The Hierarchy of Controls

Infection control issues for RACS in the context of COVID

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Acknowledgement of country

I acknowledge the Traditional Owners of the land on which we are meeting and working on. I pay my respects to their Elders, past and present, and any Aboriginal or Torres Strait Islander people of other communities who may be here today.



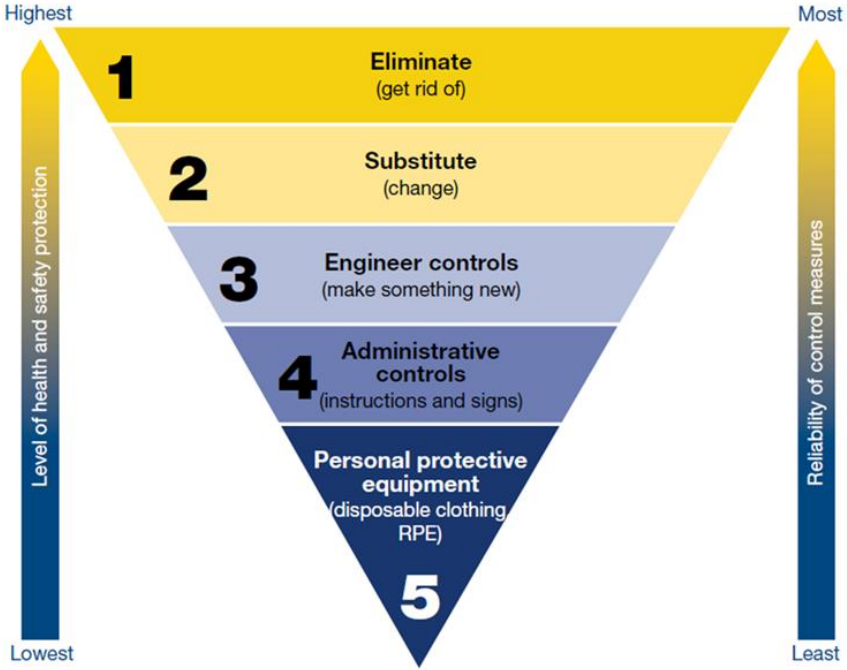
Introduction

In this presentation we will explore options for infection risk reduction in aged care facilities in the context of COVID-19. We will also:

- discuss the Hierarchy of Controls as a tool for systematic risk reduction
- visit ventilation, HVAC and standalone AC systems, fans and AC Split Systems
- discuss HEPA filters and Air Scrubbers
- review safe work practices /behaviours & eye protection

Question 1

What is the hierarchy of controls?



