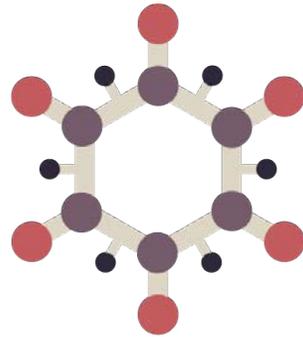


# COVID-19 'PPE's and other non-pharmaceutical strategies

Dr Susan Jain

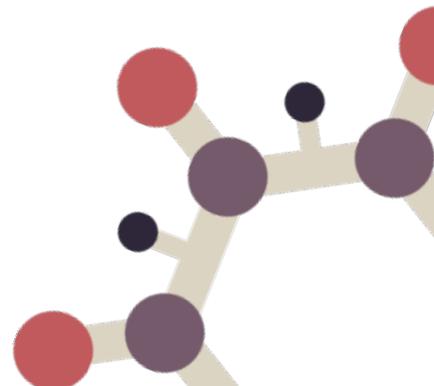
Infection Prevention and Control Consultant, COVID-19 Response Lead



**I M M U N I S A T I O N**  
**C O A L I T I O N**

# Risk Management in Healthcare

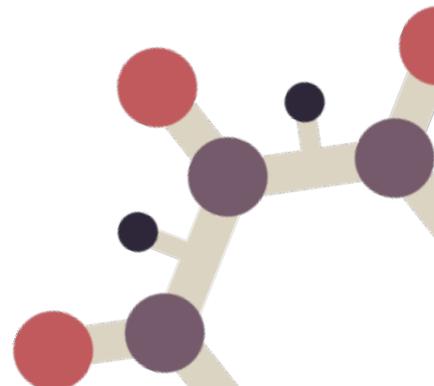
- ❁ Risk management in healthcare comprises the clinical and administrative systems, processes, and reports employed to detect, monitor, assess, mitigate, and prevent risks.
- ❁ Deployment of healthcare risk management has traditionally focused on the important role of patient safety and health worker (HW) protection.



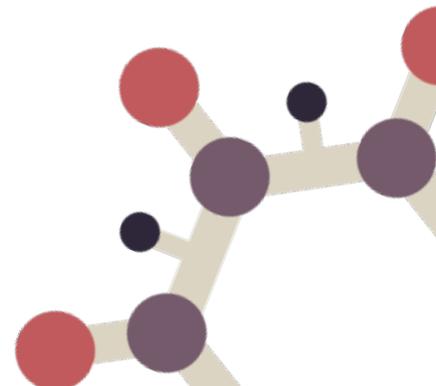
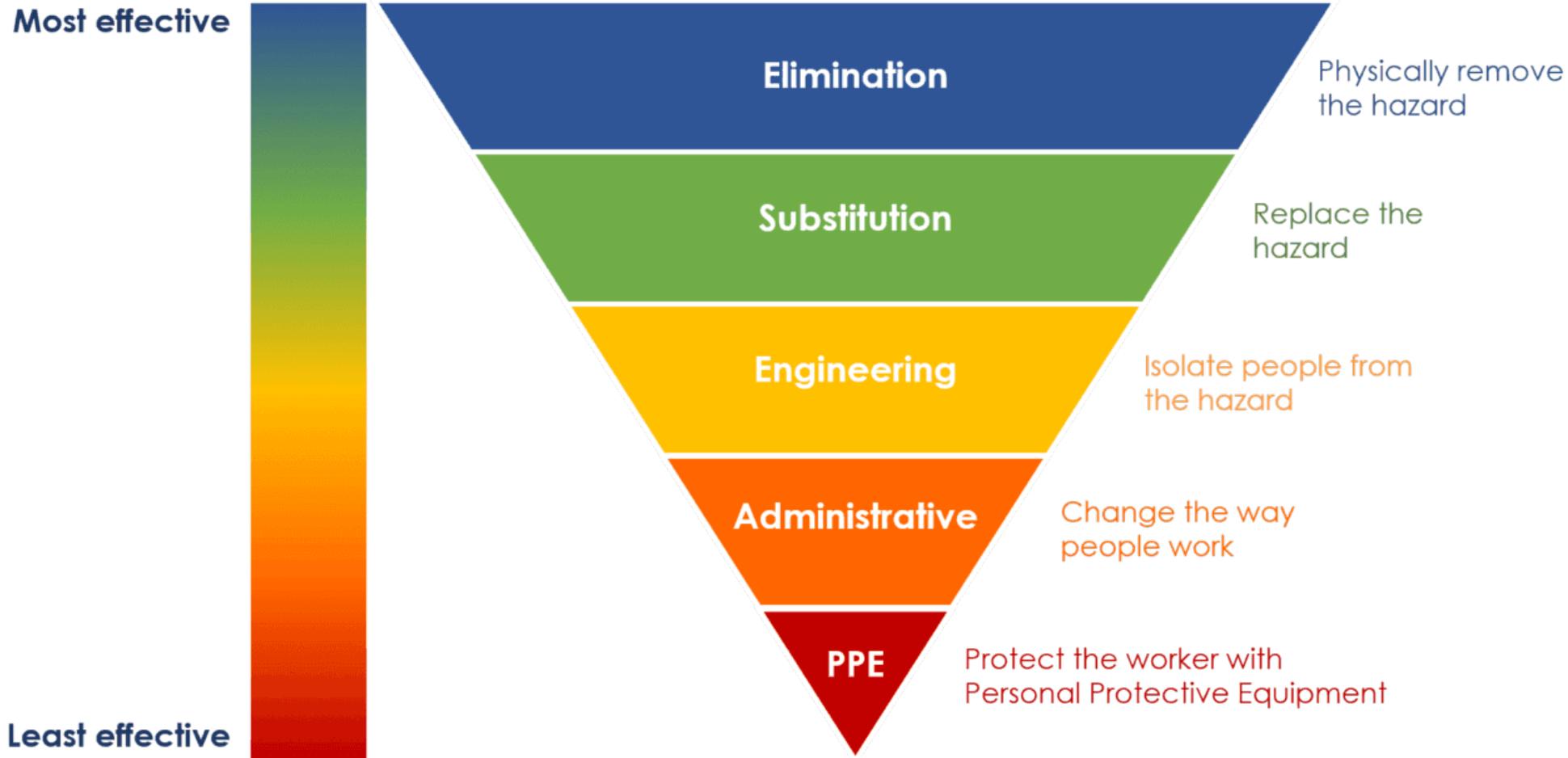
# Poll question

