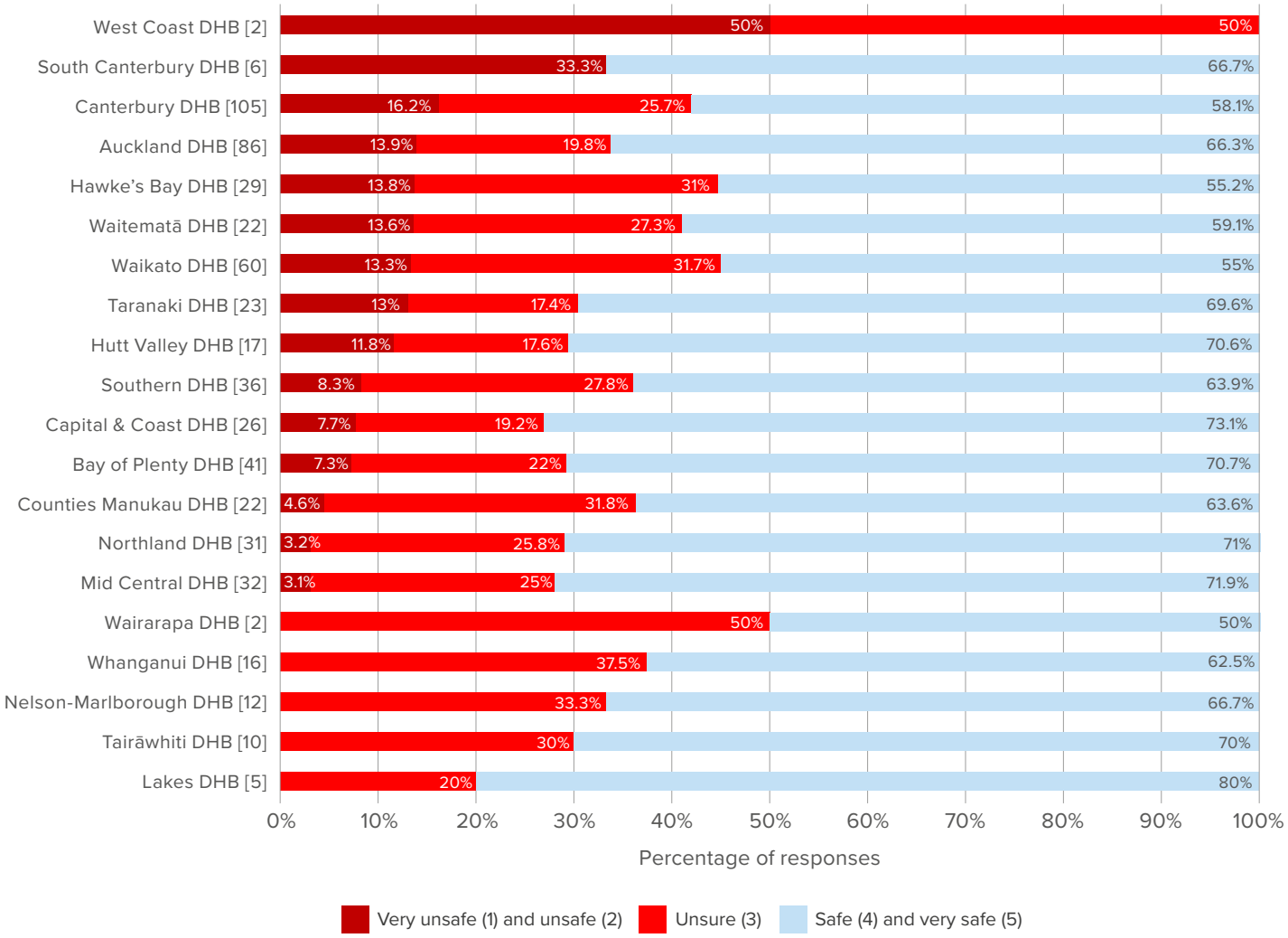
[600 survey responses made by 589 survey respondents]



Appendix 3: Each DHB (Questions 5 to 10 by graphs)

Question 5: On a scale of 1–5 where 1 means 'very unsafe' and 5 means 'very safe', how safe do you feel at work in regard to the human coronavirus?

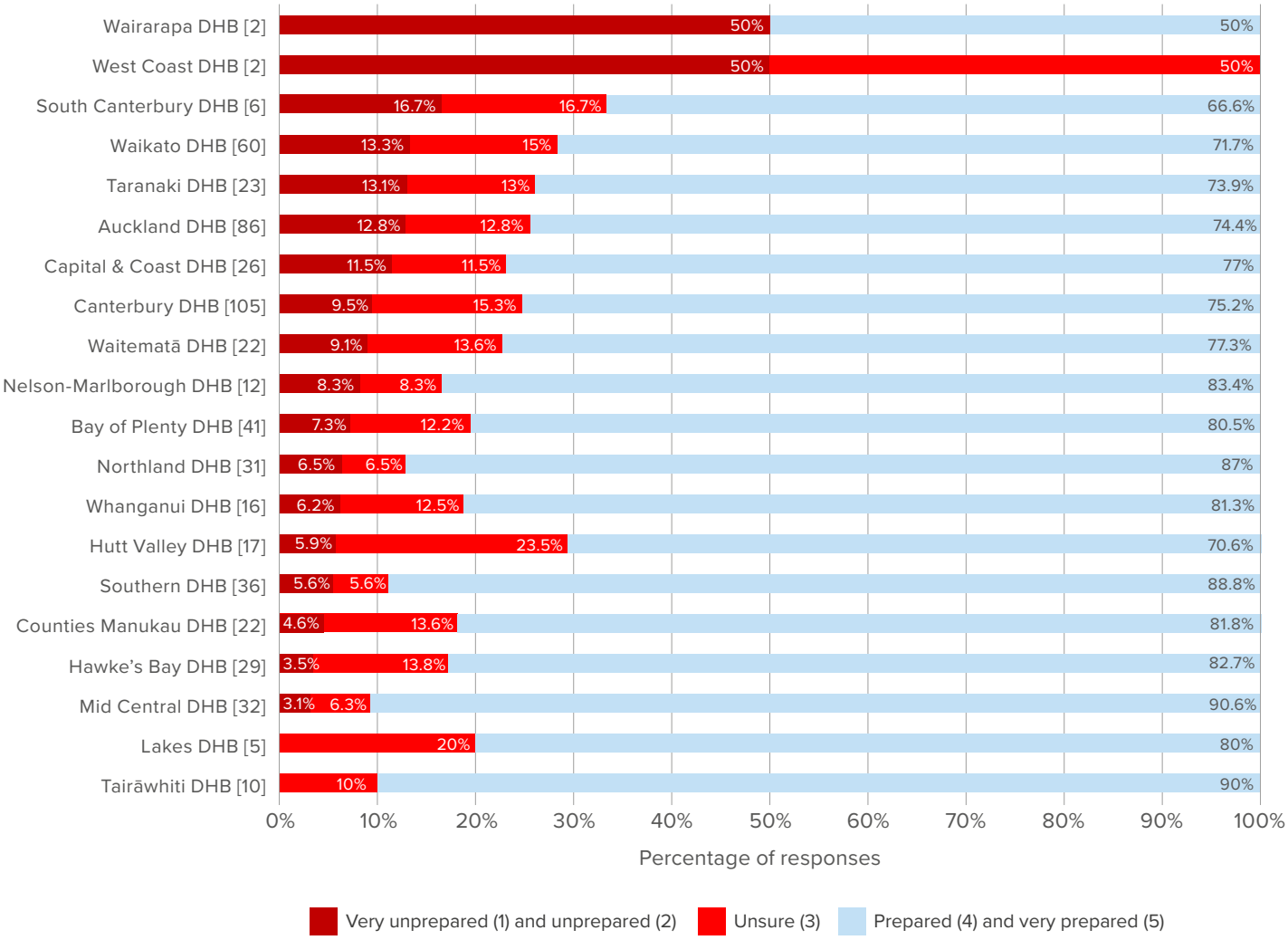
[583 survey responses. Please note we have excluded 17 responses, where respondents did not select a DHB]



Appendix 3

Question 6: On a scale of 1–5 where 1 means 'not prepared at all' and 5 means 'very prepared', how prepared do you think you are you to use PPE appropriately?

