

# **PROTECTING STAFF: PPE STAFF WELLBEING LEVELS OF SICKNESS TO BE EXPECTED**

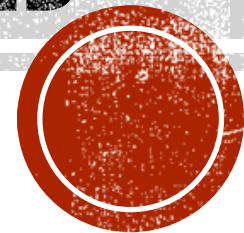
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# SINGAPORE CONTEXT



- Population: 5.7 million
  - Singapore residents 4 million (Citizens 3.5 million, Permanent residents 0.5 million)
  - Foreigners 1.7 million
- COVID-19 Statistics (as of 16 March 2020)
  - Confirmed cases = 226
  - Recovered cases = 105
  - Still in hospital = 121
  - Critical condition in ICU currently = 13
  - Deaths = 0
  - #23 most affected country (was #2 for most of February 2020)
  - Confirmed cases affecting pregnant women: 0
  - 5244 close contacts quarantined - 3532 completed quarantine
- KK Women's and Children's Hospital
  - Largest O&G unit in Singapore – delivers ~ 12000 babies annually
  - Number of screened and COVID-19 swabbed pregnant women at KKH: 56



**COVID-19**

**PANDEMIC**



### **WHO chief on coronavirus: This is not a drill**

Director-general of the World Health Organization Dr. Tedros Adhanom Ghebreyesus has warned governments that the global spread of the novel coronavirus is "not a drill" and called on them to take significant action if public health authorities are to contain the deadly outbreak. [Source: CNN](#)



# GENERAL PREVENTIVE MEASURES FOR HEALTHCARE PROVIDERS

- Maintain good personal hygiene
- Social distancing during COVID-19 epidemic period
  - Reduce participation in gathering where minimum distance of 1m between individuals cannot be maintained
- Performing hand hygiene frequently with an alcohol-based hand rub (with 70% alcohol concentration) if hands not visibly dirty
  - Soap and water if hands dirty
- Avoid touching eyes, nose, mouth
- Respiratory hygiene – cough/sneeze into bent elbow or tissue then dispose tissue immediately
- Wear a 3-ply surgical mask when visiting a hospital or other high risk areas
  - Recommended by some national health authorities/hospital systems
- Seek medical assistance promptly for timely diagnosis and treatment when experiencing symptoms like fever and cough

# SCREENING PATIENTS FOR COVID-19

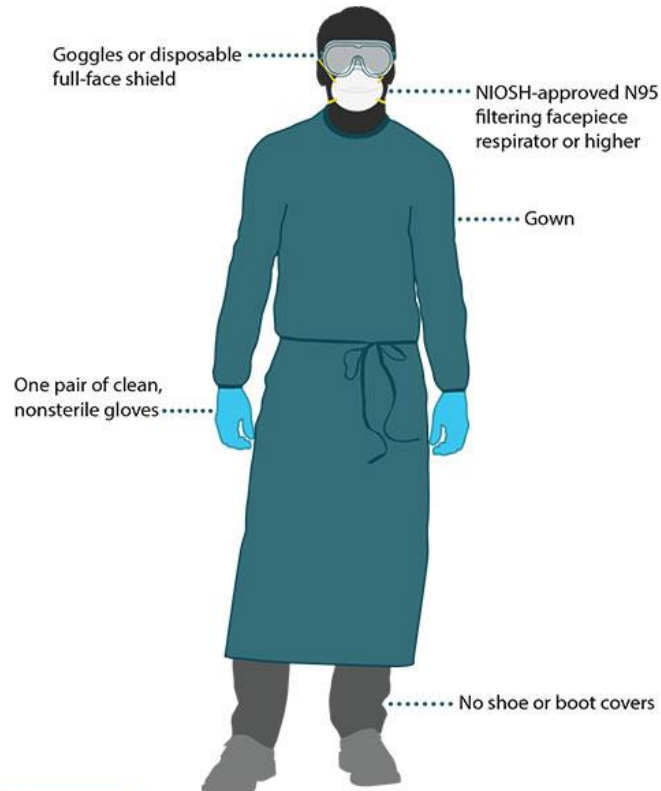
Checklist for Symptoms and TOCC	
1	Influenza-like illness symptoms
<input type="checkbox"/>	Fever
<input type="checkbox"/>	Cough
<input type="checkbox"/>	Sore Throat
<input type="checkbox"/>	Shortness of breath
<input type="checkbox"/>	Diarrhea and/or vomiting
<input type="checkbox"/>	None of above
<input type="checkbox"/>	Information cannot be obtained
2	TOCC: 14 days before onset of symptoms
<input type="checkbox"/>	History of recent <u>Travel</u> to the affected areas Date of travel: from _____ to _____ Area: _____
<input type="checkbox"/>	High risk <u>Occupation</u> (e.g. laboratory workers, healthcare workers, wild animals related work)
<input type="checkbox"/>	History of unprotected <u>Contact</u> with: <u>a_Human</u> case confirmed with COVID-19, OR <u>b_Consumption</u> of wild animals in areas known to have COVID-19 infection
<input type="checkbox"/>	Clustering of influenza-like illness / pneumonia (≥2 affected persons)
<input type="checkbox"/>	None of above
<input type="checkbox"/>	Information cannot be obtained
3	Types of Isolation Precautions required:
<input type="checkbox"/>	Droplet Precautions
<input type="checkbox"/>	Contact Precautions
<input type="checkbox"/>	Airborne Precaution
<input type="checkbox"/>	Nil
Date:	
Name & Signature:	
Designation:	