🌀 **Choose the least effective controls in reducing the risk to health and safety.**

1. Elimination
2. Substitution
3. Engineering
4. Personal protective equipment

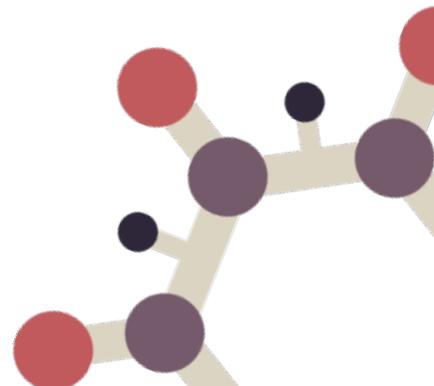


# Hierarchy of controls



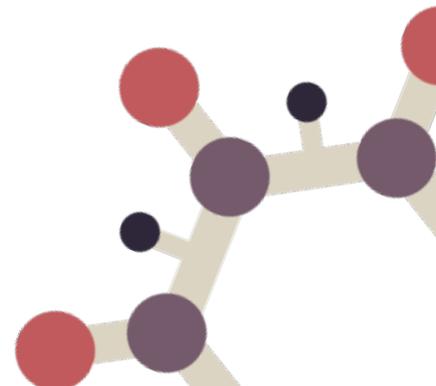
# Elimination

- ❁ Public health restrictions
- ❁ Testing availability
- ❁ Contact tracing
- ❁ Work from home policies
- ❁ Telehealth consultations
- ❁ Visitor restrictions
- ❁ Early discharge of patients not requiring inpatient care
- ❁ Use of remote meeting technology



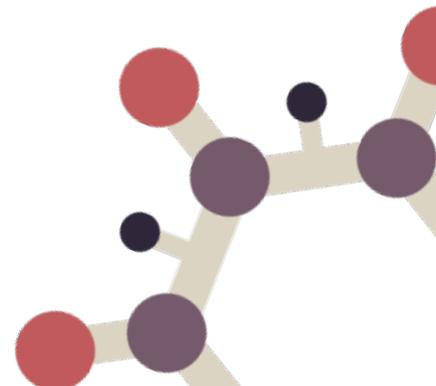
# Substitution

 Immunization if available



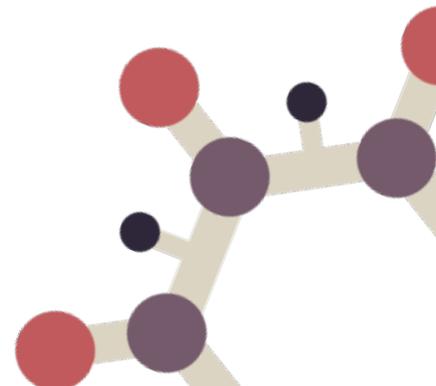
# Engineering

- ⚙ Attention to ventilation & air circulation in clinical & non-clinical areas
- ⚙ Availability of negative pressure rooms
- ⚙ Physical separation of patient groups (single room, cohort)
- ⚙ Adequate space for health workers
- ⚙ Provision of breakroom with enough spacing
- ⚙ Enough physical barrier for public facing HWs
- ⚙ Appropriate equipment and cleaning regimes