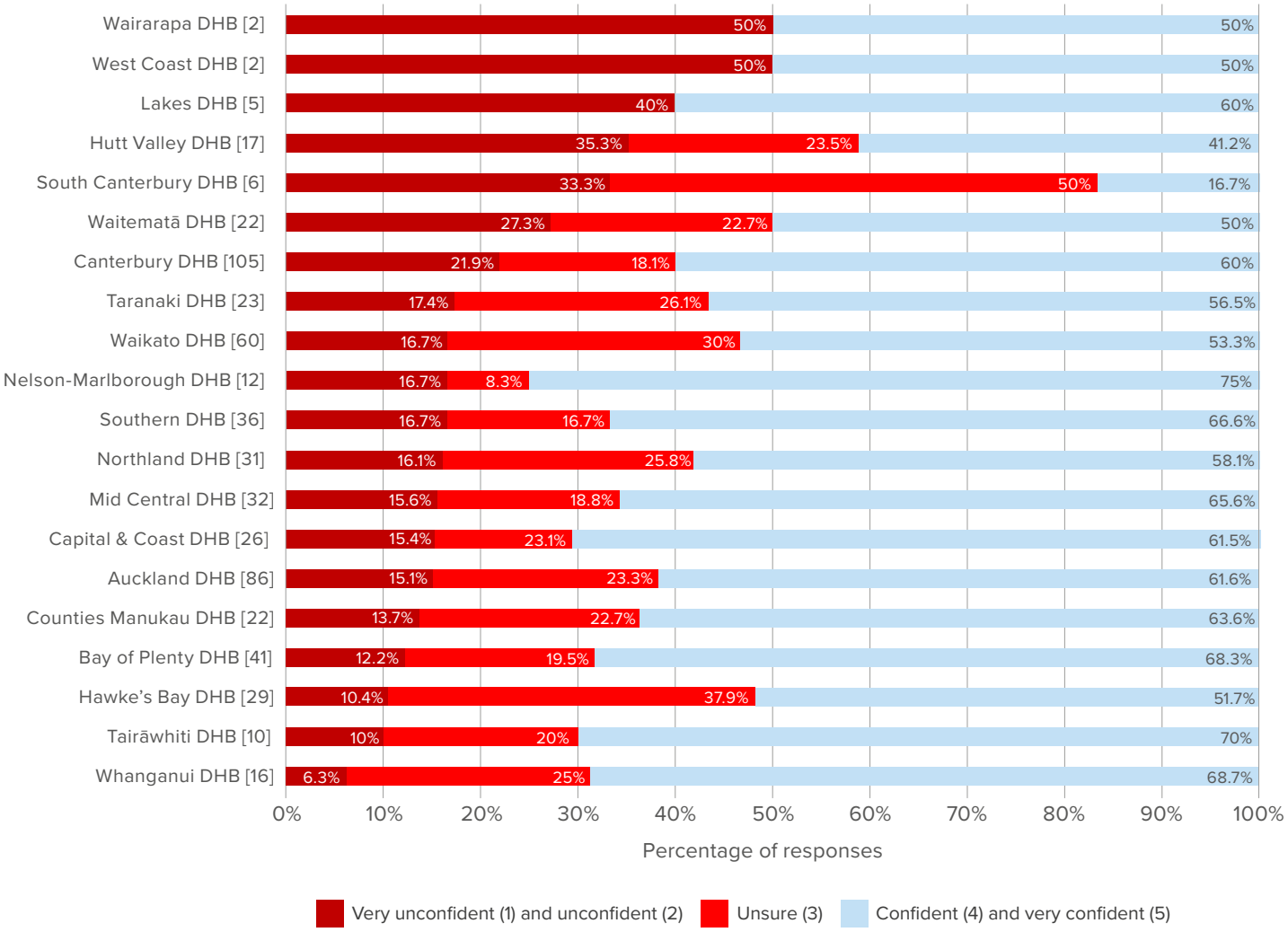
[583 survey responses. Please note we have excluded 17 responses, where respondents did not select a DHB]



Appendix 3

Question 7: On a scale of 1–5 where 1 means 'low confidence' and 5 means 'high confidence', how confident are you that your DHB/Employer can provide the PPE you need?

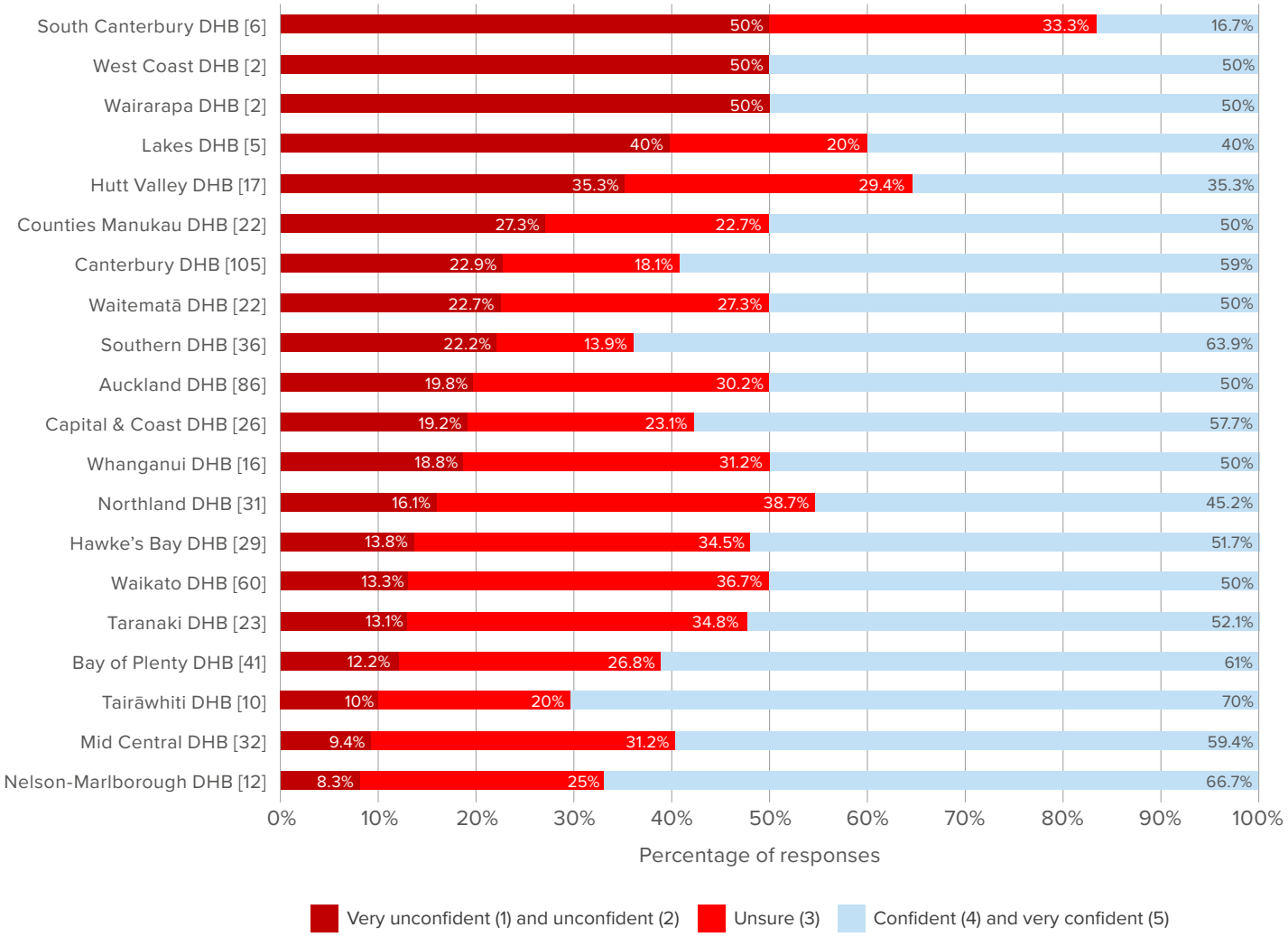
[583 survey responses. Please note we have excluded 17 responses, where respondents did not select a DHB]



Appendix 3

Question 8: On a scale of 1–5 where 1 means 'low confidence' and 5 means 'high confidence', how confident are you that NZ has the necessary PPE stock?

