The Union

International Union Against Tuberculosis and Lung Disease

Health solutions for the poor

Respiratory protection for TB and airborne diseases (including COVID-19) transmitted by airborne and droplet spread

Tuesday 12th May 2020

Chairpersons: Amanda Christensen and Niesje Jansen

The Union

International Union Against Tuberculosis and Lung Disease

Health solutions for the poor

THEUNION.ORG

Presentation

Respiratory protection for TB and airborne infectious diseases (including COVID-19) transmitted by airborne and droplet spread.

Chairs: Amanda Christensen and Niesje Jansen

1. **Appropriate use of masks (cloth and surgical masks), respirators and re-use**
Dr Carrie Tudor, International council of nurses

2.**Personal Respiratory Protection programme for airborne IPC**
Dr Grigory Volchenkov, Vladimir, Russia

Questions and Answers will follow the presentations.

End Tuberculosis Transmission Initiative

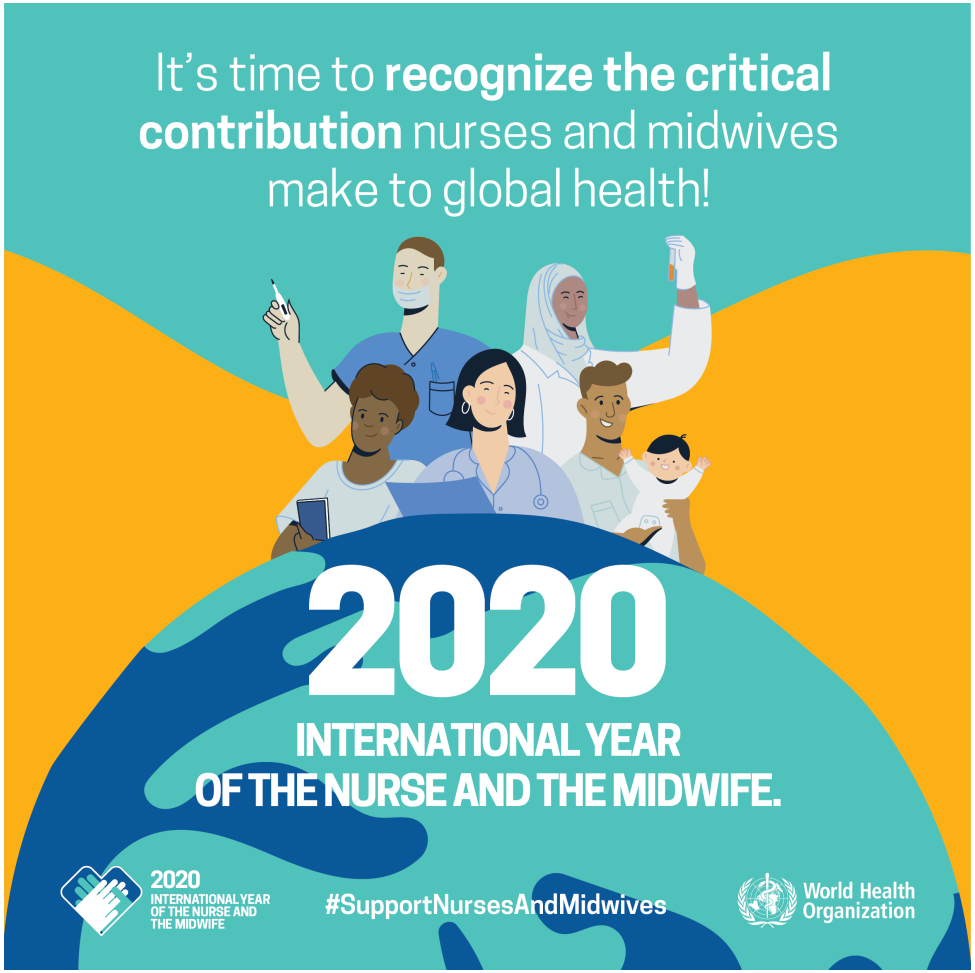
Appropriate use of masks (cloth and surgical masks), respirators and re-use

Carrie Tudor, PhD, MPH, RN

12 May 2020

http://www.stoptb.org/wg/ett/

Happy International Nurse's Day and Year ! ! !