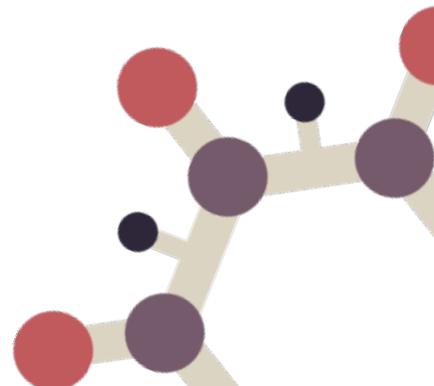
# Administrative

- ❁ Existing policies, procedures, new guidance & recommendations for COVID-19
- ❁ Appropriate governance
- ❁ Use national & state guidelines - inform & develop hospital COVID-19 guidelines
- ❁ Regular communications to HWs & public
- ❁ Workflow changes to enable physical distancing
- ❁ Bed allocation (COVID-19 specific ward)
- ❁ HW training and monitoring of PPE compliance
- ❁ Hand hygiene
- ❁ Cleaning (environmental and shared equipment)



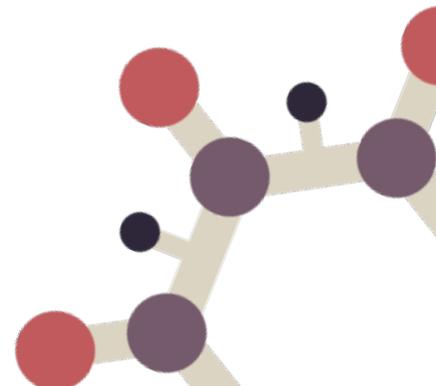
# Personal protective equipment (PPE)

- ✿ PPE - clothing or equipment designed to be worn by someone to protect them from the risk of injury or illness
- ✿ PPE - evolved over the centuries as healthcare needs have increased and become more challenging



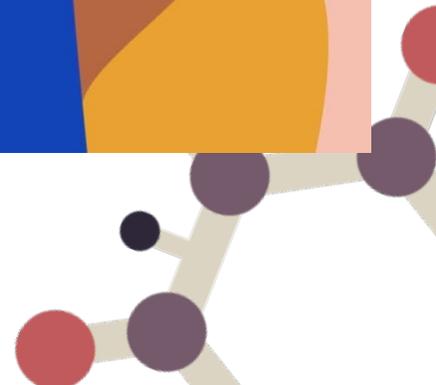
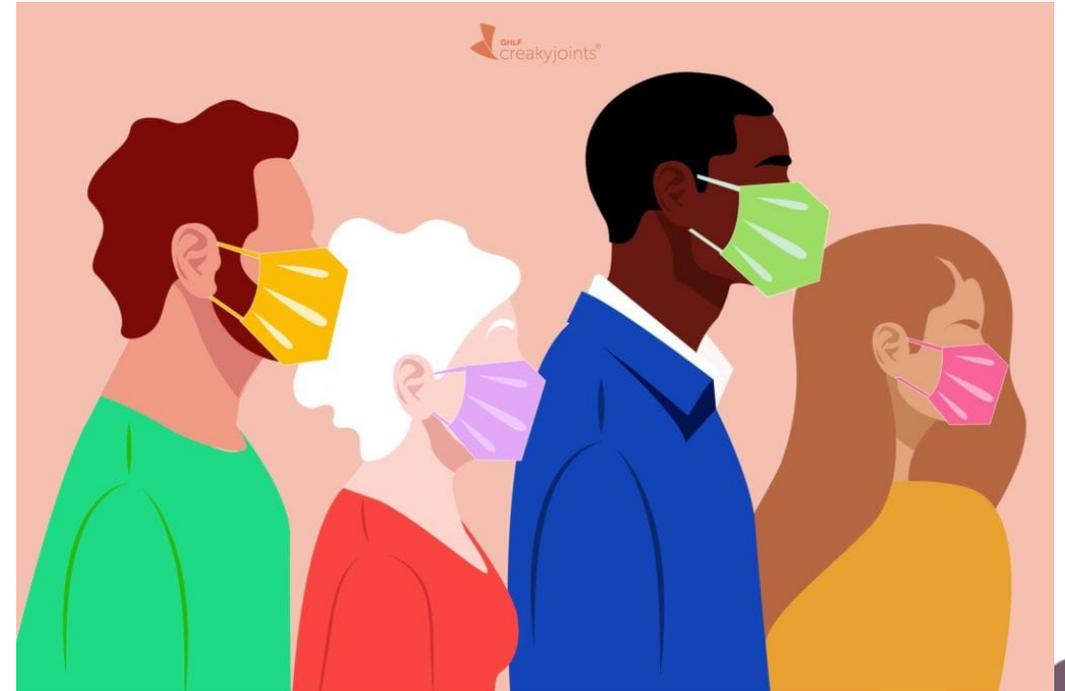
# Where does the use of PPE fit in the risk management process?