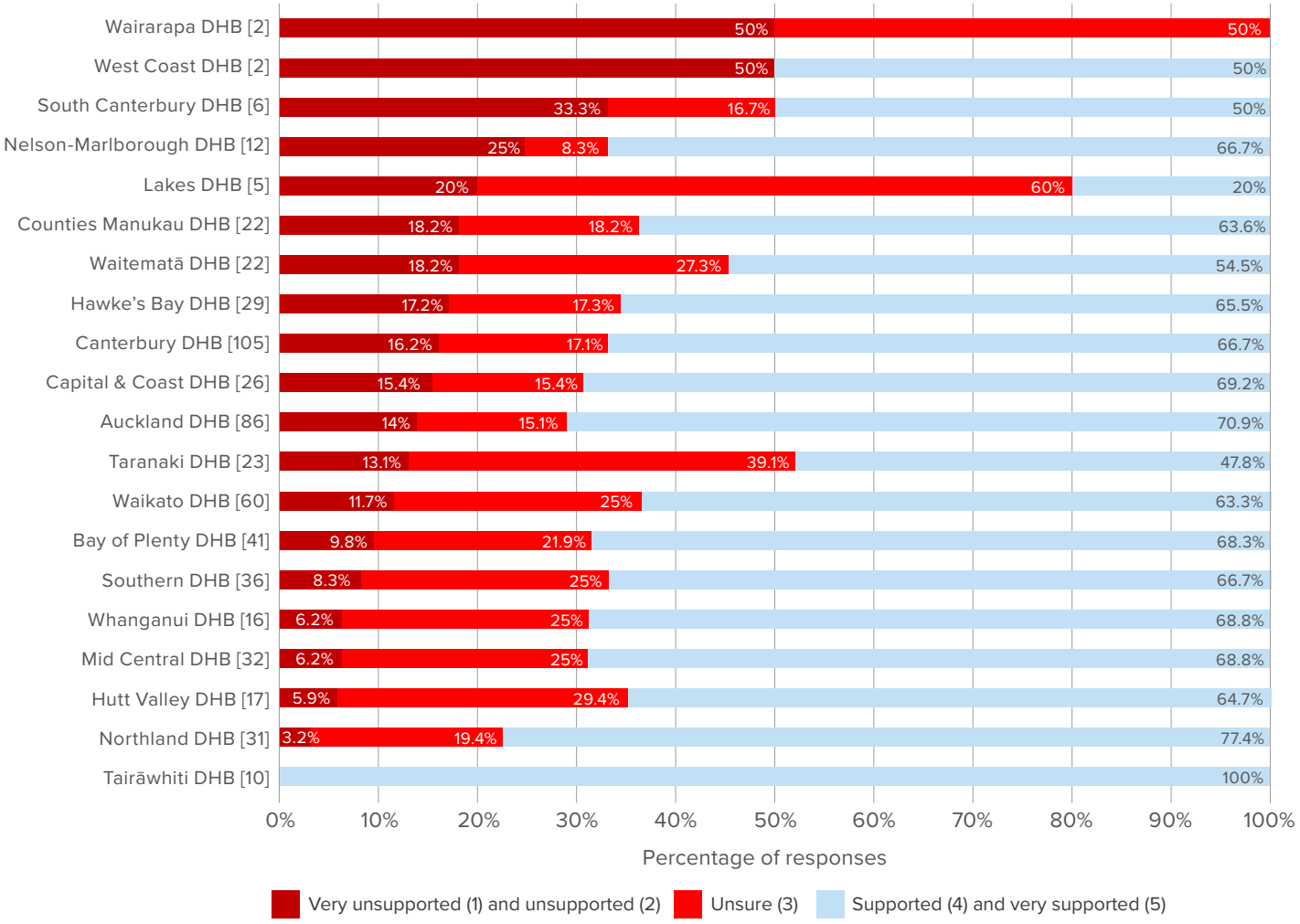
[583 survey responses. Please note we have excluded 17 responses, where respondents did not select a DHB]



Appendix 3

Question 9: On a scale of 1–5 where 1 means 'not supported at all' and 5 means 'very supported', how supported do you feel to move from Alert Level 4 to Alert Level 3?

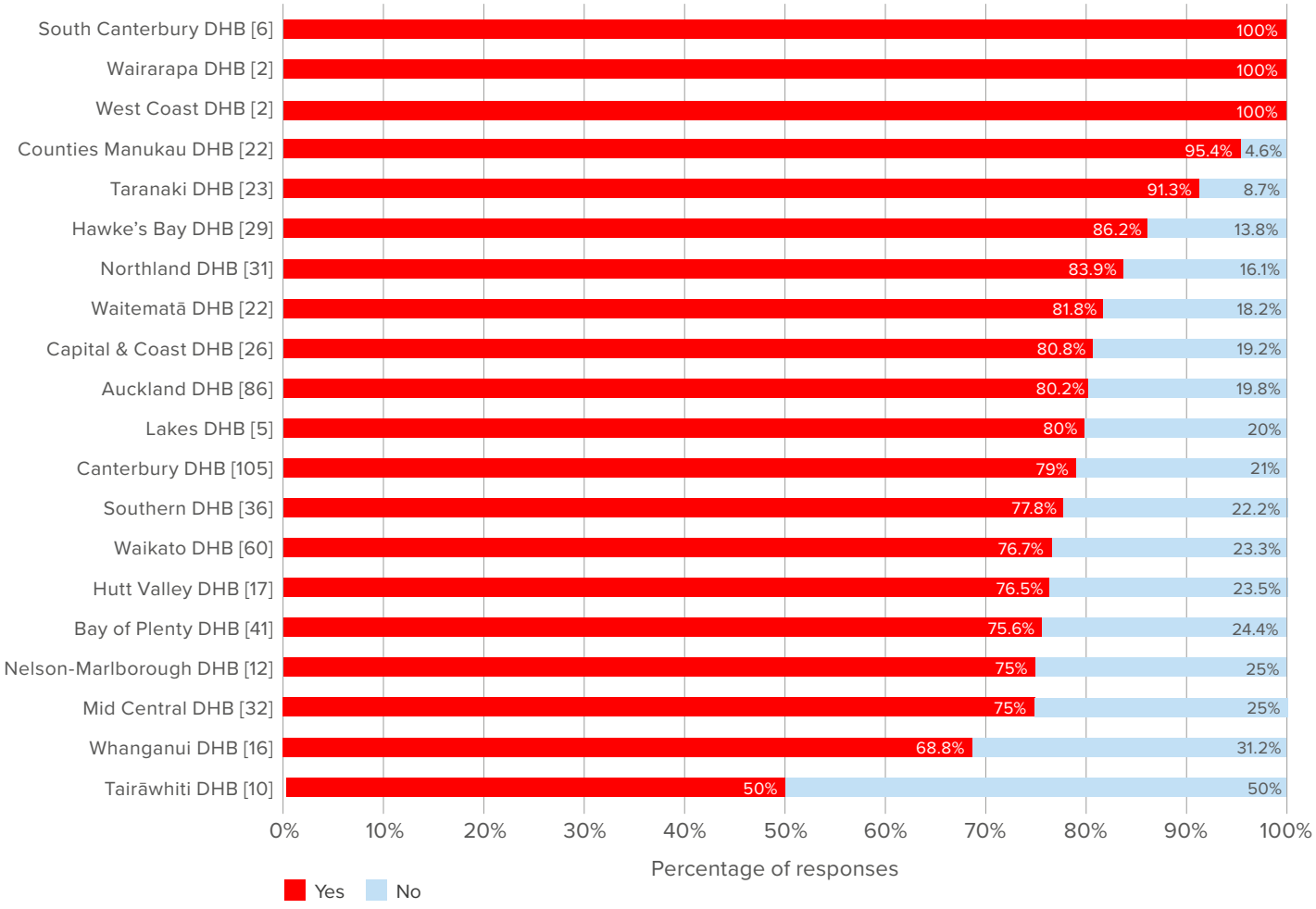
[583 survey responses. Please note we have excluded 17 responses, where respondents did not select a DHB]



Appendix 3

Question 10: Would you like to have the National PPE stock audited monthly?

[583 survey responses. Please note we have excluded 17 responses, where respondents did not select a DHB]



Appendix 4: Each DHB (Question 11 by PPE and other equipment)

Select as many answers as apply. Are you aware of shortages in any of the following PPE?

