

## SUPPLEMENTARY MATERIAL

### SUPPLEMENTARY FILE 1 – ONLINE QUESTIONNAIRE

Questions displayed to participants were dependent on their answers to previous questions. The survey was built using Qualtrics. We have included notes in [square brackets] where it may be helpful for interpreting the survey logic and flow.

You may receive this survey from multiple sources due to our commitment to achieving wide representation and diversity. **Please only complete it once.**

Please select your country of residence: [drop down box]

Which region do you work in most of the time? [drop down box]

Northland  
Auckland  
Waikato  
Bay of Plenty  
Gisborne  
Hawke's Bay  
Taranaki  
Manawatū-Whanganui  
Wellington  
Tasman  
Nelson  
Marlborough  
West Coast  
Canterbury  
Otago  
Southland

What is your age? [single-choice response]

Under 21 years  
21-24 years  
35-44 years  
45-54 years  
55-64 years  
65+ years

What is your gender? [single choice response]

Male  
Female  
Gender diverse (please state): \_\_\_\_\_  
Prefer not to say

Which ethnic group do you belong to? Select the option or options which apply to you [multiple choices possible]

New Zealand European  
Māori  
Samoan  
Cook Islands Māori  
Tongan  
Niuean  
Chinese  
Indian

Other (please state, e.g. Dutch, Japanese, Tokelauan): \_\_\_\_\_

What is your profession? Select the option that applies to you. [single choice response]

- Ambulance officer
- Cleaner
- Customs officer
- Defence force employee
- Dental hygienist
- Dentist
- Dietitian
- Early career doctor (House Officer, Registrar)
- Fire service
- General practitioner / urgent care physician
- Health care assistant
- Hospital specialist / consultant
- Hotel worker (hotel currently operating as a managed isolation or quarantine facility)
- Midwife
- Nurse
- Nurse practitioner
- Occupational therapist
- Optometrist
- Orderly
- Pharmacist
- Physician assistant
- Physiotherapist
- Podiatrist
- Police officer
- Psychologist
- Speech and language therapist
- Other (please specify): \_\_\_\_\_

Where do you primarily work? [single choice response]

- General/community medical practice
- Public hospital
- Private hospital
- Private practice
- Aged residential care
- Community (please specify): \_\_\_\_\_
- Other (please specify): \_\_\_\_\_

If you work in a District Health Board, please select which one, or select 'not applicable'.

[single choice response]

- Not applicable
- Auckland District Health Board
- Bay of Plenty District Health Board
- Canterbury District Health Board
- Capital & Coast District Health Board
- Counties Manukau District Health Board

Hawkes Bay District Health Board  
Hutt Valley District Health Board  
Lakes District Health Board  
Mid Central District Health Board  
Nelson-Marlborough District Health Board  
Northland District Health Board  
South Canterbury District Health Board  
Southern District Health Board  
Tairāwhiti District Health Board  
Taranaki District Health Board  
Waikato District Health Board  
Wairarapa District Health Board  
Waitematā District Health Board  
West Coast District Health Board  
Whanganui District Health Board

Have you had a confirmed infection of SARS-CoV-2 (the virus that causes COVID-19)?

Yes

No

*If yes: Did the infection occur in New Zealand or elsewhere?*

New Zealand

Elsewhere (please state: \_\_\_\_\_)

Have you had a close relative, friend or colleague who has had a confirmed infection of SARS-CoV-2 (the virus that causes COVID-19)?

Yes

No

*If yes: Did the infection occur in New Zealand or elsewhere? Please select all that apply (if multiple relatives, friends or colleagues have been infected):*

New Zealand

Elsewhere (please state: \_\_\_\_\_)

### **PPE Reuse**

*Personal protective equipment (PPE) refers to anything worn by a person to minimise risks to health and safety. PPE includes masks, eye protection, gloves, gowns, and in the event of aerosol-generating procedures, N95-type filtering face-piece respirators (FFRs). It does not include the use of non-medical face coverings.*

*PPE is required to protect healthcare and other “frontline” workers from pathogens, as well as protecting patients and household members, and is especially required for aerosol-generating procedures.*

*One solution for addressing the compromised global supply of PPE is reusing PPE that has been disinfected. There is now scientific evidence that some PPE could be safely disinfected for potential reuse.*

Thinking of your longest period of time wearing an N95-type mask during a shift in the COVID-19 pandemic, was this for:

<1 hour

1-2 hours

2-4 hours

4-6 hours

6-8 hours

8-12 hours

12+ hours

Not applicable (I have not worn an N95-type mask during a shift in the COVID-19 pandemic)

Was this **uninterrupted** or **intermittent** wear of the N95-type mask?