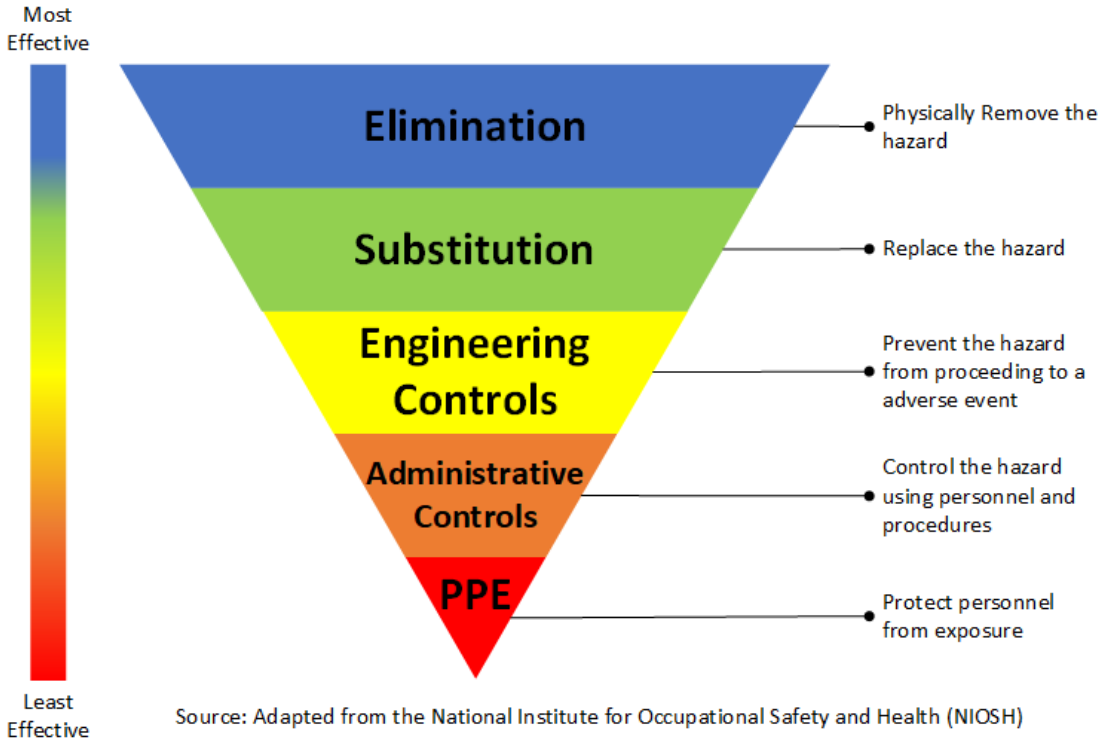
Question 1 – Hazards and Risks

An engineering safety algorithm or guidance formula to prioritise strategies to mitigate and reduce risks of hazards especially in a workplace.

Hazard: an inherent property of a substance process or phenomenon

Risk: the likelihood or probability that a substance or process can cause harm

Question 1 – Hierarchy of Controls Pyramind



Source: Adapted from the National Institute for Occupational Safety and Health (NIOSH)

Question 1 – Hierarchy of Controls

Allows a systematic approach to reduce risk in a variety of settings by attention to process and engineering interventions and then addressing human and personal protection

- Commercial
- Manufacturing
- Industrial Mining & Refining
- Educational settings
- Health Care

Question 2 - Elimination

How can opportunities for the virus to enter the facility be reduced?

- Humans are the carrier/vector for COVID-19 virus (SARS-CoV-2)
- Prevention of ‘unnecessary’ entry – an arbitrary decision
- Screening of staff, residents and allowed visitors reduction of concurrent working on more than 1 site
- Symptoms – health statement, T check , testing (PCR, RAT)
- Optimal vaccination coverage

Question 3 - Substitution

Can any hazards be substituted?

- Not applicable in the context of COVID-19
- We cannot alter hazard of the infection, this is inherent or fixed, but we can modify the risk of exposure using the strategies discussed in the previous slide.

Question 4 – Engineering Controls (physical barriers)

What are some physical barriers that can be implemented?