- ☼ Use of PPE - lowest on the list of control priorities
- ☼ These controls should not be relied on as primary means of risk control until the options higher in the list of control priorities have been exhausted
- ☼ PPE should only be used:
  - ☼ as a last resort where there are no other practical control measures available



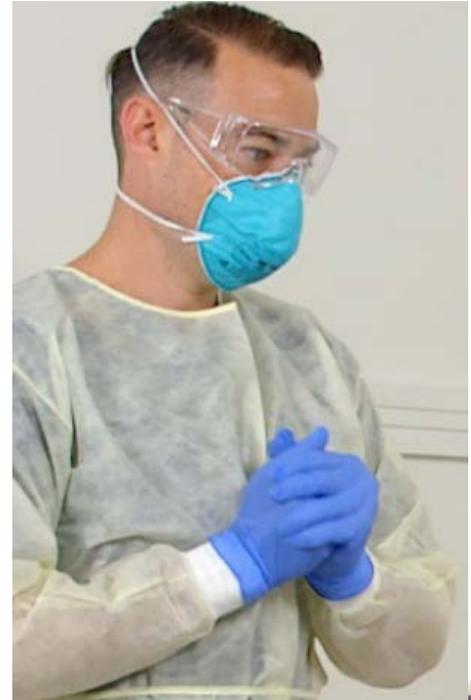
# Who should be wearing PPE?

- ☼ Health workers
- ☼ GPs
- ☼ Patients
- ☼ Visitors to health facility
- ☼ Community



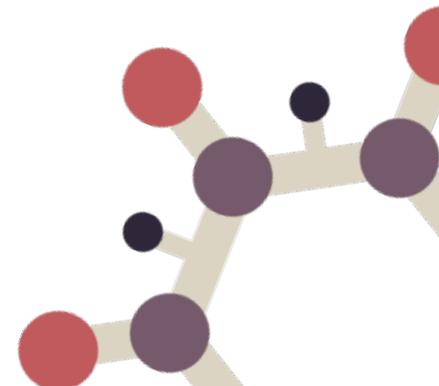
# Commonly used PPE in Healthcare

- ❁ Gown/apron
- ❁ Eye protection
- ❁ Respiratory protection
- ❁ Gloves



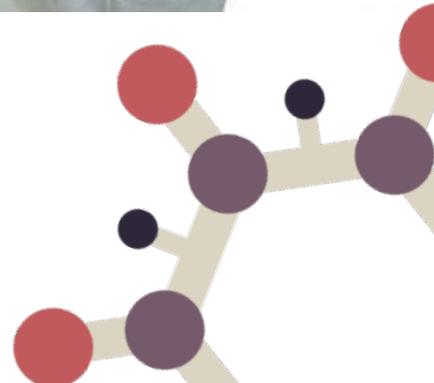
# Gloves

- ❁ Wearing gloves does not eliminate need for hand hygiene & hand hygiene must be performed immediately:
  - ❁ before putting on gloves to avoid contamination of the outer surface of the gloves; and
  - ❁ after removing gloves to avoid transfer of microorganisms to another person, patient's environment, clinical equipment from wearer's hands and to protect the HW.



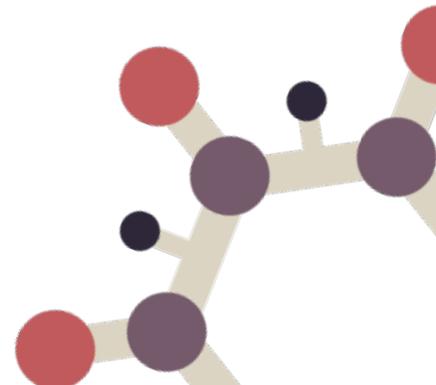
# Aprons and gowns

- ❁ Disposable, fluid resistant aprons/gowns recommended for general clinical use when close contact with patient, materials/equipment to prevent contamination of uniforms or other clothing