Uninterrupted

Intermittent

Thinking of your longest period of time wearing a surgical mask during a shift in the COVID-19 pandemic, was this for:

<1 hour

1-2 hours

2-4 hours

4-6 hours

6-8 hours

8-12 hours

12+ hours

Not applicable (I have not worn a surgical mask during a shift in the COVID-19 pandemic)

Was this **uninterrupted** or **intermittent** wear of the surgical mask?

Uninterrupted

Intermittent

At any point during the COVID-19 pandemic, have you personally reused PPE?

Yes

No

*If yes:* What did the reuse entail? Please select all that apply.

Reusing an item(s) of PPE multiple times in one day

Reusing an item(s) of PPE multiple times in one day

\*Other (please explain): \_\_\_\_\_

At any point during the COVID-19 pandemic, has your organization collected PPE for potential reuse?

Yes

No  
Don't know

*If yes: Was the rationale for this well-communicated?*

Yes  
No  
Don't know

\*Please explain: [open text box]

What was collected? Tick as many as apply:

FFRs (N95-type masks)  
Surgical masks  
Gowns  
Face shields  
Eyewear e.g. goggles  
Other (please specify): \_\_\_\_\_  
Don't know

To your knowledge, is new PPE sterile?

Yes  
No  
Don't know

Under what circumstances would you be comfortable reusing PPE after it has been properly disinfected and processed (made safe)? Tick as many as apply:

Under pandemic situations  
In the event of supply shortages (i.e. PPE has or is running out)  
Under non-pandemic situations  
I would not be comfortable reusing disinfected PPE under any circumstances (even if this means no PPE)

\* Can you please elaborate as to why you would not use disinfected PPE?

Which of the following types of PPE would you be willing to reuse after it had been properly disinfected and processed (made safe)? Tick as many as apply:

N95 FFR masks  
Gowns  
Surgical masks  
Faceshields  
Eye wear, e.g. goggles  
Other (please state): \_\_\_\_\_  
All of the above

When considering reuse of PPE, please rank in order of importance the reasons why we should consider disinfecting and reusing PPE (drag and drop into your preferred order):

Reducing medical wastage/environmental impact of single-use products

Cost-saving

Personal safety for healthcare workers in the event of no supply or short supply

Minimising spread of infectious diseases such as SARS-CoV-2 among other healthcare workers, patients and the wider community

Other (please specify): \_\_\_\_\_

Is medical waste reduction from single-use products important to you?

Not at all important

Of low importance

Neutral

Somewhat important

Very important

### **Chain of identity**

*Chain of identity refers to the association of the PPE wearer to the PPE item for the disinfection and reuse process, so that each wearer has their own PPE returned post-disinfection for reuse.*

Is chain of identity important to you, so that you would receive your own PPE back after disinfection?

Not at all important

Of low importance

Neutral

Somewhat important

Very important

How much time would you be prepared to invest per shift in ensuring you received your own PPE back after disinfection? Choose the option that best suits.

0 minutes

5 minutes

10 minutes

15 minutes

20 minutes

30 minutes

45 minutes

60 minutes

Other (please specify): \_\_\_\_\_

Not applicable (I would not reuse PPE)

What would make reused PPE after disinfection more acceptable to you? Choose all that apply:

Video showing how PPE is disinfected

Scientific evidence that disinfection works against key human pathogens (including SARS-CoV-2)

Advocacy from clinical champions at work

Other (please specify): \_\_\_\_\_

PPE reuse is not acceptable to me

If you were using PPE that had been disinfected for reuse, how would you prefer to receive it?

- Out of a box, like new PPE
- Wrapped in plastic (biodegradable)
- Wrapped in plastic (any type)
- In a paper bag
- Other (please specify)
- No preference

### **Wave One questions**

*The following questions give context to your experience with PPE during wave one in New Zealand.*

*Wave one refers to the period from the first case of COVID-19 in New Zealand on 28th February 2020, until the last recorded case of community transmission (transfer of the virus from an unknown source) on 1st May 2020.*

*Area of work refers to the ward, location or area in the community where you provided care to patients or those affected by COVID-19.*

At work, in terms of PPE, how protected from COVID-19 did you feel during wave one?

- Not at all protected
- Somewhat unprotected
- Neutral
- Somewhat protected
- Very protected

Please indicate the level of trust you had in your organisation to provide enough PPE for all workers requiring it, on a scale from 0 (no trust) to 10 (complete trust):

Were you aware of shortages or very low stock levels of PPE during wave one in your area(s) of work?

- Never
- Rarely
- Sometimes
- Often
- Always

Was there confusion relating to whether there was adequate supply in your area(s) of work?

- Yes
- No
- Unsure

Were you told not to wear PPE by your organisation for reasons related to stock levels?

- Yes
- No



Don't know

Were you told not to wear PPE by your organisation for reasons related to stock levels?