- **Patients with respiratory symptoms!!**
  - **Surgical mask**
- **Frontline screening staff**
  - Minimum of 3-ply surgical mask and gloves + maintain 1m spatial distance
  - **N95**
- **Prompt negative pressure isolation room for patients with suspected/probable COVID-19**
- **Cleaners**
  - Surgical mask
  - Gown
  - Heavy duty gloves
  - Eye protection (if risk of splash from organic material or chemicals).
  - Boots or closed work shoes
- **Consider separate healthcare teams for looking after confirmed/probable/suspected COVID-19 and those who are negative on screening**

# PERSONAL PROTECTIVE EQUIPMENT (PPE)

COVID  
CORONAVIRUS  
DISEASE  
19

COVID-19 Personal Protective Equipment  
(PPE) for Healthcare Personnel



- Indications for use:
  - Caring for/transferring confirmed COVID-19 patients
    - WHO – surgical mask instead of N95
  - Aerosol generating procedures in confirmed/suspected COVID-19 patients
    - Tracheal intubation
    - NIV
    - CPR
    - Manual ventilation before intubation
    - Sputum induction
    - Collection of nasopharyngeal swab
    - Suctioning
    - **Vaginal delivery**
    - **Surgery, including caesarean section**



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For more information: [www.cdc.gov/COVID19](http://www.cdc.gov/COVID19)



KK Women's and  
Children's Hospital  
SingHealth

# N95 FIT TEST AND PPE TRAINING

**N95 DAY 2016**

## Why are annual FIT TESTS required?

OSHA requires annual fit testing: 29 CFR 1910.134

Administrator

Time for your annual fit testing!

It usually only takes 15-20 minutes.

Bottom line...

If your respirator doesn't fit, it can't efficiently protect you. **OSHA requires annual fit testing: 29 CFR 1910.134**

Worker

Can we do this another day? I've got so much to do.

I'm busy. You're busy. Why is it necessary to do this EVERY YEAR?

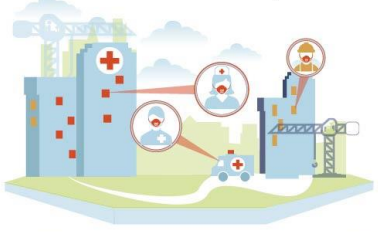
## NIOSH Facts

**10%** NIOSH research confirms the need for annual testing: 10% of subjects failed a fit test after 1 year using the same make, model, and size respirator.

NIOSH research also suggests that those who have lost > 20lbs should prioritize getting fit tested again right away. Other facial changes requiring fit testing include significant weight gain, extensive dental work, scarring, or cosmetic surgery.

Respirator fit **CAN** change over time. If your respirator doesn't fit, it doesn't work.

If the respirator fit is unacceptable, the worker must be given the opportunity to select a different respirator and be retested.