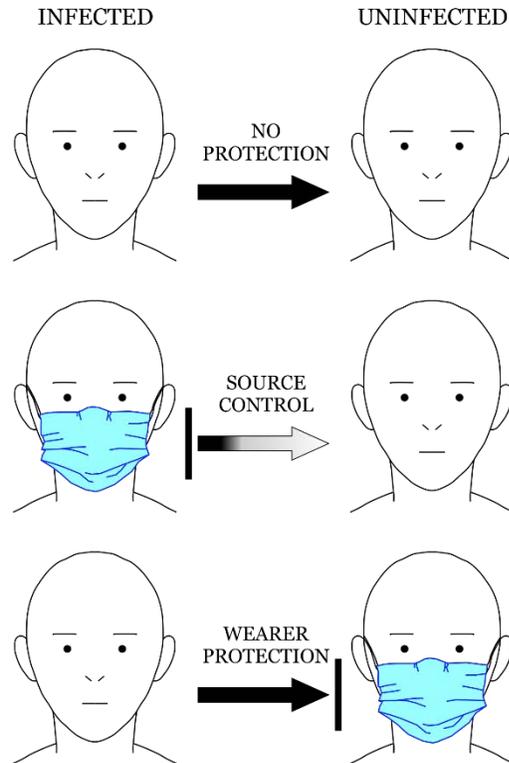


# Eye Protection

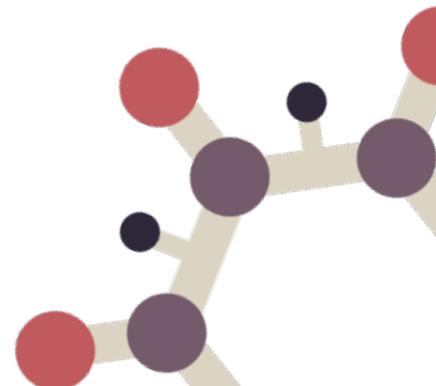
- ☼ Eye protection - worn with risk of body substances splashing or spraying into conjunctiva
- ☼ Eye protection (safety glasses, mask visor, goggles or a face shield) - recommended for close contact within 1.5 metres COVID-19 patient



# Masks

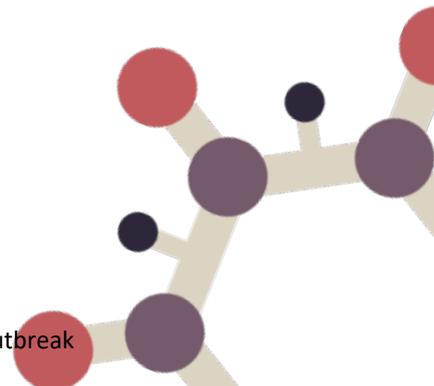


- ❖ loose-fitting, fluid resistant & disposable
- ❖ prevent large bodily fluid droplets that may contain pathogens from nose & mouth
- ❖ protect against splashes/sprays (sneezes/coughs) from other people
- ❖ animal model suggests aerosol SARS-CoV2 transmission events masks provide
  - source control
  - wearer protection



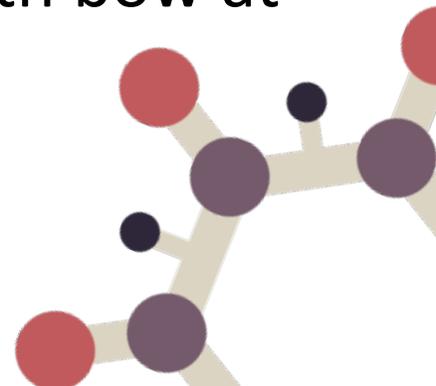
# General guidance for cloth masks

- ✿ 3-layer masks are best (2 minimum)
- ✿ Fluid-repellent outside layer provides best protection
- ✿ 1 for each time of the day you think you'll need it
- ✿ Wash your collection of masks at the end of each day
- ✿ Handle masks with clean hands.
- ✿ Treat your used mask like a used handkerchief - not on desk or hanging around your neck
- ✿ Clean hands before & after putting on mask & adjusting mask
- ✿ Masks - not for babies and children <2 years old - choking hazards



# How to don a mask

- ☼ Hand hygiene before touching mask
- ☼ Remove mask from box, look for obvious tears/holes both sides
- ☼ Determine mask outer side - bright blue facing out white side facing inside
- ☼ Stiff bendable edge on top
- ☼ Stiff edge mould/pinch to the shape of nose bridge
- ☼ Mask with ties - take bottom ties one in each hand, secure with bow at nape of neck
- ☼ Pull bottom mask over mouth & chin



# Wearing a Mask: Dos & Don'ts

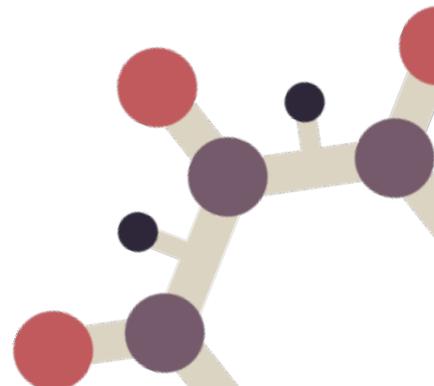
Created by Corri Levine @CBLevineMS



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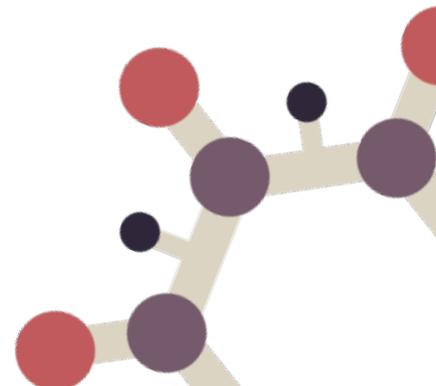
# Mask Etiquette