[Brackets refers to number of responses]	Masks P2/N95	Face shields	Goggles	Hand sanitiser	Masks e.g surgical	Gowns	Antibacterial wipes	Scrubs	Slip-on shoe covers	Hair nets / Head hoods	Nitrile gloves	Gloves	Medical Ventilators	Thermoscans	Bleach	Oxygen generators	Oxygen Tanks	Oxygen Masks
Auckland DHB [86]	50	29	28	24	14	21	25	11	13	8	12	6	3	2	4	1	1	2
Bay of Plenty DHB [41]	13	12	6	8	8	4	7	2	5	5	3	3	2	4	1	1	1	1
Capital & Coast DHB [26]	10	6	5	7	3	5	6	6	3	4	2	2		3				
Counties Manukau DHB [22]	15	11	11	10	8	8	9	8	9	8	4	4	3	3	1	2	2	1
Hawke's Bay DHB [29]	13	16	5	10	9	4	6	10	4	3	3	1	3	1	1	1	1	
Hutt Valley DHB [17]	11	6	5	6	4	7	6		2	2	2							
Lakes DHB [5]	2	3	1	1	2	2	2											
Mid Central DHB [32]	11	12	8	8	9	7	4	5	11	7	4	5	3	3	1	2	2	2
Northland DHB [31]	18	14	13	8	12	8	6	5	9	5	3	6	3	4	1	1	1	1
Tairāwhiti DHB [10]	4	5	1	1	2	1			1			1	1					
Taranaki DHB [23]	8	14	9	3	3	9	8	7	3	1	2	3	2			1	1	
Waikato DHB [60]	26	25	13	19	15	9	12	17	10	8	3	5	5	5	2	2	2	2
Wairarapa DHB [2]	2				1	1			1									
Waitematā DHB [22]	12	9	8	10	6	8	3	8	6	6	4	3	3					
Whanganui DHB [16]	7	7	5	1	6	5		1	4	4	2	4	4					
Canterbury DHB [105]	38	40	22	14	22	11	13	10	10	14	12	7	3	6	1	1	1	1
Nelson-Marlborough DHB [12]	3	3	1	6	1	3	2	1	3	2		2	2	1	1			1
South Canterbury DHB [6]	4	4	4	2	1	2			1	1			1					
Southern DHB [36]	13	16	9	9	5	7	9	9	5	7	4	3	4	4	2	1		1
West Coast DHB [2]	1	1	1	1		1		1	1		1			1				
Other [17]	2	3	3	4	3	2	1			2	3	1	2	1				
Total responses	263	236	158	152	134	125	119	101	101	87	64	56	44	38	15	13	12	12
Total respondents	589	589	589	589	589	589	589	589	589	589	589	589	589	589	589	589	589	589
Percentage (%) of respondents that responded	45%	40%	27%	26%	23%	21%	20%	17%	17%	15%	11%	10%	7%	6%	3%	2%	2%	2%

Appendix 5: Comments regarding PPE products, protocols and other strategic issues

Table 1: Comments regarding PPE products
Note: * Means the comment is included in the main report.

Respondent comment on PPE product	
A: Good access to PPE	
1.	I believe the organisation I work for have our best interests at heart. I would like to acknowledge and thank them for all they have acquired to make the journey safe for us all.
2.	We need to keep ourselves, each other, and those we care for safe, for as long as it takes.
3.	I have been well supported throughout this time. It has been unnerving at times, scary, quite daunting. However, I am lucky to be working with a great team who are supportive of each other. Our team has worked collectively putting together protocols and procedures to help us prepare for COVID-19. By doing this we felt we were listened to and our skills and expertise were acknowledged and utilized.
4.	I think our DHB is doing a good job in difficult circumstances.
5.	I work in an Accident and Medical clinic. Once the COVID-19 CBAC opened in our vicinity the threat of contact without PPE minimised.
6.	I am feeling very well supported and prepared in regards to PPE and COVID-19. Our organisation is working really hard at making sure the appropriate PPE is available in the correct areas and for the correct use.
7.	My workplace is very prepared and had plans in place early for PPE, separate work streams for patients and staff, and had staff allocated to plan and implement these plans.
8.	The GP practice where I work have been amazing, they have sourced PPE from many areas and if we are not adequately covered by PPE for the task we don't do it.
9.	In General Practice the PPE available to order on a weekly basis is: gowns, gloves, eye shields, surgical masks and hand sanitiser. We always have got what we requested. We do not have the option for N95 masks but would prefer these.
10.	So proud to be a healthcare worker.
11.	The situation has improved markedly over the past 3 weeks.
12.	We have been supported well so far with good provision of PPE stock which we are keeping track of by doing weekly stocktakes. [...] However, we would like to have shoe covering which was not been offered.
13.	While our stocks in the med centre are sufficient we are aware that there seem to be shortages and some of stock is on back order but we [...] try to keep ahead of our supplies. Our PPE supplies are good, it's stocking other areas of the practice but we prioritise important products and supplies etc. It's about having a good plan in place, rather than blame shortages utilize, prioritise and plan well.
14.	Not in the hospital as we are well equipped. However, in the community our colleagues there are not as lucky as we are in the DHB.
15.	Every healthcare provider should be prepared and stay alert at all times for any unexpected pandemic that may strike. Our clinic and staff are well prepared. We do a monthly check on all our medical equipment (including partial PPE gear).
16.	I work for a large medical centre in primary care. We have put very good systems in place to protect staff and patients in terms of COVID-19 transmission. However, we have taken a significant cut in wages and have no assurance regarding PPE supplies. It's a very stressful situation going forward. [See also in Table 3, Section C: Insufficient staffing levels and wages]
17.	Our staff are very safe when compared to overseas colleagues as our government's strategy has been to protect the people and the health system. Going to the media is not helpful. Staff are now coming in anxious after listening to news about PPE. Are the media going to help us with managing the hysteria they cause on PPE? We need to be practical and constructive and not destructive. Our public image will suffer since we cannot solve these by using proper escalation methods.* [See also in Table 3, Section D: Disconnect between MoH and DHBs]

Appendix 5

B: Poor access to PPE	
18.	Certain things appear to be rationed.
19.	I have felt generally very unsupported by the higher management in my company regarding PPE. As a front line nurse I did not receive any PPE until two weeks into lockdown and the sanitizer wipes we use as a community nurse is still on back order.
20.	All stock [...] is taken to a central supply place so it's such a hassle to get PPE when needed. Why are DHBs so greedy and protective of their PPE but not staff?
21.	We had no access to masks after four days into level 4.
22.	Scrubs are always in short supply, not just now. Antibacterial wipes are sourced from the UK so had expected them to be in short supply but I can still get them. I would like to have had contactless thermometers.
23.	Supplies are rationed at our DHB.
24.	I have had to purchase my own PPE.
25.	At our facility we have not had our orders for PPE supplied by our DHB when we requested. We have relied on paying for stock and a gift of masks from a private source. We are waiting for an order of gowns requested last week but they have not arrived yet. This is urgent as our stock is low.
26.	My clinic has very low stock of surgical masks and all the suppliers are putting up their prices. I do not know where we can order or get surgical masks for staff to use.
27.	On the first week of lockdown management hid PPE equipment from staff. When asked, we were told they did not have enough for everyone. On the second week of lockdown masks were visible for isolated clients.
28.	We have to reuse disposable glasses and have been told gowns are in short supply. We had to purchase our own scrubs and we have no access to shoe covers and head protection.
29.	PPE for coronavirus is OK. However, we are having to fight for PPE for other purposes to protect ourselves when caring for patients e.g. MRSA, ESBL, gastro and anything in isolation that requires a gown.
30	We also have not been able to order thermometer covers for thermometers. Need ASAP [...] We ordered 2 April and followed up weekly and will not get before 29 April. Really hard to follow current guidelines. Our DHB is trying to help us out.
31.	PPE was not readily accessible. You have to rationalize to your coordinator or team members to get your PPE. Very discouraging approach from management as their aim seems to be to save PPE rather than save staff exposure.
32.	We as a small GP practice. It took us three weeks to get PPE gear so we purchased our own PPE in the interim (which I found stressful).
33.	We have received notification that our supplies of 3M N95 masks are limited as the suppliers in Europe and US have stopped shipping equipment off-shore.
34.	Masks are limited to 50 at a time when I order them. And I would feel safer if we were able to get 2–3 boxes at a time.
35.	Unable to order stock for long periods of time. Now provided with limited rations of select products only.
36.	We had to be proactive in stopping our gear from being taken by other areas.
37.	Slow arrival of DHB/MoH promised PPE.
38.	It is difficult to get supplies of masks, gloves, hand sanitiser, antibacterial wipes and liquid soap from our usual suppliers as this has all been earmarked for the hospitals (DHBs) as priority. Despite the fact that we are swabbing COVID-19 people and are on the front line. People come to GPs first.*
39.	Knowing there is a shortage of N95 masks makes me nervous and scared.
40.	Our DHB is not supplying N95 masks so where do we get them from?
41.	If we were shown to have more than one set of PPE gear for each car we would feel more comfortable knowing it was there for us to use as required.
42.	I am working in a private company and need to source PPE from medical supply companies.
43.	When this all started we bought PPE gear for $800. Less than two weeks later the same gear was $3000!

