



COVID-19 Bundle of Protection

CDHB Infection Prevention and Control Service

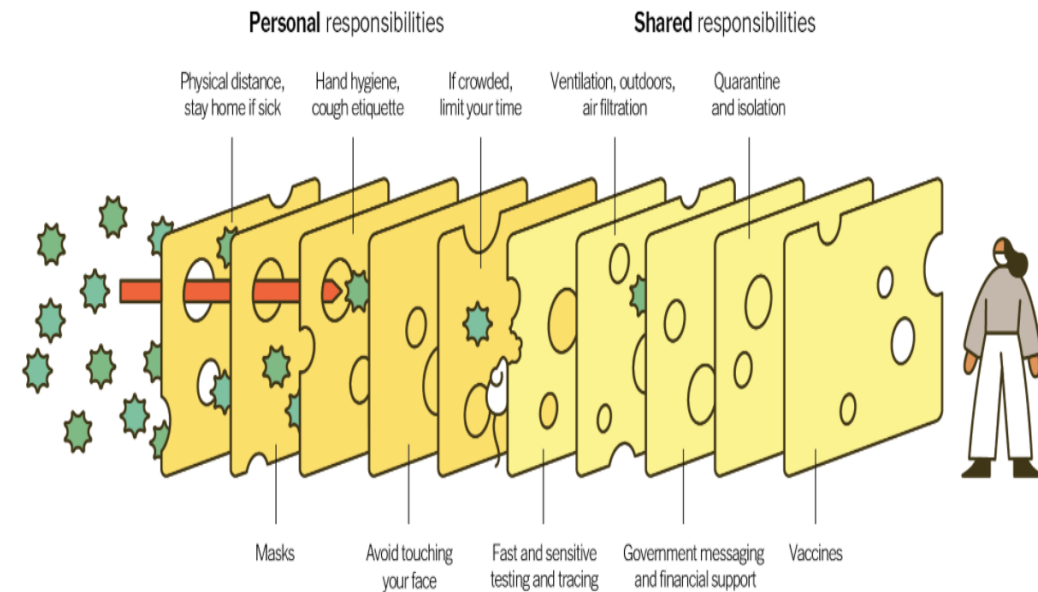
November 2021

Bundle of Protection

- Vaccination
- Risk assessment
- N95 masks
- Surveillance Testing
- Environmental conditions
- Physical distancing
- PPE donning and doffing
- Transmission-based precautions
- Hand hygiene

Multiple Layers Improve Success

The Swiss Cheese Respiratory Pandemic Defense recognizes that no single intervention is perfect at preventing the spread of the coronavirus. Each intervention (layer) has holes.



Source: Adapted from Ian M. Mackay (virologydownunder.com) and James T. Reason. Illustration by Rose Wong

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Vaccination

- Vaccines are designed to teach the body's immune system to safely recognize and block the COVID-19 virus
- Pfizer/BioNTech vaccine includes non-replicating messenger ribonucleic acid (mRNA) encoding the COVID-19 spike protein
- Host cells express the COVID-19 spike antigen
- Pfizer/BioNTech vaccine elicits a neutralising antibody and cellular immune response to the antigen
- Pfizer/BioNTech COVID-19 vaccine has approval from Medsafe for use here in New Zealand and remains the main vaccine available
- Astra Zeneca (viral vector) vaccine will be available from late November for people who would like a different option
- Booster now available for individuals 18yrs or older who have completed their primary course 6 months ago
- Medsafe has granted **provisional approval** for the use of the Paediatric Pfizer vaccine for 5-11year olds

Risk Assessment

Effective risk assessment includes:

- epidemiological factors
- symptoms

This helps determine:

- red stream or green stream
- patient placement

***Ask about vaccination status of patients and support person*



Key Steps Donning N95

1. Check straps are intact
2. Place top strap around crown of head and bottom strap at base of neck
3. Mould around the nose-bridge
4. Perform positive-pressure check (exhale gently and check for leaks)
5. Perform negative-pressure check (inhale sharply and check for leaks)
6. If air leaks around the nose, repeat Step 3, Step 4 and Step 5