## Face Masks and Coverings for COVID-19



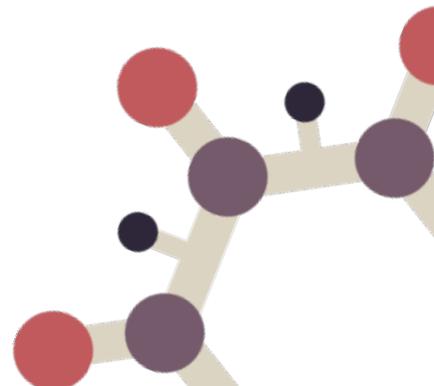
# When you are wearing a mask,

- ☼ Change when moist
- ☼ Change when sprayed or splashed
- ☼ Perform hand hygiene if mask accidentally touch (change mask if contaminated with blood/body fluids)
- ☼ Removing mask: perform hand hygiene, remove & discard into general waste bin, put on new mask
- ☼ Report mask pressure injuries - supervisor or manager
- ☼ Follow local reporting processes and WH&S processes



# Respiratory Protective Equipment (RPE)

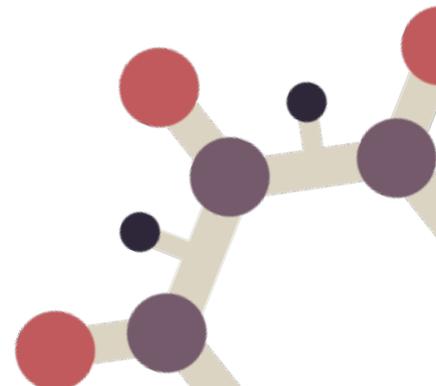
- ✿ Worn on face, covers at least nose and mouth
- ✿ Used to reduce wearer's risk of inhaling hazardous airborne particles (including dust particles & infectious agents)
- ✿ Respiratory and facial protection
  - ✿ required with droplet or airborne transmitted pathogens
  - ✿ airborne particles have been artificially created e.g. Respiration Aerosol generation procedures (AGPs)



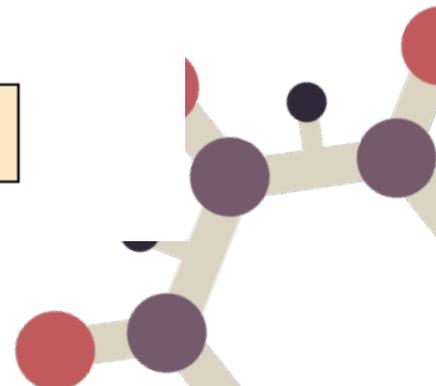
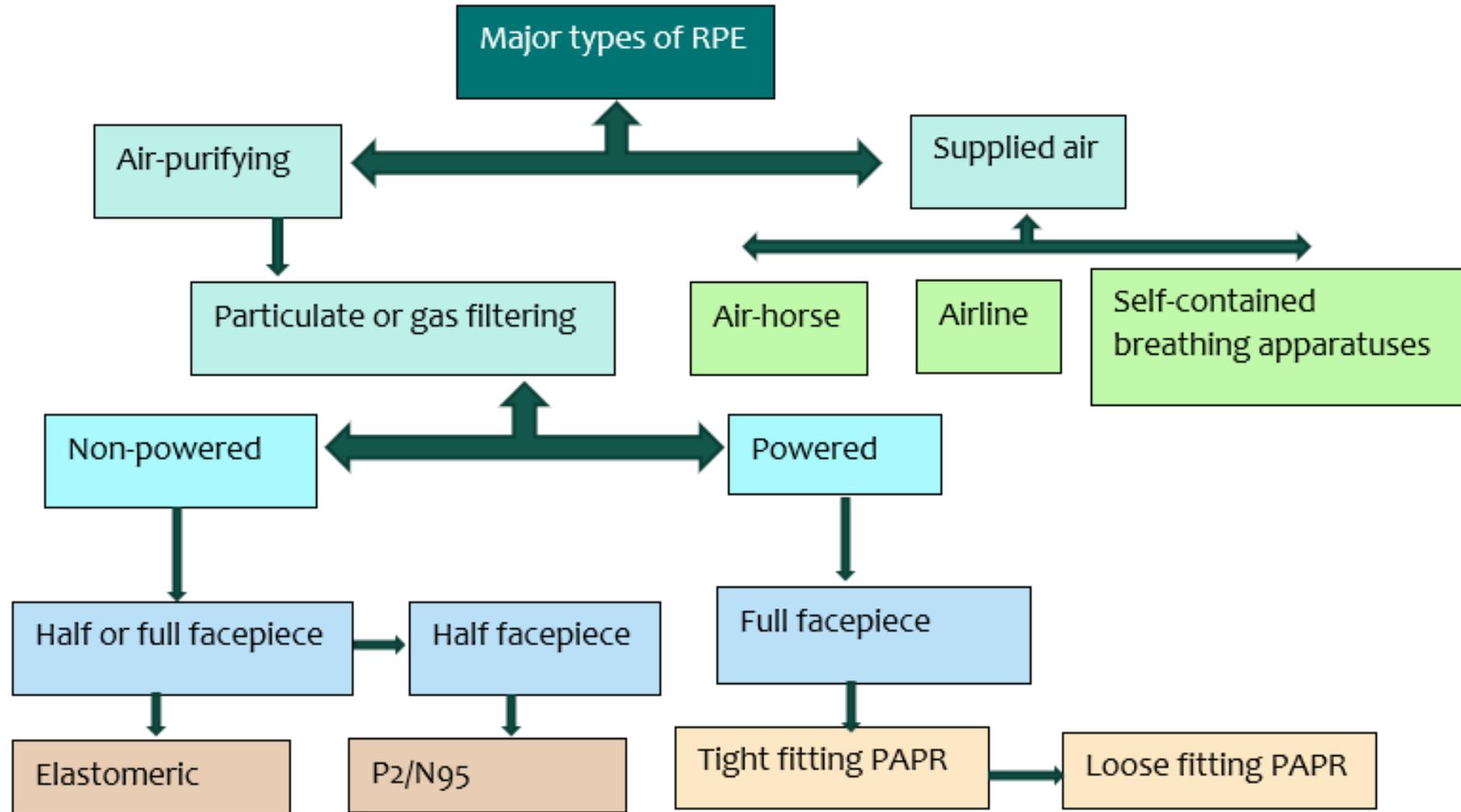
# Poll question