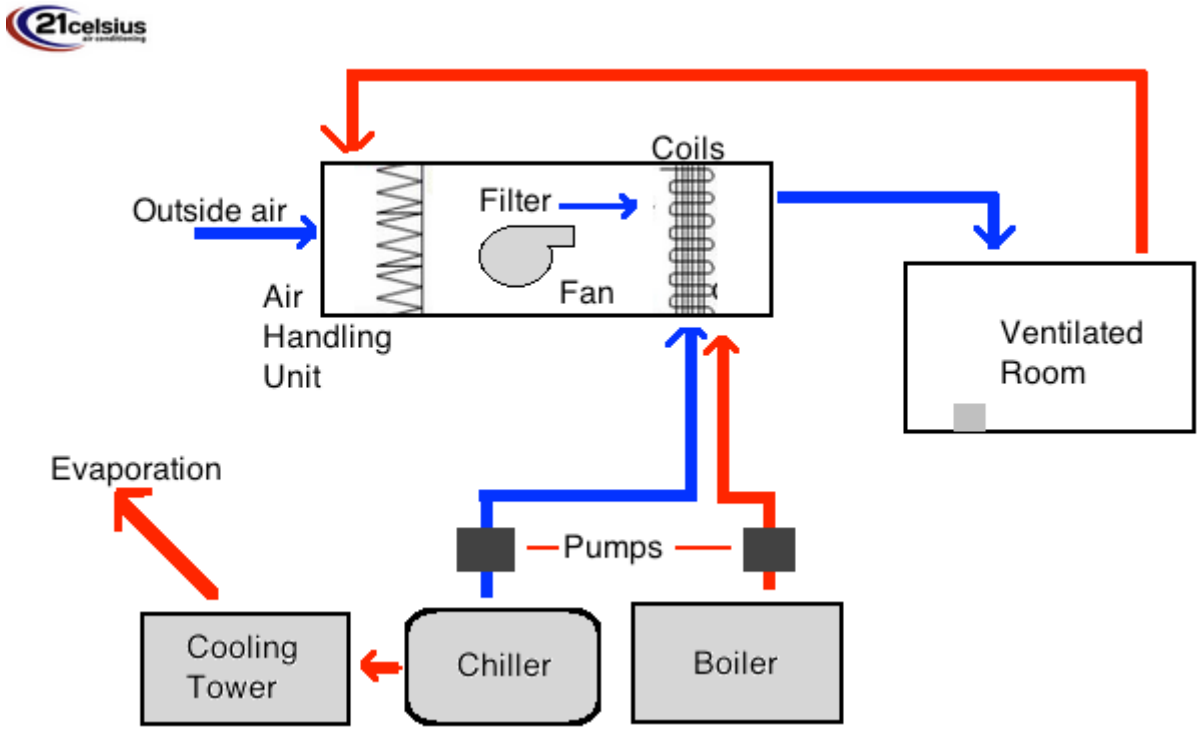
- Zoning and cohorting (physical separation) with doors and walls which do not leak
- Perspex barriers (limited use)
- Pressure differentials between resident's rooms and corridors or common areas (difficult to implement and requires expertise)
- Special arrangements in hospital care – pressure walls

Question 5 – Engineering Controls (ventilation)

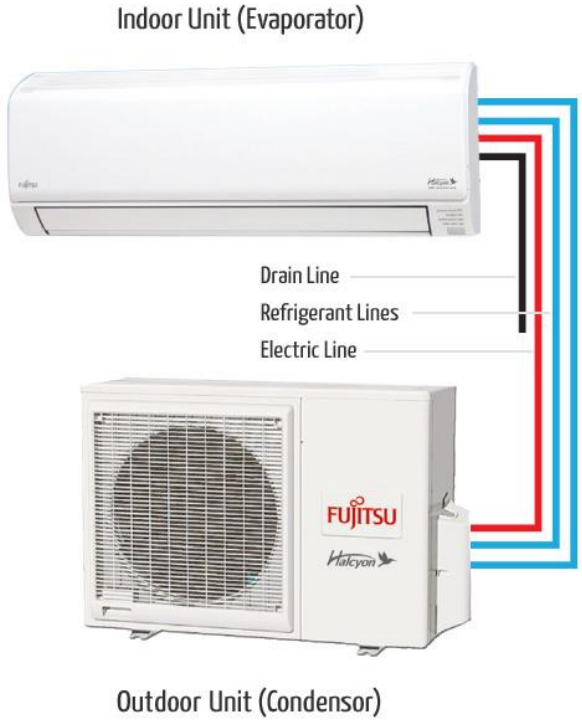
What is ventilation?