C Tudor – 12 May 2020

'It may seem a strange principle to enunciate as the very first requirement of a hospital that it should do the sick no harm'

Notes on Hospitals, 1859

Florence Nightingale (1820 – 1910)

Outline

- Basics of Airborne IPC
- Hierarchy of Airborne IPC
- Introduction to PPE
- Surgical / Procedure Masks
- N95 / FFP2 Respirators
- Reuse


C Tudor – 12 May 2020
Jennison [1942]

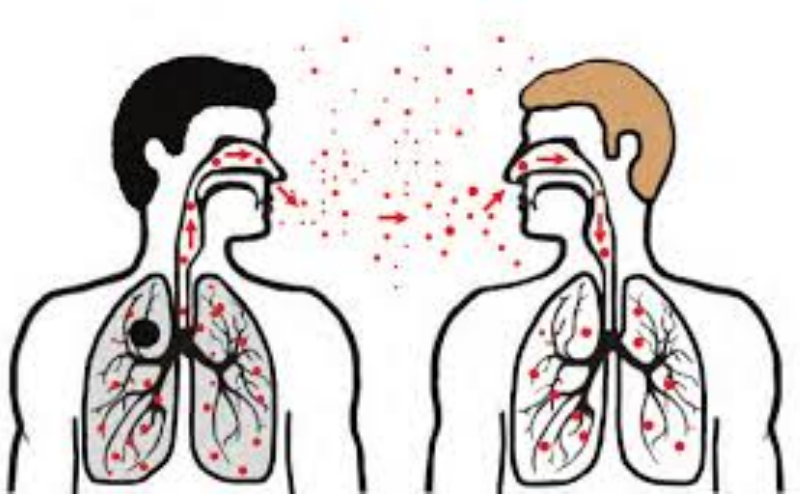
Slow motion sneeze

Droplets

- **Large droplets - larger than *100 µm***
  - Settling velocities >> *0.5 m/s*
  - Fall out of air quickly
- **Medium-size particles - *10 to 100 µm***
  - Settling velocities > *0.2 m/s*
  - Settles out slowly
- **Small particles – *1 to 10 µm***
  - Falls very slowly, take days to settle out of a quiet atmosphere. In a turbulent atmosphere they may never settle out
  - A 1.0 µm ***Droplet Nucleus*** or ***Micro-Droplet*** will settle at a rate of 0.0035 cm/s or 3 m in 24 hours!

Modes of TB Transmission (1)

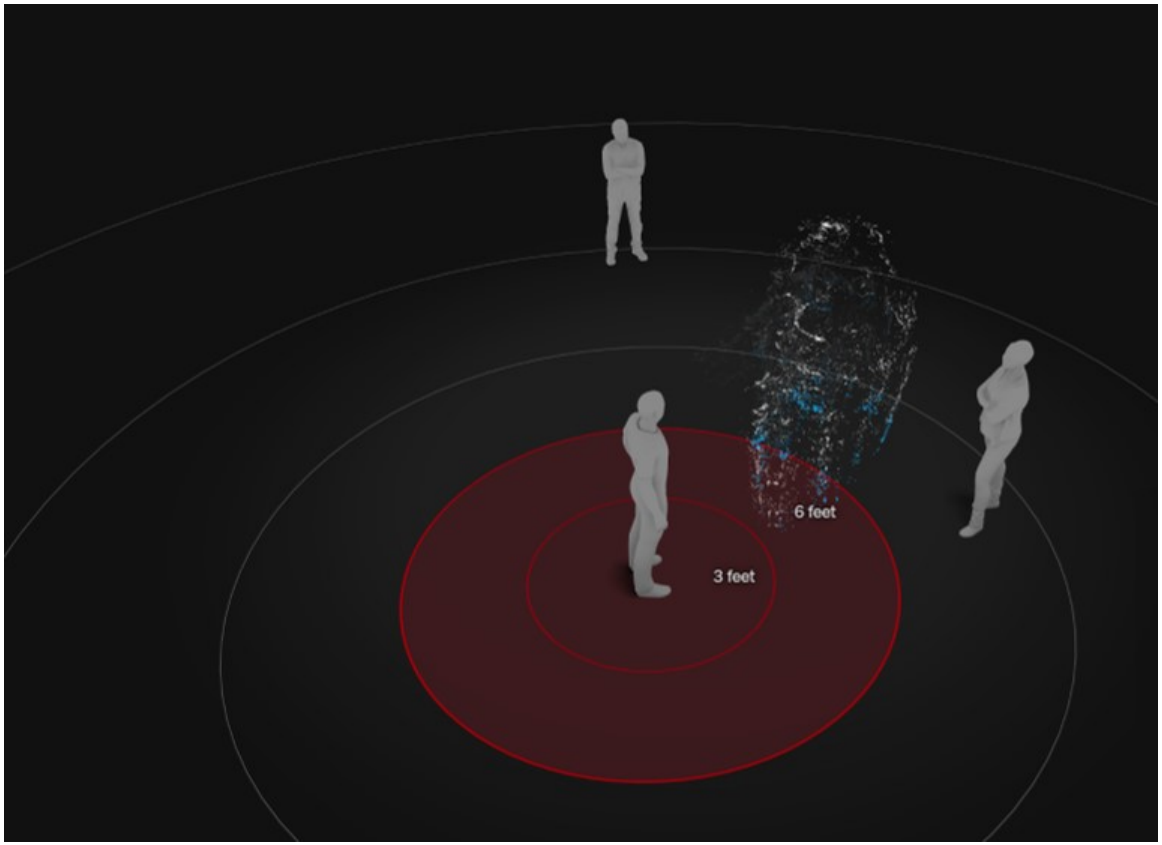
- Person-to-Person through Airborne Route!
- When a person breathes TB bacteria deep into the lungs and can begin to grow.
- From there, they can move through the blood to other parts of the body, such as the kidney, spine, and brain.