## QUALITATIVE RESPIRATOR FIT TESTING



## QUANTITATIVE RESPIRATOR FIT TESTING




Sources: OSHA Fit Testing Procedures 1910.134, Appendix A. [https://www.osha.gov/pls/osaweb/owadisp.show\\_document?p\\_table=STANDARDS&p\\_id=9780](https://www.osha.gov/pls/osaweb/owadisp.show_document?p_table=STANDARDS&p_id=9780)  
New NIOSH Study Supports the OSHA Annual Fit Testing Requirements for Filtering Facepiece Respirators, <http://blogs.cdc.gov/niosh-science-blog/2016/01/05/fit-testing/>

DEPARTMENT OF HEALTH AND HUMAN SERVICES  
Center for Disease Control and Prevention  
National Institute for Occupational Safety and Health





 **Dr ABC**  
Consultant  
[Update profile](#)


 **36.5°C**  
Temperature recorded on 16/03/2020  
[Update temperature record](#)

 **100/100**  
Immunity status score as on 16 Mar 2020  
[Update immunisation records](#)

 **0**  
Count of reported sickness in last 12 months  
[Click to report sickness](#)

 **None**  
Not registered for any future training  
[Click to register for training](#)

 **None**  
No Future Travel Plan declared  
[Declare Travel Plans](#)

 **1/9**  
PPE Tested / Available PPE  
[Update PPE records](#)





# FAQS ABOUT MASKS

- N95 masks filter out at least 95% of very small (0.3 micron) particles, including bacteria and viruses
  - Needs to cover at least nose and mouth
- Use for 8 hours
  - Extended use vs (Limited) reuse
  - Minimize unnecessary contact with the respirator surface
  - Strict adherence to hand hygiene practices, and proper PPE donning and doffing technique
  - Reuse no more than 5 x
- Discard N95 after:
  - Aerosol generating procedures
  - Contaminated with blood, respiratory or nasal secretions or other bodily fluids
  - Close contact with or exit from care area of any patient co-infected with infectious disease requiring contact precaution
  - Noticeable damage or becomes hard to breathe through
- How to prolong N95 use
  - Use cleanable face shield over N95 – reduce surface contamination
  - Hang used respirators in designated storage area or keep them in a clean breathable container such as a paper bag between uses
  - Minimise cross contamination – ensure they do not touch each other and person using is clearly identified

## Understanding the Difference



**Surgical Mask**



**N95 Respirator**

	Surgical Mask	N95 Respirator
<b>Testing and Approval</b>	Cleared by the U.S. Food and Drug Administration (FDA)	Evaluated, tested, and approved by NIOSH as per the requirements in 42 CFR Part 84
<b>Intended Use and Purpose</b>	Fluid resistant and provides the wearer protection against large droplets, splashes, or sprays of bodily or other hazardous fluids. Protects the patient from the wearer's respiratory emissions.	Reduces wearer's exposure to particles including small particle aerosols and large droplets (only non-oil aerosols).
<b>Face Seal Fit</b>	Loose-fitting	Tight-fitting
<b>Fit Testing Requirement</b>	No	Yes
<b>User Seal Check Requirement</b>	No	Yes. Required each time the respirator is donned (put on)
<b>Filtration</b>	Does NOT provide the wearer with a reliable level of protection from inhaling smaller airborne particles and is not considered respiratory protection	Filters out at least 95% of airborne particles including large and small particles
<b>Leakage</b>	Leakage occurs around the edge of the mask when user inhales	When properly fitted and donned, minimal leakage occurs around edges of the respirator when user inhales
<b>Use Limitations</b>	Disposable. Discard after each patient encounter.	Ideally should be discarded after each patient encounter and after aerosol-generating procedures. It should also be discarded when it becomes damaged or deformed; no longer forms an effective seal to the face; becomes wet or visibly dirty; breathing becomes difficult; or if it becomes contaminated with blood, respiratory or nasal secretions, or other bodily fluids from patients.



Centers for Disease Control and Prevention  
National Institute for Occupational Safety and Health



SingHealth

# LEVELS OF SICKNESS EXPECTED AMONGST HEALTHCARE PROVIDERS

The New York Times

## Two Emergency Room Doctors Are in Critical Condition With Coronavirus

Karen Weise 4 hrs ago



SEATTLE — Two emergency medicine doctors, in New Jersey and Washington State, are in critical condition as a result of coronavirus, rei



This article is more than 1 month old

### Doctor who blew whistle over coronavirus has died, hospital says

Early reports of death of Li Wenliang were retracted, only for doctor to succumb to disease later in day

Coronavirus - latest updates

Singapore

### The Big Read: The untold sacrifices by frontline healthcare workers as they soldier on against COVID-19

For more than a month now, frontline healthcare workers have been grappling with lost time with family members and disruptions to their personal routines and plans.