44.	I would like to have the option to use PPE when I deem it necessary (not to have it secured behind locked doors).*
45.	When ordering stock (e.g. gloves) they are put on back order, so we run out while waiting for back orders to arrive. I went an entire week without the correct size gloves. We are having to re-use goggles and don't have access to face shields and we are doing COVID-19 swabs.
46.	At the department of xxx, we do not have the correct PPE and there seems to be very little communication with staff on the floor in regards to cleaning processes or plans going forward. [...] We have not been supplied bleach for the xxx unit and although we have been asking there seems to be no telling when or if this will show up so we can clean out units effectively.
47.	Our PPE does not include eye protection.
48.	Our NGO does not provide face masks or gloves or any PPE gear.
49.	I feel very supported by the DHB in regards to PPE. The access to PPE is another thing, where I have noticed that masks and hand sanitiser has been locked in xxx or xxx's office (unsure of whether office is locked etc). The main issue I had with the outbreak was the preparation of the DHB to their staff in regards to donning and doffing uniform at work and the lack of policy and procedure behind the fact.
50.	From an registered nurse point of view I don't exactly know what PPE gear we have in stock. You just hear from circulating rumours that we have xxx masks in stock. Only our xxx knows what we have and how much of it we have. What we hear about our stock does not reflect what's been brought out for staff to comfortably use. It's like we have plenty of stock but 'we can't use it just in case we need it'. I just stated what PPE equipment we are short of because I don't see this equipment freely available.
51.	With some of our PPE we have to ask our supervisors to get the stock for us when restocking areas. We are not made aware of where the additional PPE is kept or what the stock levels are. We have previously run out of hair nets and face shields; it is always difficult to get our hands on these when urgently needed.
52.	We were wholly supported with gloves for our job, but masks were very few and were lucky to get even one mask otherwise we had to pay for our own masks. Our clients felt more safe with us also having the face masks. Because we have to go shopping (like everyone else) so our masks were part of us protecting ourselves and our clients as we were going into their homes.
53.	We were given one box of gloves. When the company heard the MoH was going to check facilities they put out made boxes available.
54.	When requesting more PPE it feels like we are having to 'beg' for it. Our supply department are rationing equipment, which I get, but they are also struggling to get adequate supply of certain items, most recently gowns.
55.	We have stock but has to be kept aside and use monitored. When low takes a lot of effort to restock.
56.	Government is not being truthful in the media about PPE (and assistance to all medical staff) or availability of the Flu Vax (as medical centres are saying they are not available to them).*
57.	In the ED we have had a shortage for all of the above. Senior staff would have to hide the equipment and only allow a particular amount of equipment per shift (meaning you could be wearing the same surgical mask for an entire shift). Policy in my DHB states N95 masks should only to be worn for COVID patients when staff are nebulising or intubating. However in the community I have seen staff who I know work in the rest homes shopping in a local Four Square wearing N95 masks and surgical gloves. I feel as though staff such as this do not require this level of equipment when they do not have the education to go with it, particularly when ED staff is struggling without. [See also in Table 2, Section A: Poor or conflicting guidelines and practice]
C: Poorly fitting or inappropriate PPE	
58.	Our gowns are not impenetrable; they open at the back and tend to rip.
59.	N95 fitting was not available due to shortage of N95. When questioned how safe will we feel to go into patients rooms with uncertainty of fitting – answer was given fit to best possible way. That felt unsupported.
60.	Please consider full body covering gowns.
61.	It's not always the amount of PPE available but that it doesn't fit the face correctly.
62.	Goggles don't cover glasses properly. No face shields available.

63.	At my DHB nurses are not allowed to wear scrubs as part of PPE. They tell us that the yellow gowns (one size fits only a few) are all we need. These gowns rip when any tall (let alone chubby) moves in them. The masks FFP2 have about a 35% secure fit and we have yet to train all staff even in high risk areas. We are now being told to collect FFP2 masks so they can be decontaminated and re-used. I do think they can decontaminate for COVID-19 but can they actually do the same for the bacteria (I do not want to wear a mask that is sweaty, has face oil and potentially someone else's oral bacteria over it). It is simply unacceptable and we have only had a few COVID-19 patients. We have been lied to for years. The stockpile they talked of, they said had two weeks' worth of PPE, but they couldn't tell us if this was for use at BAU, 50 patients or 500 patient rates. [See also in Table 2, Section A: Poor or conflicting guidelines and practice]
D: Re-use of existing PPE	
64.	I feel that the DHBs are trickle feeding the PPE equipment [...] we don't have enough visors so we need to reuse them [...]
65.	I don't know how I feel about this but we have to keep our used N95s for sterilisation and reuse.
66.	We have been informed by our DHB that N95 masks are in short supply and that they are considering cleaning and recycling them. This is not acceptable.
67.	I know our DHB doesn't have enough face shields, we are having to wash and reuse them. We asked at the beginning if we could have one each and were told no. There weren't enough to go around and the budget didn't allow for that.
68.	My employer has locked masks and gowns away from us. We have been short of hand sanitiser. Nurses have been re-using face masks when treating those with suspected COVID-19.*
69.	Can you please let people know that even though the government states there is enough PPE, DHBs are telling staff not to waste PPE and are actively encouraging staff to only use PPE for confirmed and probable cases. We are also being asked to reuse PPE. [See also in Table 3, Section D: Disconnect between MoH and DHBs]
E: Expired PPE	
70.	Staff in our ED discovered that some of the masks they have been using expired in the year 2000. They discovered this as the masks smelt strange and musty. Our DHB will not disclose numbers of PPE available, there should be transparency here.

Table 2: Comments regarding PPE protocols

Respondent comment on PPE protocols	
A: Poor or conflicting guidelines and practice	
1.	It took time to get masks available for home-based support providers. Challenging when people public and support workers wanted masks when they were not recommended.
2.	Are hair nets and shoes covers required? We have been told they are not provided.
3.	Everyone should have the same level of understanding with PPE. Currently we do not use PPE when we have low COVID-19 risk patients. However, when you go to other wards/places etc, they are all wearing masks etc, which makes you feel like either your ward is unsafe or they are inappropriately using PPE. Clear guidelines are needed for all to ensure the correct and appropriate use of PPE.
4.	Current DHB lacks communication around PPE in terms of supply and distribution.
5.	The MoH state that surgical masks are adequate for primary care but I feel that any healthcare personnel swabbing patients should wear an N95 mask
6.	We have stock but have been told there is a shortage and to use wisely.
7.	Very confusing going from lockdown 4 to 3. During 4 we were asked to use full PPE in negative pressure room. During level 3 being told a surgical mask is enough.