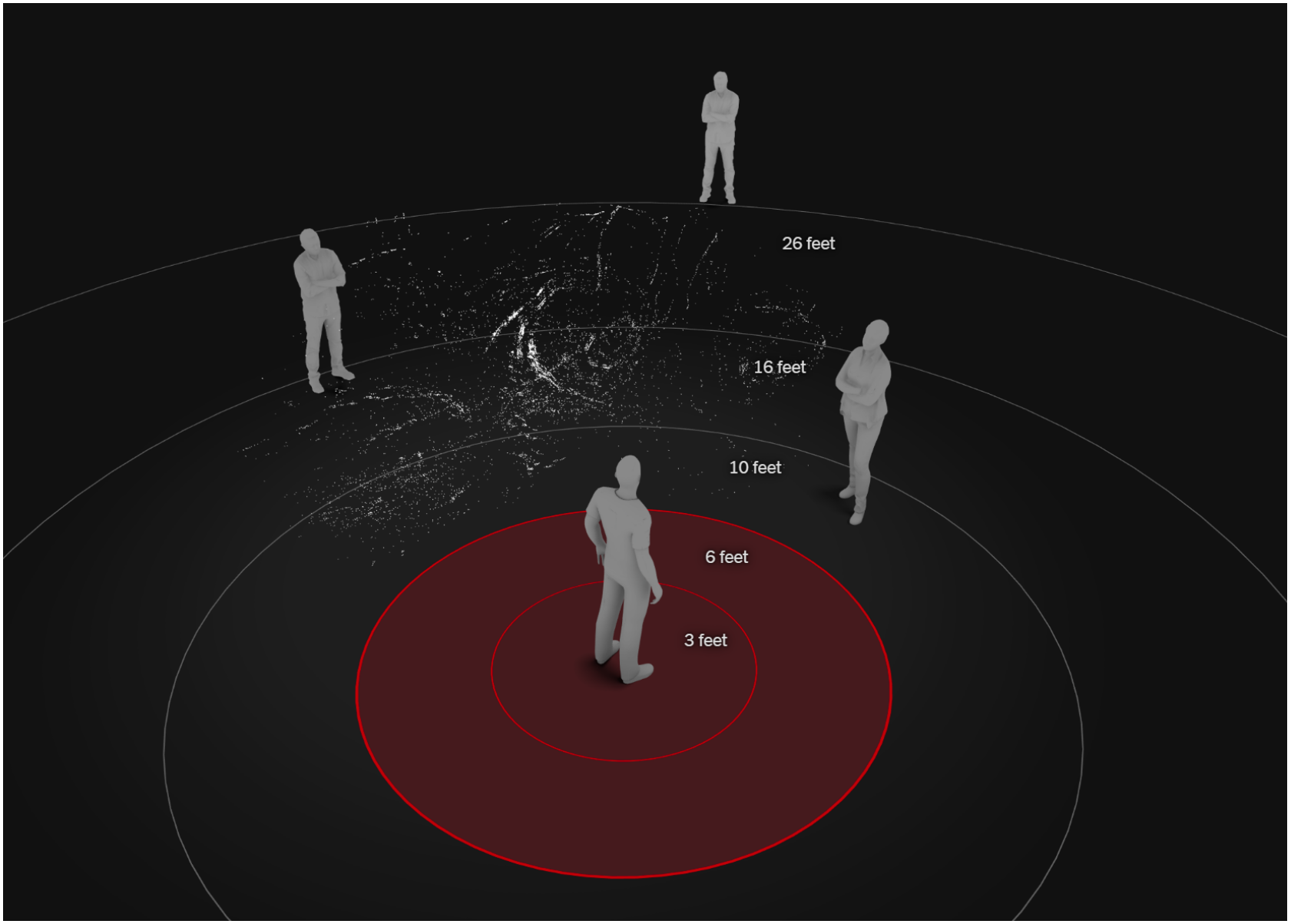
Person-to-Person Spread of CoV

- Mainly from person-to-person.
- Mainly between people who are in close contact with one another (6? feet / 2? meters)
- Through respiratory droplets produced when an infected person coughs, sneezes, talks, sings, shouts….
- Droplets can land in the mouths or noses of people who are nearby or **inhaled into the respiratory tract**.
- May be spread by people who are not showing symptoms.

Why 2 meters / 6 ft?