N95 Masks

- Following the key steps will help you to achieve the best possible seal of your N95 mask
- If you can feel air leaking out the side of the mask, you haven't got a proper seal
- Try the steps again or a different mask if you keep feeling air leaking from the sides of the mask

Surveillance Testing

Part of the bundle of protection to ensure early detection and management of COVID-19

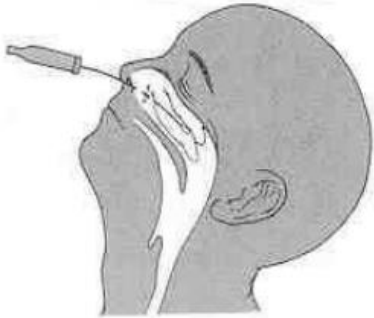
Molecular and antigen tests are types of diagnostic tests that can detect an active COVID-19 infection

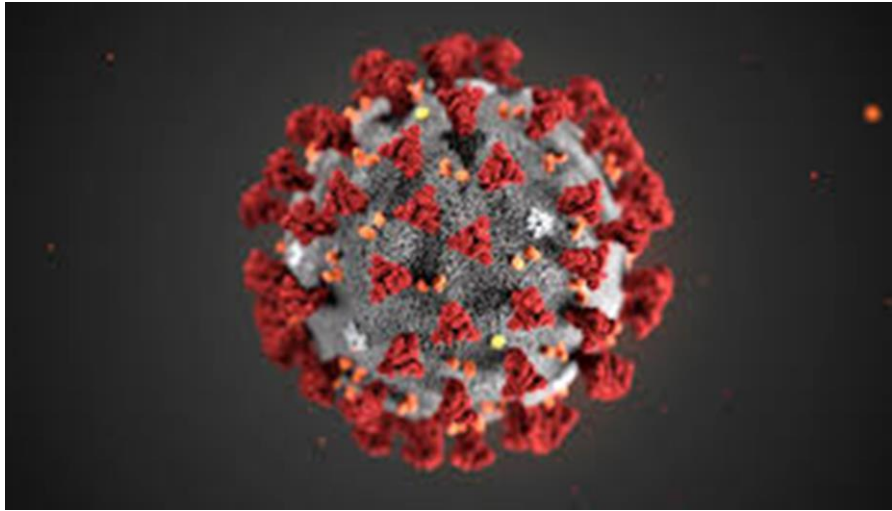
Common samples for PCR tests

- **Nasopharyngeal swab**
 - Collected deep inside nose
 - Gold standard
 - Sensitive (can detect very small amounts of virus in a sample)
- **Saliva sample**
 - Collected by drooling into tube
 - More labour intensive

Rapid Antigen Test

- MoH controlled at this stage
- Collected by nasal swab
- May become useful as prevalence of disease in community increases