8.	Hospital policy means current PPE is only suitable for probable cases. I am concerned there is no adequate policy for positive patients (i.e. confirmed cases).
9.	The issues are how we handle patients; it starts at the front door and some doctors/nurses do not follow 'all the procedures' which increase the risk of infection to other staff.
10.	I have been told hair covers and shoe covers are not required however I constantly see (via media) healthcare workers wearing them in other areas. [...] Colleagues not prepped to cope, lack of understanding. Care workers in rest home wearing uniforms in supermarkets.
11.	We have no idea what the stocks are [...] we just run out and ask for replacements as everything is locked away. I don't know how much there is in stock nationally but am dismayed to hear that a lot of the national stock being distributed is not fit for purpose. We have been told we are not allowed to use N95 unless in direct care of COVID-19 patients. [...] No foot or hair covers are available and we have been told we are not capable of using them properly according to the research (which is majorly flawed). We get questioned if we do use a mask in the acute areas of ED. A lot of pressure is on nurses not to use PPE despite all the research that is coming out of China and Italy and the death rates of nurses who do not have PPE in America and England etc. [...] We need employers and the government to be accountable through the Health and Safety at Work Act 2015. [See also Table 3, Section B: Lack of preparedness]
12.	Hair nets and shoe covers have not been included in our PPE supply on my ward, I asked about this and was told it was unnecessary, is this true?
13.	[We have been informed that we] have stocks allocated and sitting in our sheds and [these can] be replenished as needed. [Also] what is an alternative to PPE gear? Do we have gear we can wash down and sanitise as opposed to throwing away? Should our PPE gears be incinerated instead of going into general rubbish?
14.	Is it reasonable for a registered nurse to decide to wear an N95 when dealing with a COVID-19 positive patient (rather than wearing a surgical mask) – if the registered nurse does not feel safe?
15.	We were provided basic face masks two weeks ago. We received an N95 mask in mid-April. Originally told PPE was not necessary unless nursing a COVID positive patient and that thorough hand cleaning was sufficient.
16.	Yes we are not told there is a shortage but huge emphasis on limiting easily accessible supplies. Initially we were told to re-use surgical masks. [...] Not happy with insistence on wearing surgical masks with suspected COVID-19 patients. [...] I would be very concerned if NZ had major community outbreaks.
17.	Our DHB is still not providing us shoe covers. They have told us these are not needed. The head covers were given out only after a lot of staff requested them (but there is not enough if the ward gets full). The goggles and face shields are being cleaned after each use and then reused. We have asked for personal goggles but they said we don't need them.
18.	Even at Level 4, [although] ED personnel have been prepped with how to manage patients coming in to the hospital [...] but the wards have been left to organize themselves. I feel as healthcare workers we should be wearing masks at the very least, 100% of the time at work as we cannot be sure if we are nursing asymptomatic COVID-19 patients or passing the virus to other patients if we as nurses are asymptomatic. Currently, we are told it is voluntary if we use a mask or choose not to as we don't have any COVID-19 positive patients on our ward.
19.	The DHBs are following MoH guidelines, which I believe are woefully inadequate. Given the lack of evidence around airborne transmission (which CDC says is still uncertain), we should be using N95 masks as a precaution. But given the mandate from the MoH, this is not advised.
20.	Our DHB recommendations for ward nurses (so not ICU or theatre): eye shields (have not seen goggles yet), surgical masks, gown and gloves, as appropriate, when nursing COVID-19 positive patients and does not have the aerosol producing procedures. I cared for a suspected COVID-19 patient in a negative pressure room who was symptomatic who later tested positive. I was able to wear a N95 mask. However, the recommendations for suspected patients does not include hair covering or shoe covering or face shields. This patient was coughing. PPE is at the discretion of the manager who is able to access supplies. The staff on our ward are so concerned that we have purchased face shields with our own money, I am considering making my own head gear. There are very limited changing facilities for taking off uniforms at start and end of shifts, let alone shower facilities.*
21.	Need consistent information on how long the PPE lasts once worn...two hours or full eight hours? Surgical masks, when do they need to be changed?*

Appendix 5

22.	Not so much concerned about the PPE, but lack of cleaning regimes of our communal and regularly used work areas (not just the rooms the infected patients are looked after in). Other areas include the nursing/doctor stations, note folders, work tops and computer keyboards etc.
23.	We are not given the option of face shields or hats, we have been instructed that a mask is enough and that adding a hat will risk contamination in the doffing process, face shields are only for intubations! Given the recent scientific evidence to say the virus can stay in the air for up to 12 hours I think that a hat and face shield for the direct care of this group of patients should be a given.
24.	I tested positive from work due to not having time to come out of the ward and change my mask/gown when saturated in the very early stages. This has improved now according to staff working on the ward.*
25.	It's better to do COVID-19 test for the all suspected cases even though they are palliative, so that we can preserve more PPE.
26.	Would be good if DHB supported primary care rather than expecting them to order through their normal channels and then contact if had problems. Also GP practices were expected to swab COVID suspected patients prior to setting up community-based assessment centres (CBACs) for testing when there was very little PPE. When stock is rationed PPE is likely to be rationed and not used for fear of running out.
27.	My colleagues have expressed frustration around the difficulty of getting the requested PPE equipment and other supplies. At times it feels like those in the big white hospital do not view psychiatry as a high risk area, despite us continuing to work in the community. We continue to respond to psychiatric crises. I do, however, still believe my managers have been doing the best they can to ensure we get the equipment we need.
28.	My ward is not using PPE because there are no cases on my ward. This makes me feel unsafe as there are cases in other parts of the hospital. It takes two weeks for symptoms to appear and therefore we cannot be sure there are no cases on our ward. This gives me anxiety.
29.	Our DHB has had adequate stock, even though WHO guidelines do not insist on shoe covers this remains a topic of concern.
30.	I do not work in the COVID-19 ward, however we have had patients admitted to our ward who were later transferred to the COVID-19 ward. The damage is already done; there is not enough or nil PPE equipment available (or just masks) and we were told that we did not need to wear a mask on this particular ward. The patient was later returned to the ward. Fortunately the patient was negative following the swab.*
31.	Conflicting information on what PPE is available is disturbing. Also, news today that COVID-19 is more highly transmissible in the air is disturbing as we have been told no mask or just a surgical mask is sufficient.
32.	Is it appropriate for staff on wards not dealing with COVID-19 patients to be expected to wear the same surgical mask for the whole shift to conserve supplies?
33.	I was told at start of Level 4 that I was not allowed hand sanitizer and masks by manager, but after a number of requests I finally got it. Have been told that hairnet/shoe covers are not needed! [...] No communication regarding DHB reorganising [...] Poor care being given to patients as no-one prepared to listen.
34.	I am not happy that in our DHB the red/hot areas does not require hair cover. I questioned this policy as I feel that this is not just droplet but airborne first and was requested to stand down by email. I have been saying this for a month. I have worked in ICU for 20 plus years and worked through many pandemics, ventilation disconnections, changing over in line suctions, intubating and extubating, as well as the non-vent patients coughing etc on you. I feel I was bullied when I tried to raise a question of safety for our nurses. I am disappointed by this attitude. The same manager told a nurse that if a patient was arresting then she had to go in straight away and intervene. The nurse (a union rep) questioned this as she felt the health professional should gown up first. This is in line with international practice. There is no emergency/situation that cannot wait for the PPE to first be put on (front line staff are dying overseas). [...] I want the union to stand up loud and clear and get nurses' hair covered up! Insist on full PPE before any emergency intervention. Please hear our voice.
35.	Perhaps a question on direction from management on use of PPE and if we agree/disagree. I have gone with looking at each situation independently and used the necessary PPE that I felt comfortable with at the time. This may have gone against management directive – e.g. early use of mask and gloves.
36.	The lack of PPE question is often confused with what guidance we have been given regarding what PPE to use (i.e. a surgical mask for COVID patients, unless aerosolising procedures/BiPAP/high flow nasal prongs/men's etc).

37.	I feel that N95 masks should be worn whenever entering room of suspected COVID-19 patients, rather than just a surgical mask.
38.	My DHB has got enough PPE, but they use policy as a tool to guide frontline people not to use PPE.
39.	When this all started we were given one surgical mask per shift. Now we are allowed two. We have been given no guidelines on if we are allowed to take them off for morning tea/afternoon tea, change or keep the mask when going to a different patient. Or even if we can take it off to have a drink of water, or if that means we need a new mask.
40.	At my DHB nurses are not allowed to wear scrubs as part of PPE. They tell us that the yellow gowns (one size fits only a few) are all we need. These gowns rip when any tall (let alone chubby) moves in them. The masks FFP2 have about a 35% secure fit and we have yet to train all staff even in high risk areas. We are now being told to collect FFP2 masks so they can be decontaminated and re-used. I do think they can decontaminate for COVID-19 but can they actually do the same for the bacteria (I do not want to wear a mask that is sweaty, has face oil and potentially someone else's oral bacteria over it). It is simply unacceptable and we have only had a few COVID-19 patients. We have been lied to for years. The stockpile they talked of, they said had two weeks' worth of PPE, but they couldn't tell us if this was for use at BAU, 50 patients or 500 patient rates. [See also in Table 1, Section C: Poorly fitting or inappropriate PPE]
41.	In the ED we have had a shortage for all of the above. Senior staff would have to hide the equipment and only allow a particular amount of equipment per shift (meaning you could be wearing the same surgical mask for an entire shift). Policy in my DHB states N95 masks should only to be worn for COVID patients when staff are nebulising or intubating. However in the community I have seen staff who I know work in the rest homes shopping in a local Four Square wearing N95 masks and surgical gloves. I feel as though staff such as this do not require this level of equipment when they do not have the education to go with it, particularly when ED staff is struggling without. [See also in Table 1, Section B: Poor access to PPE]
B: Not enough information and/or training on use of PPE	
42.	All health departments need to have an education day on correct use of PPE. I am sure that none of us has been prepared for such an outbreak. Maybe we need to have stocks for pandemic such as COVID-19 and stocks rechecked and redistributed yearly. Perhaps this will build confidence in the health workers knowing that we will be protected too.
43.	Education sessions on COVID-19 and isolation precautions given to staff each shift initially, but some casual staff missed. Regular infection prevention and control (IP & C) education given annually, or to new staff within 6–12 months. Adequate number of pre-packed isolation room bins no longer kept in preparation for any outbreak.
44.	Information on PPE has been inconsistent, disjointed and a major failing.
45.	Shocking how ill-trained GPs are in using PPE.