# LEVELS OF SICKNESS EXPECTED AMONGST HEALTHCARE PROVIDERS

- In China, data up to 24 Feb 2020, 3387 healthcare workers confirmed with infection
  - 22 deaths (0.6%)
  - >90% from Hubei province
- In Singapore, data up to 16 Mar 2020, 5 affected healthcare workers (1 anaesthetist, 1 A&E nurse, 1 psychologist, 1 medical social worker, 1 non-clinical staff) confirmed with infection – contact tracing show no evidence of transmission from within the clinical workplace
  - 226 confirmed cases in Singapore (2.2%)
  - 2 of 5 since discharged from hospital – rest still admitted in isolation wards
- SARS 2002
  - 8098 cases → 1707 (21%) cases involving healthcare workers

# **FACTORS THAT INCREASE RISK OF TRANSMISSION TO HEALTHCARE PROVIDERS**

- **Inadequate personal protection use at the beginning of the epidemic**
- **Long-time exposure to large scale of infected patients**
- **Shortage of PPE**
- **Insufficient training of frontline staff for infection prevention and control**

# MEASURES TO REDUCE TRANSMISSION AMONGST HEALTHCARE PROVIDERS

- Appropriate PPE and infection control training
- Restriction of travel, especially to highly affected areas (national level definitions)
- If staff have exposure/significant contact with confirmed cases or travel to highly affected areas, 14-day quarantine or “Stay Home Notice” as per national guidance
- Travel to other affected areas, consider:
  - Informing supervisors and institutional HR
  - Surgical masks for 14 days, even if not patient-fronting
  - Social distancing, frequent hand hygiene
  - Regular temperature monitoring
- Advise defer/against non-essential travel
- Funding and leave allowance to support healthcare workers affected
- Staff clinic with testing facility for COVID-19

# STAFF WELLBEING DURING COVID-19 PANDEMIC

- KK Women's and Children's Hospital (Unpub data)
- ***Resilience and emotions of frontline healthcare providers in medical crisis***
- Survey of O&G Isolation Team Doctors and Nurses (1 month data)
  - 8 doctors/week in Isolation Team – 12-hour shifts
- 46 of 50 returned survey (92%, 1 incomplete survey)
  - Brief Resilience Scale
    - Low resilience (1.00-2.99), Normal resilience (3.00-4.30), High resilience (4.31-5.00)
  - Qualitative responses on emotions related to working in Isolation Team

# STAFF WELLBEING DURING COVID-19 PANDEMIC

Variable	Total	Mean resilience score	SD	p-value	95% CI
<b>Occupation</b>					
• Doctors	31	3.9	0.593	0.004	0.170-0.868
• Nurses	14	3.3	0.378		
<b>Gender</b>					
• Male	6	4.3	0.437	0.008	0.186-1.148
• Female	39	3.6	0.556		

# STAFF WELLBEING DURING COVID-19 PANDEMIC

- 52.2% felt worried when asked to do Isolation Team duties
- 84.4% concerned for wellbeing of their family
  - 53.3% concerned for personal wellbeing
  - 15.6% concerned for wellbeing of community
- 57.8% felt mental health is most affected by working in isolation team
  - 24.4% social health
  - 17.8% physical health



## Mental Health Considerations during COVID-19 Outbreak

6 March 2020

- **Healthcare workers**
  - Stress – no reflection that you cannot do your job or are weak
  - Take care of basic needs – rest, eat sufficiently & healthily, physical activity, stay in contact with family & friends
  - Employ coping strategies
  - Avoidance by family or community due to stigma and fear – Use digital methods, turn to colleagues/manager/trusted persons for social support
  - Use understandable ways to share messages with people with intellectual, cognitive and psychosocial disabilities
  
- Also covers considerations for general population, team leaders/managers in healthcare facility, caretakers of children or older adults, people in isolation

# PREGNANT HEALTHCARE PROFESSIONALS

- At present, pregnant healthcare professionals do not appear to be more susceptible to COVID-19 or its complications compared with non-pregnant colleagues
- Possibility of small risk of FGR and preterm birth should the mother become seriously unwell
- Advocate strict compliance to use of protective equipment
  - Where possible, use at least the minimum of a surgical mask in patient-facing areas
  - Report any suspicious symptoms early and seek appropriate medical attention

# SUMMARY

- Transmission rate amongst frontline healthcare workers appears to be controllable with use of protective equipment and good infection control training
- General preventive measures and rational PPE use
- Healthcare professionals will get sick - COVID-19 or otherwise
  - Have established workflow and manpower plans to prevent collapse of healthcare service
- Mental & social health – risk of burnout
- Support colleagues
- Keep sensible and safe