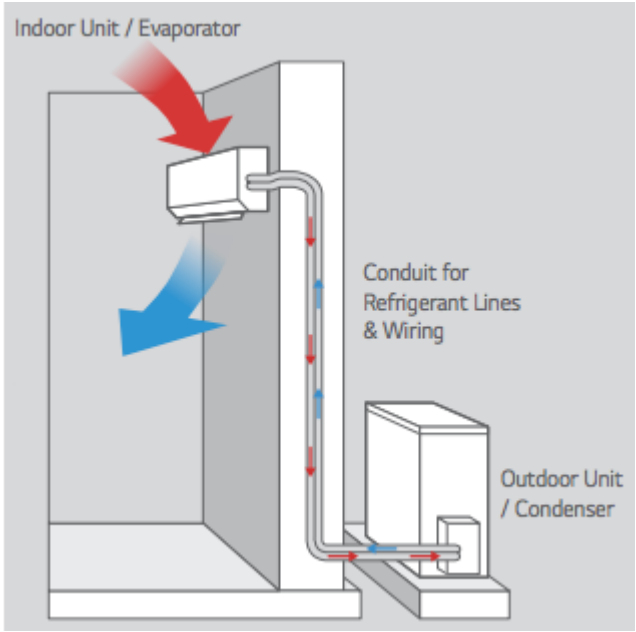
- Ventilation is fresh or recycled air movement and this can be natural and or mechanical
- Natural ventilation means doors windows and vents
- Mechanical ventilation includes HVAC systems, stand alone AC units (window mounted) exhaust fans and other fans, provided there is a passage for air outflow
- Split Air Conditioning systems and ceiling fans recirculate air

Question 5 – A Typical HVAC System



Question 5 – Split System Air Conditioner Types





Question 5 – Fan types

Question 6 – Engineering Controls (air cleaners)

What are air cleaners (air scrubbers) and how do they work?

- Air scrubbers or air purifiers filter air using HEPA filters of Hospital Grade and will clean air and remove COVID-19
- They do not increase ventilation but will clean air in a defined space
- The filtering efficiency depends on the power and the volume of the space or room
- They need a power source and filters regular filter change and they can be noisy

Question 6 – HEPA filters

HEPA stands for High Efficiency Particulate Air. It is a standard defined and developed by the U.S. Department of Energy during the 1940s as part of their efforts to trap particles and contamination resulting from nuclear testing.

This standard has moved into the consumer market and become commonplace for air purifiers. To meet the HEPA standard, the filter must remove 99.97% or more of all particles which are 0.3 microns (micrometres) in diameter.

Most Powerful: Medical Grade - HEPA H13-H14 are in the highest tier of HEPA and considered medical grade quality. Whereas H10-H12 filters only trap 85-99.5% of all particles that are 0.1 microns in diameter, HEPA H13 and H14 trap 99.95% and 99.995% of such particles, respectively.

Question 6 – Air Cleaner Model CB 660

Air Flow	660m³/hour
Power Supply	240V/10A Single Phase
Current Consumption	1A = 240W
Weight	9.8kg
Dimensions	460mm(W) x 286mm(D) x 760mm(H)
Coverage	Up to 80m² Coverage
Fan Speed Settings	x6
Noise Level	66dB[A]

CB 660 Features

The CB660 Air Purifier features 5 stages of air purification with ultraviolet technology, carbon charged Filter, IMD touchpad, Smart Air Quality Display, Sleep Mode and 6 Fan Speeds with Hospital Grade HEPA filtration system. Perfect for homes or professional workplace and office use. Rent ~$161 p/week, buy ~$800-900

- UV Light Technology
- Hospital Grade HEPA Filter
- Activated Carbon Filter
- Multiple Speed Settings

Air Scrubber Models

Samsung 90 m2 variable flow ~ $900

Thor -Husqvarna A1000 300W Portable Air Cleaner ~ $1800

Cool breeze CB2310 HEPA Air Scrubber

SPECIFICATIONS	
Area Handling	200m2
Air Flow	High: 1350CFM = 2310m3/hr Low: 1135CFM = 1928 m3/hr
Noise dB(A)	66dB
Filters	Pre-Filter HEPA Filter >0.3 micron Charcoal (optional)
Power Supply & Use	240V/10A single Phase draw current 5A High setting 1130W Low Setting just 600W
Ducting	300mm duct point
Weight	60 kg
Size LxWxH	72.4L x 76.2W x 76.2H cm

Question 7 – Engineering Controls (air cleaners)

Should air cleaners be used in a residential aged care service?