Table 3: Comments regarding PPE strategic issues

Respondent comment on strategic issues	
A: Not enough transparency around supply and distribution of PPE	
1.	Are DHBs actually distributing the PPE or holding on to it 'in case'? If so, why? They need to be more transparent.
2.	This COVID-19 virus will still continue even though lockdown will be lifted. It will be better if everyone continues to be vigilant and careful. Please ensure all facilities, especially the vulnerable ones, have enough supplies of PPE not only for patients but for healthcare staff.
3.	For my work place it wasn't that NZ didn't have enough PPE it was the distribution and early advise on the need to use the equipment that was the problem. Ordering was restricted and while I understand the need to make sure stocks lasted getting what was needed was problematic
4.	I have had an issue where PPE control/ordering has been handed over to the DHBs and despite putting in a very modest order for PPE for our practice, it was halved by the DHB as deemed not necessary.

5.	Initially it felt difficult to secure enough PPE, it seems that the DHB viewed themselves as front line staff and not those of us working in the various services in the community. It would have been better to have passed the PPE onto rest homes and community services delivering care in the initial stages of prevention.
6.	I think distribution and communication has had its faults, or lapses, yet overall I think some cases, magnified by critical media, contributed to the public perception that New Zealand is lacking. Perception and distribution/ communication is the real topic. Like the Canterbury earthquakes, the public system could not be totally prepared to just seamlessly go from whoa to go. I think we have responded professionally and publicly with a great deal of admiration. [See also below, Section D: Disconnect between MoH and DHBs]
7.	While I understand concern we have to be wary of undermining the Government's response by alarmist messaging. [See also below, Section D: Disconnect between MoH and DHBs]
B: Lack of preparedness	
8.	This is very intense situation. Why not create a specific area for suspected patients and send them to respective wards once the result are back?
9.	This survey means nothing to health workers who have already been infected. We need to plan ahead before the lockdown instead of doing a survey once the pandemic has already been controlled.
10.	Slow response from DHBs re using PPE and poor care of staff and the patients we serve.
11.	We have had periods of low stock/shortages during the preparation and initial weeks (approx. 1–2 months ago). This seems to have been largely resolved. My concern is, going into the winter months, that we will be entering a period of over sensitivity when it comes to isolating on suspicion of COVID. Faster testing in regional areas will make a massive difference to lessen the strain on PPE stock, as currently, patients are isolated in full PPE for up to three days before testing negative. Local testing could decrease that time to four hours and decrease PPE use accordingly. Please pass it on!
12.	[I have] heard that the DHB only has 2 weeks supply of PPE. Some areas in hospital have applied physical distancing, others areas are using surgical masks, [but they] have been told by management they cannot wear them and are wasting PPE. When we are working clinically with patients it is impossible to keep 2 m distance so surely we should be able to use masks to keep us safe.
13.	We just had to buy a lot ourselves at the start as there was no stock issued at the Level 4 start.
14.	I think nurses as a group have been happy and confident to work with the PPE we have been provided, though there appears to be some nurses who are making opinion-based arguments to the media and social groups – often based out of fear and anger. I feel this would have been mitigated had there been a bigger supportive education drive. I think most staff would have felt better supported having the rationale behind the PPE rather than just being dictated to by the management/DHB. I was also surprised we didn't have a larger discussion relating to pandemics and their planning (e.g. after the Ebola outbreak) and after the Christchurch earthquakes and shootings. It is not unusual for this type of forward thinking to be ignored as part of a cost cutting exercise and as a consequence is managed in hindsight.
15.	DHBs are very inpatient focused and planning is slower to reach community and outpatient areas where pandemics start (so delays in rollout of specific information and resource should have gone first).
16.	I've given my answers based on here and now. If you had asked me the same questions at the start of the COVID-19 crisis I would have said we needed more training to use PPE and more people on shifts so we could have frequent breaks when needing to change PPE. Lots of lessons learnt at the cost of some poor dedicated nurses.
17.	More understanding of the method of virus spread would assist staff to understand what level of PPE is needed.
18.	Community very unprepared at the beginning of Level 4 with PPE not available initially when patients or family have symptoms.
19.	Initially in the week leading up to the lockdown, we didn't have confidence (unable to get goggles and face shields) but now we have a good supply. If we had a high use of PPE at the start of the lockdown, I think we would have had to fight/really justify our supply.

Appendix 5

20.	The one thing I haven't heard mentioned is all employers (and this includes self-employed such as midwives) have a responsibility to hold sufficient supplies to keep themselves and staff safe during a pandemic. This has always been the responsibility of the self-employed (to look after own health and safety), but it has obviously been long forgotten.*
21.	When we initially went into Level 4, the management plan at the hospital was so chaotic. Too many egos, no real leadership. Different messages every five minutes. The rules and parameters kept changing for who was tested for COVID-19. Mainly medical staff kept changing the parameters. There was no clear path of communication with the nurses on the front line. Many of my peers were put under more stress due to this. I feel the NZNO needed to have a stronger presence, be more visible and present during this time for the nurses.
22.	I think there is a lack of leadership nearer the coal face with nurse managers making decisions that are not necessarily supported by evidence but there is no one at the next level offering cohesive informed advice. Too many areas seem to have been left to make decisions on their own.*
23.	Very distressed that nurses at Burwood developed COVID-19 due to a lack of PPE. Also very concerned that nurses testing for COVID-19 are not wearing protection on their hair even though we know the virus survives on hair. Extremely disappointed at how ill prepared DHBs have been considering we knew in January this was coming. January was when the Ombudsman should have reviewed the rest homes to ensure they were ready. Too late now, people have needlessly suffered and died. I hope NZNO holds the DHBs accountable for putting so many nurses' lives at risk.
24.	We have no idea what the stocks are [...] we just run out and ask for replacements as everything is locked away. I don't know how much there is in stock nationally but am dismayed to hear that a lot of the national stock being distributed is not fit for purpose. We have been told we are not allowed to use N95 unless in direct care of COVID-19 patients. [...] No foot or hair covers are available and we have been told we are not capable of using them properly according to the research (which is majorly flawed). We get questioned if we do use a mask in the acute areas of ED. A lot of pressure is on nurses not to use PPE despite all the research that is coming out of China and Italy and the death rates of nurses who do not have PPE in America and England etc. [...] We need employers and the government to be accountable through the Health and Safety at Work Act 2015. [See also in Table 2, Section A: Poor or conflicting guidelines and practice]
C: Insufficient staffing levels and wages	
25.	In my workplace PPE is not the main issue, it is having enough nursing staff to safely staff our COVID wards and ED 'Red COVID' areas.
26.	What about hazard pay? We need hazard pay too.
27.	More public health nurses needed as valuable source of advice and education re PPE use, contact tracing, communicable diseases.
28.	Due to staff shortages, there are not always cleaners available. Nurses have therefore been cleaning high use areas (as well as maintaining nursing tasks).
29.	I felt the DHB had a plan to follow. The staff had a right to their feelings regarding COVID-19; however, we're disappointed in those refusing to work putting pressure on those to double their efforts in a time when we should all be supporting each other.
30.	I work for a large medical centre in primary care. We have put very good systems in place to protect staff and patients in terms of COVID-19 transmission. However, we have taken a significant cut in wages and have no assurance regarding PPE supplies. It's a very stressful situation going forward.* [See also in Table 1, Section A: Good access to PPE]
D: Disconnect between MoH and DHBs	
31.	[Our DHB was] not willing to supply community-based nurses with PPE equipment. In the last week of lookdown they did volunteer face masks. Government did not know or think about how DHBs work with other community based nursing companies as they don't know how to collaborate with outside nursing institutions.