Yes

No

Don't know

*If yes: what was the reason? [open text box]*

Did you receive adequate PPE from your organisation to do your work at all times?

Yes

No

Don't know

*If no: Please specify what was missing or in low supply:*

FFRs (N95-type masks)

Gowns

Surgical masks

Face shields

Eye wear, e.g. goggles

Other (please specify): \_\_\_\_\_

Did you, at any time during wave one, personally save items of **used** PPE for use in your area of work in the event of your organisation running out?

Yes

No

Prefer not to answer

Did you, at any time during wave one, personally save items of **new** PPE for use in your area of work in the event of your organisation running out?

Yes

No

Prefer not to answer

During wave one, did you buy PPE directly for yourself or your department/organisation for use in your area of work?

Yes

No

*If yes: please specify which items of PPE were purchased:*

FFRs (N95-type masks)

Gowns

Surgical masks

Face shields

Eye wear, e.g. goggles

Other (please specify): \_\_\_\_\_

If you purchased your own PPE, were you allowed to use it at work?

- Yes
- No
- I don't know
- I was not in a situation where this was necessary

*If no: Why not?* [open text box]

Did you or your department/organisation receive a donation of PPE from a charity, local firm or individual donors?

- Yes
- No
- Don't know

Do you think frontline staff should have access to information regarding stock levels of PPE held by their organisation?

- Yes
- No
- Don't know

*Why/why not?* [open text box]

### **Fit Testing**

*A **fit test** follows a standardised testing protocol that evaluates if the FFR (N95-type mask) provides an adequate face seal. Under AS/NZS 1715 Standards, this test is recommended annually for all those who require respiratory protective equipment in their workplace.*

*A **fit check/user seal check** refers to a quick self-administered test prior to use, determining if the FFR is properly sealed to the wearer's face.*

Are you required to undertake aerosol-generating procedures (e.g. intubation) requiring respiratory protective equipment (filtering facepiece respirators [FFR] [N95-type mask])?

- Yes
- No

*If yes: Have you been fit tested for an FFR [N95-type mask] this year?*

- Yes
- No

Prior to this pandemic, were you fit tested annually?

- Yes
- No

Did you, prior to this questionnaire, understand the difference between a fit test and a fit check of an FFR [N95-type mask]?

- Yes

No

Have you ever been taught in your current place of employment how to undertake a **fit check** of an FFR [N95-type mask]?

Yes

No

Have you ever failed a **fit test** for an FFR [N95-type mask] at your current place of work?

Yes

No

*If yes:* Have you been informed how your organisation will ensure you have access to a well-fitting FFR [N95-type mask]?

Yes

No

Don't know

*If no:* Does this worry you or cause undue stress?

Yes

No

Is there anything your organisation could do differently to improve communication in terms of PPE use and supply?

Yes

No

Don't know

*If yes:* Please explain [open text box]

### ***Mental Health***

Have you, or are you currently experiencing (tick all that apply):

Depression

Anxiety

Stress

Fatigue

Burnout

Emotional distress

Other mental health conditions (please specify): \_\_\_\_\_

None of the above

Were these present prior to the COVID-19 pandemic?

Yes

No

Don't know

Have you experienced increased anxiety over the availability of PPE at work?

Yes

No

Don't know

If New Zealand faces further waves of COVID-19, are you confident that your workplace can provide all the necessary PPE you need?

Yes

No

Don't know

*If no or don't know: Why not?* [open text box]

**Final comments**

Has the COVID-19 pandemic made you more or less likely to **remain** in health as a profession?

Much less likely

Somewhat less likely

No change

Somewhat more likely

Much more likely

Please explain: [open text box]

\*Do you have any other comments in relation to the disinfection of PPE for reuse, or your experience with PPE during the COVID-19 pandemic that you would like to share with us?  
[open text box]

**Thank you for participating in this survey.**

**To go in the prize draw or to receive a written summary of study results, please click  
here**

## SUPPLEMENTARY FILE 2 – Distribution of participants across the different regions of New Zealand

Region of New Zealand		N (%)
North Island	Northland	43 (3.2%)
	Auckland	405 (30.1%)
	Waikato	90 (6.7%)
	Bay of Plenty	100 (7.4%)
	Gisborne	18 (1.3%)
	Hawkes Bay	38 (2.8%)
	Taranaki	73 (5.4%)
	Manawatū-Whanganui	60 (4.5%)
	Wellington	198 (14.7%)
South Island	Tasman	4 (0.3%)
	Marlborough	14 (1.0%)
	Nelson	35 (2.6%)
	Canterbury	159 (11.8%)
	West Coast	12 (0.9%)
	Otago	71 (5.3%)
	Southland	26 (1.9%)

Data are n (%).  
n=1346 answered this question.