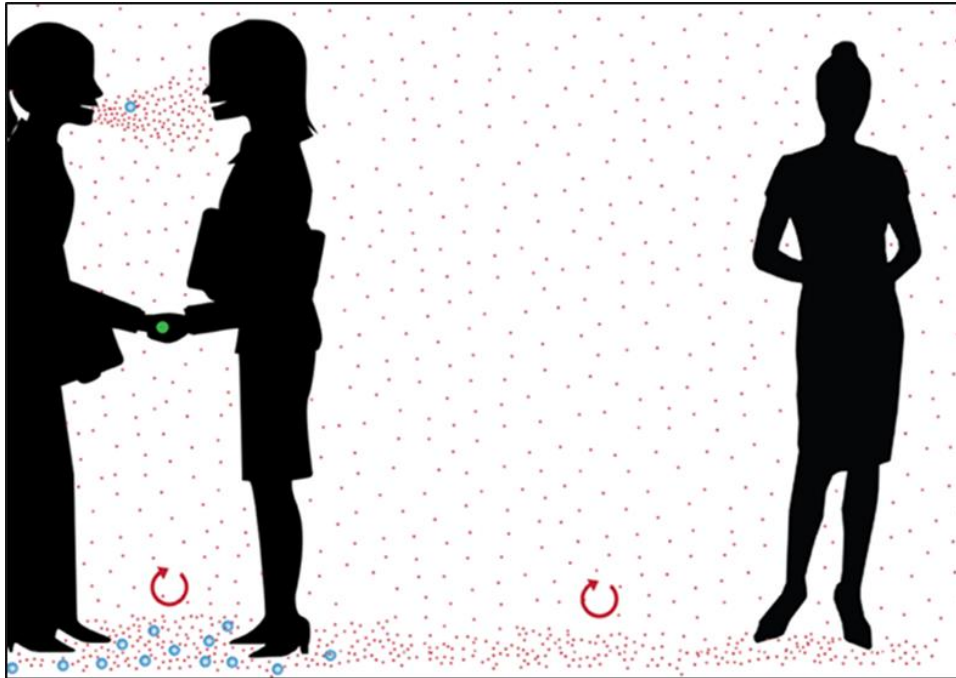




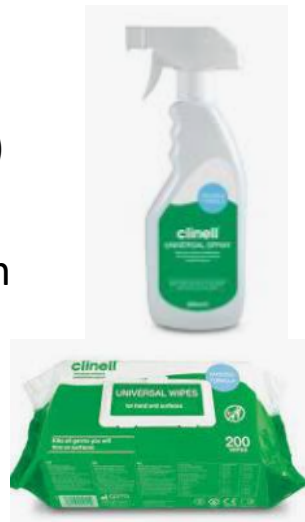
Environmental Conditions

- The COVID-19 virus can be transported on a range of different sized respiratory particles
- These particles exist on a continuum of different sizes from droplets through to aerosols
- **The pattern of movement of the particles once expelled will vary depending on environmental conditions**
- There is no distinction between aerosol generating procedures – the risk is from the patient, not from the procedure

Environmental Conditions



- There is abundant evidence that proximity is a key determinant of transmission risk
- At close range, there is an increased concentration of particles (droplets to aerosols)
- Increasing fresh air via windows/HVAC systems aids to dilution of infectious particles
- Factors influencing how particles may travel:
 - Turbulent airflow
 - Busy areas
 - Door movements (pressure changes)
 - People traffic
 - Temperature variations (such as from electrical equipment and heating)
 - Frequency of surface cleaning





Physical Distancing

- The risk of becoming infected with COVID-19 increases the closer you are to a person and the longer you are close to that person
- The risk is highest in crowded and poorly ventilated indoor spaces, and is lower outside, where there are fewer people, and when you are further away from others

PPE Donning and Doffing

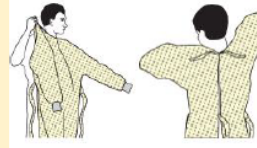
SEQUENCE FOR PUTTING ON PERSONAL PROTECTIVE EQUIPMENT (PPE)

The type of PPE used will vary based on the level of precautions required, such as standard and contact, droplet or airborne infection isolation precautions. The procedure for putting on and removing PPE should be tailored to the specific type of PPE.

Perform Hand Hygiene

1. GOWN

- Fully cover torso from neck to knees, arms to end of wrists, and wrap around the back
- Fasten in back of neck and waist



2. SURGICAL MASK or N95 MASK

- Secure ties or elastic bands at middle of head and neck
- Fit flexible band to nose bridge
- Fit snug to face and below chin
- Check N95 mask for seal



3. GOGGLES OR FACESHIELD

- Place over face and eyes and adjust to fit



4. GLOVES

- Extend to cover wrist of isolation gown



- Keep hands away from face
- Limit surfaces touched
- Change gloves when torn or heavily contaminated
- Perform hand hygiene