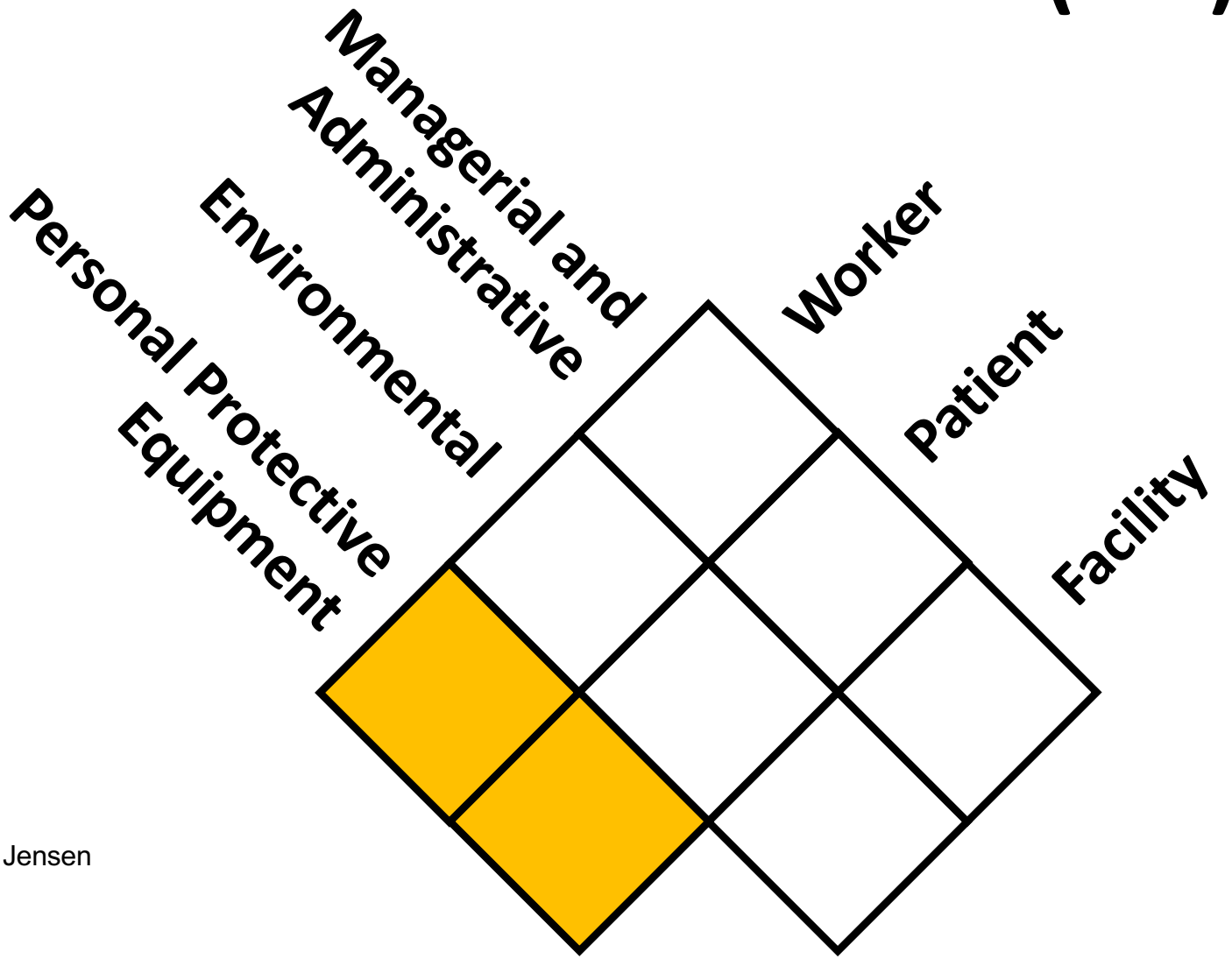


Source: https://www.nytimes.com/interactive/2020/04/14/science/coronavirus-transmission-cough-6-feet-ar-ul.html



Source: https://www.nytimes.com/interactive/2020/04/14/science/coronavirus-transmission-cough-6-feet-ar-ul.html

Hierarchy of Airborne Infection Prevention and Control (IPC)



Source: PA Jensen

Personal Protective Equipment

Respirators vs. Masks

C Tudor – 12 May 2020