- It depends on the reason it will reduce fine dusts and animal & plant allergens .
- It can reduce covid risk from an active case, needs to be risk assessment for use and where located – generally moving a case is preferrable - consider noise, power outlets, tripping hazard and need for regular maintenance

Question 8 – Administrative Controls

How can standard work practices/behaviours be appropriately changed to minimise transmission of infection?

- Think about the IPC practices that have been implemented
- Good hand hygiene and respiratory etiquette
- Room density quotients
- Physical distancing
- Cohorting of staff
- More frequent cleaning and disinfection of high touch points

Question 9 – Personal Protective Equipment (PPE)

What are the latest guidelines for eye protection in RACS?

- Protective eyewear can protect the eye from contamination with particles and body fluids that may contain SARS-CoV-2
- Can also be used to prevent the wearer from touching their eyes and face
- Options: closely fitted wrap-around goggles, safety glasses and face shields (not prescription glasses)
- Protective eyewear worn on its own does not provide adequate protection against COVID-19 infection acquisition and needs to be worn with a surgical mask

Question 9 – Personal Protective Equipment (PPE)

Activities	Eye protection required? (DH recommendations)
Daily/standard care activities Clinical care (e.g. wound, dressings, medication management) Touching a resident's belongings/equipment Visiting a resident's room	Should be worn if required for standard precautions
Caring for low-risk suspected with no community transmission	Eye protection – Face shield where practical or goggles (Tier 2 PPE)
Caring for low-risk suspected COVID-19 cases when performing AGB/AGPs	Eye protection – Face shield where practical or goggles (Tier 3 PEE)
Caring for suspected or confirmed COVID-19 cases when there is community transmission	Eye protection – Face shield where practical or goggles (Tier 3 PPE)

*Note: enhanced PPE requirements may be initiated by Public Health Directions and may depend on the level of community transmission and risk of infection transmission. In these situations, surgical masks and eye protection may be required for all staff at all times.

Question 10 – IPCAR & OP

What Department of Health resources for residential aged care services are available and where can I find them?

https://www.dhhs.vic.gov.au/infection-prevention-control-resources-covid-19

https://www.dhhs.vic.gov.au/aged-care-sector-coronavirus-disease-covid-19

https://www.health.gov.au/resources/publications/coronavirus-covid-19-guidelines-for-infection-prevention-and-control-in-residential-care-facilities

Question 10

Aged care

Guidelines

- COVID-19 PPE guidance for RACF Factsheet June 2021 (Word)
- Ventilation strategies to reduce COVID-19 transmission in residential aged care facilities (Word)

Zones and wayfinding

Please find resources here to help you with creating coronavirus (COVID-19) zones, and PPE wayfinding zones in your aged care facility:

- Creating COVID-19 zones in residential aged care facilities (Word)
- Download a poster of PPE wayfinding zones for aged care settings (PDF)
- Download a poster of an example aged care floor plan with PPE wayfinding zones (PDF)

PPE for zones

Please find below a series of posters that will help your staff follow infection prevention control procedures for personal protective equipment (PPE) in each of the different types of zones – green, yellow, amber and red.

Each zone can be downloaded as a zipfile which contains 2-3 posters. These can be printed and placed in an area where all staff are made aware of the process required.

- PPE for Green Zone posters (ZIP)
- PPE for Yellow Zone posters (ZIP)
- PPE for Amber Zone posters (ZIP)
- PPE for Red Zone posters (ZIP)

Resources

- COVID-19 Outbreak resource pack for residential aged care facilities (RACF) (PDF)
- How to prepare a COVID-19 outbreak response kit (Word)
- Stop - No entry poster
- Stop - PPE required past this point poster

For further resources and information about COVID-19 training courses for the aged care sector, visit the Aged Care sector page.

Question 10

https://www.health.gov.au/committees-and-groups/infection-control-expert-group-iceg