USE SAFEWORK PRACTICES TO PROTECT YOURSELF AND LIMIT THE SPREAD OF CONTAMINATION

Adapted from CDC Guidance

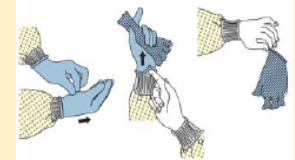


HOW TO SAFELY REMOVE PERSONAL PROTECTIVE EQUIPMENT (PPE)

Safely remove PPE without contaminating your clothing, skin or mucous membranes with potentially infectious materials. Remove PPE in the following sequence:

1. GLOVES

- Using a gloved hand, grasp the palm area of the other gloved hand and peel off first glove
- Slide fingers of ungloved hand under remaining glove at wrist and peel off second glove over first glove
- Discard gloves into a waste container



Perform Hand Hygiene

2. GOWN

- Unfasten gown ties, taking care that sleeves don't contact your body when reaching for ties
- Pull gown away from neck and shoulders, touching inside of gown only
- Turn gown inside out
- Fold or roll carefully into a bundle and discard into a waste container



Perform Hand Hygiene

3. GOGGLES OR FACESHIELD

- Remove goggles or face shield from the back by lifting head band or ear pieces
- If the item is reusable clean and disinfect, place in designated receptacle for reprocessing.



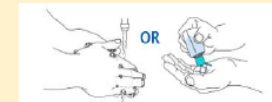
Perform Hand Hygiene

4. MASK

- Grasp bottom ties or elastics of mask and remove without touching the front
- Discard into a waste container



WASH HANDS OR USE AN ALCOHOL-BASED HAND SANITISER IMMEDIATELY AFTER REMOVING ALL PPE



PERFORM HAND HYGIENE BETWEEN STEPS IF HANDS BECOME CONTAMINATED AND IMMEDIATELY AFTER REMOVING ALL PPE

Adapted from CDC Guidance



ENHANCED PRECAUTIONS



AIRBORNE & CONTACT

(in addition to Standard Precautions)

RESTRICTED VISITING

(only on approval by IPC in conjunction with C&PH)



PLACEMENT

- ✓ Single Room (with negative pressure if available) OR cohorted area (as advised by IPC)
- ✓ Door closed to room / cohort area

MASK / EYE PROTECTION

- ✓ N95 mask AND face shield or safety glasses
- ✓ Put on at entrance to room OR designated donning area
- ✓ Remove after exiting the room OR designated doffing area

GLOVES / GOWN

- ✓ Put on before entering patient room
- ✓ Remove before exiting patient room OR dedicated doffing zone

PERFORM HAND HYGIENE

- ✓ As per 5 Moments of Hand Hygiene

PATIENT CARE EQUIPMENT / ENVIRONMENT

- ✓ Dedicated equipment OR clean and disinfect with Clinell wipes (maybe used with foam spray on large surfaces) between patients
- ✓ Frequently clean and disinfect high touch points in patient room/bedspace

PATIENT TRANSPORT

- ✓ Limit to essential purposes only
- ✓ Patient to wear surgical mask or N95 mask during transport (as tolerated)
- ✓ Patient to perform hand hygiene

WASTE / LINEN

- ✓ Waste in yellow (infectious/medical) waste bag. Tie with cable tie.
- ✓ Used linen in red bag with alginate liner



Sessional use of PPE may be used in cohort areas as advised by IPC:

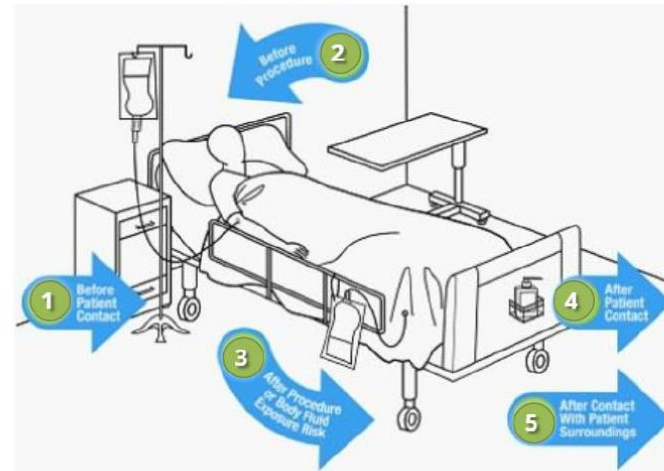
- Gowns/apron and gloves are worn in the patient room during direct patient cares. Remove before exiting the patient room.
- N95 masks and eye protection are worn for a "session" while working in a cohort space, caring for multiple patients. These are changed outside of the cohort area in a designated doffing area if contaminated, or when staff member is leaving the area e.g. to have a break.

Transmission Based Precautions

Hand Hygiene



Five Moments of Hand Hygiene



Place your mouse on each of the arrows in the diagram above



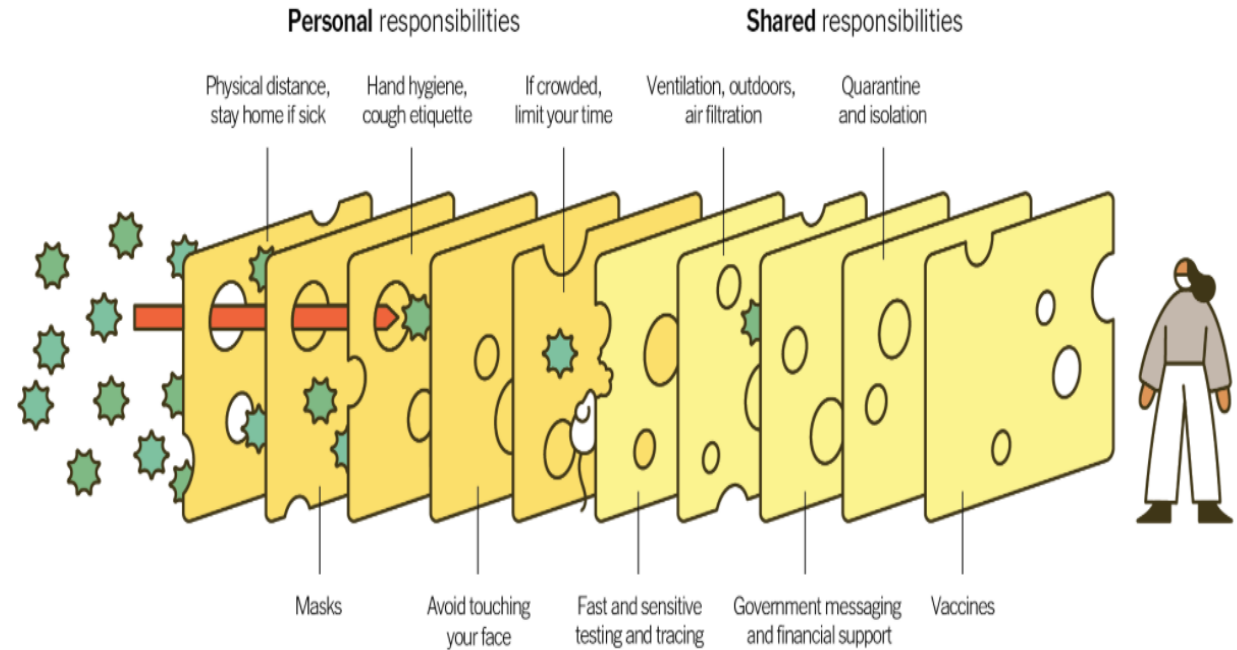
FIVE MOMENTS: Hand Hygiene must be performed:

1. Before touching a patient
2. Before a procedure
3. After a procedure or body fluid exposure risk
4. After touching a patient
5. After touching a patients surroundings

Take home message: Bundles of Protection

Multiple Layers Improve Success

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