🌀 When should a respirator be used?

1. Contact precautions
2. Droplet precautions
3. Airborne precautions

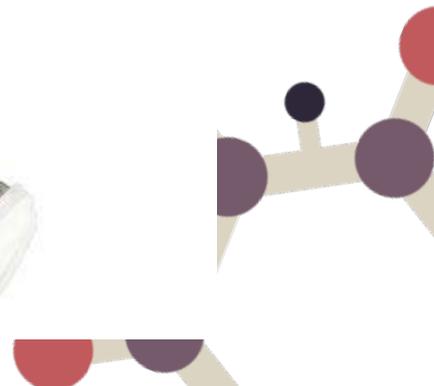


# Type of RPE



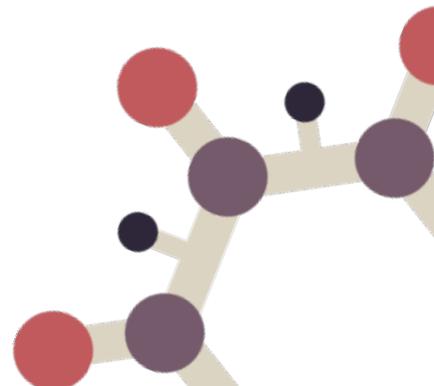
# Non-powered Respirators

- ✿ Air drawn through filter by inhalation
- ✿ Several types available
  - ✿ Disposable filtering half-facepiece (P2/N95)
  - ✿ Reusables usually termed “elastomeric”
  - ✿ Half-facepiece with one or more replaceable filters
  - ✿ Full facepiece or head covering with one or more replaceable filters



# P2/N95 Respirators

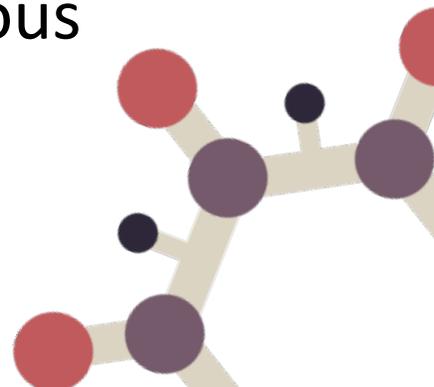
- ✿ Essentially same type of half-face particulate respirators
- ✿ Intended to protect wearer from airborne contaminants
- ✿ Forms seal over mouth & nose for efficient filtration of airborne particles
- ✿ Must be fitted & adjusted correctly to face to provide intended protection



# Optimal use of P2/N95 respirator

Use a correctly fitted P2/N95 disposable respirator when:

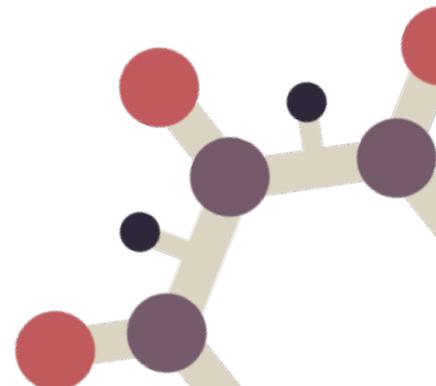
- ☼ Attending patients with probable/suspected or confirmed respiratory infection or communicable diseases with potential for airborne transmission (e.g. pulmonary or laryngeal Tuberculosis)
- ☼ Performing respiratory AGP on patient suspected/probable or confirmed respiratory infection (e.g. COVID-19)
- ☼ By maintenance staff potentially exposed to inhalation dangerous particulates & gases