Appendix 5

32.	Bloomfield kept insisting that we have plenty of PPE and that there was enough to be used appropriately however they were using WHO guidelines which are not in accordance with the Precautionary Principles about airborne particles. Nurses around the world – even in the US, are using N95 masks. But we were not permitted to use them due to the WHO guideline. Prison officers, police and tribunal and court staff were allowed to wear N95 masks in case they were around someone who might have it, but nurses weren't allowed to wear one when nursing someone who did have it. [...] Also, our infection control nurse kept talking down the risks and saying stupid things like they are doing a great job at the borders, you won't need any masks.
33.	This is yet another debacle from the Government and MoH. Last year it was measles outbreak with very little MMR vax. This year its COVID-19, no PPE and no or limited flu vax. What happened to the pandemic procedures that were supposed to be in place after the SARS virus in early 2000s. Why is PPE gear not being made in NZ? Why is it supposedly $80 a kit? I order supplies for our clinic. We are the frontline. This is like sending a soldier to war without his rifle and dumping him in enemy lines and saying 'pick me'. I am lucky at my clinic because our employer cares and they have said no PPE no clinic.*
34.	I think distribution and communication has had its faults, or lapses, yet overall I think some cases, magnified by critical media, contributed to the public perception that New Zealand is lacking. Perception and distribution/ communication is the real topic. Like the Canterbury earthquakes, the public system could not be totally prepared to just seamlessly go from whoa to go. I think we have responded professionally and publicly with a great deal of admiration. [See also above Section A: Not enough transparency around supply and distribution of PPE]
35.	Can you please let people know that even though the government states there is enough PPE, DHBs are telling staff not to waste PPE and are actively encouraging staff to only use PPE for confirmed and probable cases. We are also being asked to reuse PPE. [See also in Table 1 Section D: Re-use of PPE]
36.	Our staff are very safe when compared to overseas colleagues as our government's strategy has been to protect the people and the health system. Going to the media is not helpful. Staff are now coming in anxious after listening to news about PPE. Are the media going to help us with managing the hysteria they cause on PPE? We need to be practical and constructive and not destructive. Our public image will suffer since we cannot solve these by using proper escalation methods.* [See also in Table 1 Section A: Good PPE access]
37.	While I understand concern we have to be wary of undermining the Government's response by alarmist messaging. [See also above Section A: Not enough transparency around supply and distribution of PPE]

Appendix 6: Survey comments from respondents working in aged care facilities

Note: Where applicable, some of these comments also appear in the tables in Appendix 5.

Survey comments from respondents working in aged care facilities	
1.	Aged care facilities need to be better prepared [for] the future.
2.	On the first week of lockdown management hid PPE equipment from staff. When asked, we were told they did not have enough for everyone. On the second week of lockdown masks were visible for isolated clients.
3.	The aged care sector needs more PPE.
4.	We need to keep ourselves, each other, and those we care for safe, for as long as it takes.
5.	At our facility we have not had our orders for PPE supplied by [our] DHB when we requested. We have relied on paying for stock and a gift of masks from a private source. We are waiting for an order of gowns requested last week [that] has not arrived yet, [this is] urgent as our stock is low.
6.	More auditing [is needed] for aged care facilities on PPE and infection control.
7.	This survey means nothing to health workers who have already been infected. We need to plan ahead before the lockdown instead of doing a survey once the pandemic has already been controlled.
8.	PPE [is] available at my workplace now.
9.	No free access for PPE.
10.	[My] employer only cares about the financial cost & [their] reputation.
11.	Slow arrival of DHB/MoH promised PPE.
12.	Due to staff shortages, there are not always cleaners available. Nurses have therefore been cleaning high use areas (as well as maintaining nursing tasks).
13.	Education sessions on COVID-19 and isolation precautions given to staff each shift initially, but some casual staff missed. Regular infection prevention and control (IP & C) education given annually, or to new staff within 6–12 months. Adequate number of pre-packed isolation room bins no longer kept in preparation for any outbreak.
14.	From an registered nurse point of view I don't exactly know what PPE gear we have in stock. You just hear from circulating rumours that we have xxx masks in stock. Only our xxx knows what we have and how much of it we have. What we hear about our stock does not reflect what's been brought out for staff to comfortably use. It's like we have plenty of stock but 'we can't use it just in case we need it'. I just stated what PPE equipment we are short of because I don't see this equipment freely available.
15.	We were given one box of gloves. When the company heard the MoH was going to check facilities they put out made boxes available.
16.	Our frontline workers are [at] high risk and I would say [that the] government would give [a] reward [to] them as they are doing [an] incredible job.
17.	No I feel confident with the protocol my employer has in place at the moment.
18.	Aged care facilities need to be audited for PPE stock as well.
19.	I believe the organisation I work for have our best interests at heart. I would like to acknowledge and thank them for all they have acquired to make the journey safe for us all.

Appendix 7: MoH Guidelines for personal protective equipment use in healthcare settings including care provided in homes

Source: MoH (25 April 2020)[20]

GUIDELINES FOR PERSONAL PROTECTIVE EQUIPMENT USE IN HEALTH CARE SETTINGS INCLUDING CARE PROVIDED IN HOMES

IMPORTANT REMINDER
For all patient care and interactions, staff should follow standard precautions and adhere to the '5 moments for hand hygiene'

This poster guideline has been developed as a high level reference document, refer to MoH website for specific health care setting advice and guidance. Read this poster with the PPE guideline document in conjunction with the PPE frequently asked questions.

PPE TYPE ▼	FRONTLINE HEALTH CARE WORKERS	FRONTLINE HEALTH CARE WORKERS			PATIENTS	VISITORS	FAMILY CARERS[1]	CLEANERS[2]
	Caring for or contact with clients/patients of unknown COVID-19 status	Caring for or contact with patients who meet the case definition for COVID-19[3]			Meeting the COVID-19 case definition	Visiting clients/ patients who meet the case definition for COVID-19	Caring for clients/ patients who meet the case definition for COVID-19	Current COVID-19 positive case in room or after exit from rooms
	FOR Triaging or ongoing interaction with client/patient	Care in the community[4]	Care in hospital (including emergency departments and wards)[5]	Aerosol generating procedures		As per alert level and visiting policy of health care setting	Caring for own family members as per health care setting policy or in the persons own home – for example parents caring for children	
SURGICAL MASKS	✓ After risk assessment[6] identifies there is a risk and it's not possible to maintain physical distancing	✓	✓	✗	✓ Whilst waiting assessment and on transfer, not once in a room in isolation	✓	✓	✓ If patient in the room
N95/P2 Particulate respirators	✗	✗	✗	✓	✗	✗	✗	✗
GOWNS/ APRONS	Refer to specific healthcare setting guidance on MoH website	✓ NONPATIENT CONTACT: plastic apron DIRECT PATIENT CONTACT: fluid-resistant long sleeve gown		✓ Fluid-resistant long sleeve gown	✗	✗	✗	✓ NONPATIENT CONTACT: plastic apron
GLOVES	Use sanitiser and/ or gloves if hand washing facilities unavailable	✓ Single use	✓ Single use	✓ Single use	✗	✗	✗	✓ Single use or reusable heavy-duty gloves
EYE PROTECTION Disposable or reusable whenever available	Refer to specific healthcare setting guidance on MoH website	✓	✓	✓	✗	✗	✗	✓ If patient is in the room
OTHER MEASURES	Maintain physical distancing where possible	Refer to MoH website for specific health care setting advice and guidance				Visitor to minimise the time spent in a hospital or care facility, visitor to minimise the time spent outside of the patients room	Carer to minimise the time spent outside of the patient's room	
	GOOD HAND HYGIENE PRACTICES AND COUGH/SNEEZE ETIQUETTE.							

Notes:

1. Family carers who are in the persons direct bubble or providing care within a health facility - do not need to wear PPE. However, for family carers who are outside of the immediate bubble, PPE should be worn.
2. Cleaner should liaise with nurse before entering room.
3. Case definition: www.health.govt.nz/covid19-case-definition
4. Including primary care, accident and medical centres, aged residential care, disability services, hospices, home care / visiting services and mental health.
5. Minimise number of people in the room at one time, or in a transfer team.
6. Refer to the PPE FAQs

23 April 2020

HP7366

20 See https://www.health.govt.nz/system/files/documents/pages/hp7366-guidelines-for-ppe-use-in-healthcare-poster-25-april2020.pdf.

This research is a collaboration between the NZNO, Stickybeak and the McGuinness Institute.

Te Rūnanga o Aotearoa NZNO

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