# Evolving guidance/recommendations for Respirators

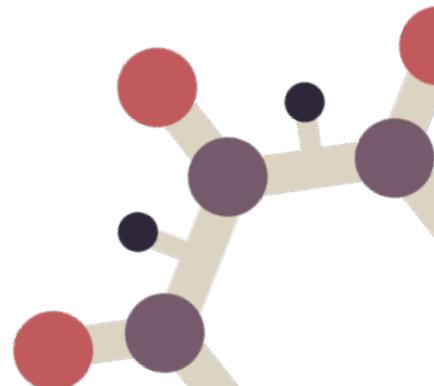
Used with

- ✿ Suspected or confirmed COVID-19 patients cohorted
- ✿ Frequent, prolonged episodes of care (e.g. dedicated COVID-19 ward)
- ✿ COVID-19 patients cohorted and a risk of unplanned respiratory AGPs and/or aerosol generating behaviours (screaming, shouting, spitting)



# Fit checking or user seal check

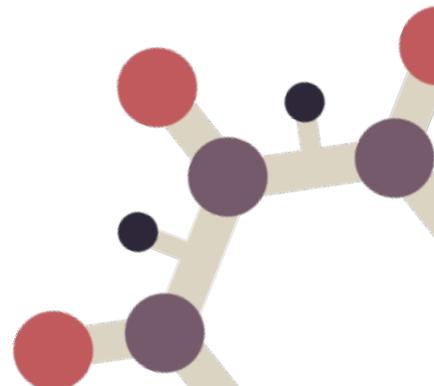
- ✿ A process performed each time a respirator is donned to check that a good facial seal is achieved
  - ✿ respirator sealed over bridge of nose and mouth
  - ✿ no gaps between the respirator & face



# Poll question

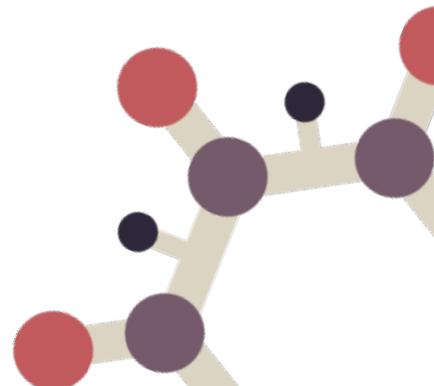
🌀 When should you fit check a respirator?

1. Once in a day
2. Every four hours
3. Each time a respirator is donned (correct)



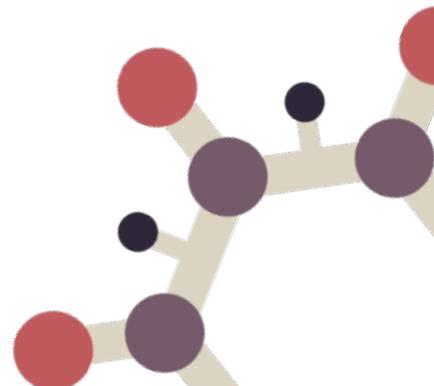
# Fit testing

- ✿ Tests seal between respirator's facepiece & wearer's face
- ✿ 15-20 mins - complete and performed at least annually
- ✿ After passing a fit test with a respirator HW must use
  - ✿ exact same make
  - ✿ model
  - ✿ style
  - ✿ size respirator



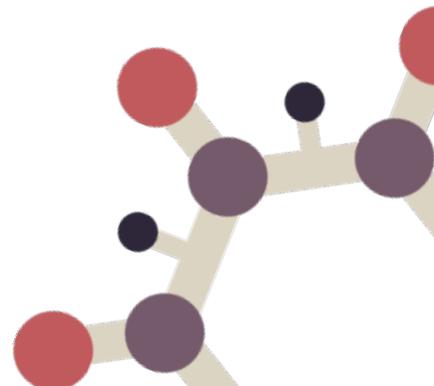
# Elastomeric respirators

- ✿ Reusable device with exchangeable cartridge filters
- ✿ Possible alternative to some current disposable P2/N95 respirators
- ✿ Require fit testing
- ✿ Exhalation valves can restrict its use in clinical settings
- ✿ Cleaning, disinfection and maintenance challenges



# Powered Air Purifying Respirators (PAPRs)

- ❁ Battery-powered blower provides positive airflow through filter, cartridge, or canister to a hood or face piece to protect user by filtering out contaminants
- ❁ Type and amount of airborne contaminant dictates type of filter, cartridge or canister required for PAPR
- ❁ Some parts are reusable
- ❁ Exhalation valves



# Donning and Doffing of PPE

- ✿ Follow correct sequencing
- ✿ Hand hygiene in between
- ✿ Reinforce PPE (donning, doffing, appropriate use, proper disposal)
- ✿ Take time - doff, cleaning hands in between, doffing space, hands off face while wearing PPE
- ✿ Supervision, buddy system
- ✿ Regular audit with feedback
- ✿ Use PPE champions or tiger team