Personal protective equipment

Surgical Mask

- Worn by patients
- Worn by HCWs for large droplets (flu, H1N1, SARS CoV2, etc.)

Respirator

- Worn by HCWs

Selected PPE

Masks . . . Large droplets

Protect environment from wearer

People (patients, HCWs, etc.)

Surfaces

Protect wearer from environment

Respirators . . . Micro-Droplets / Droplet Nuclei

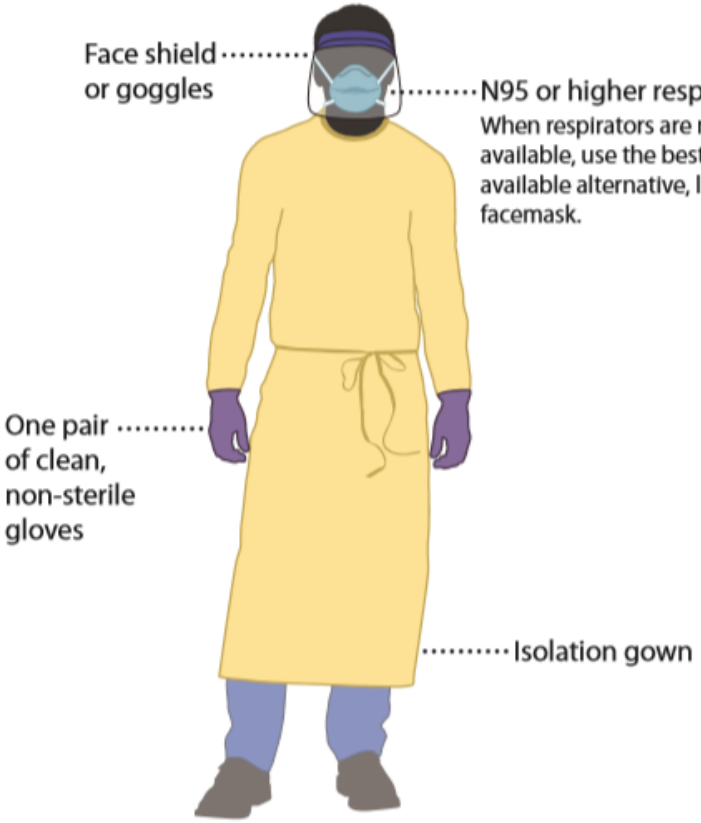
Protect environment from wearer

(if no valve)

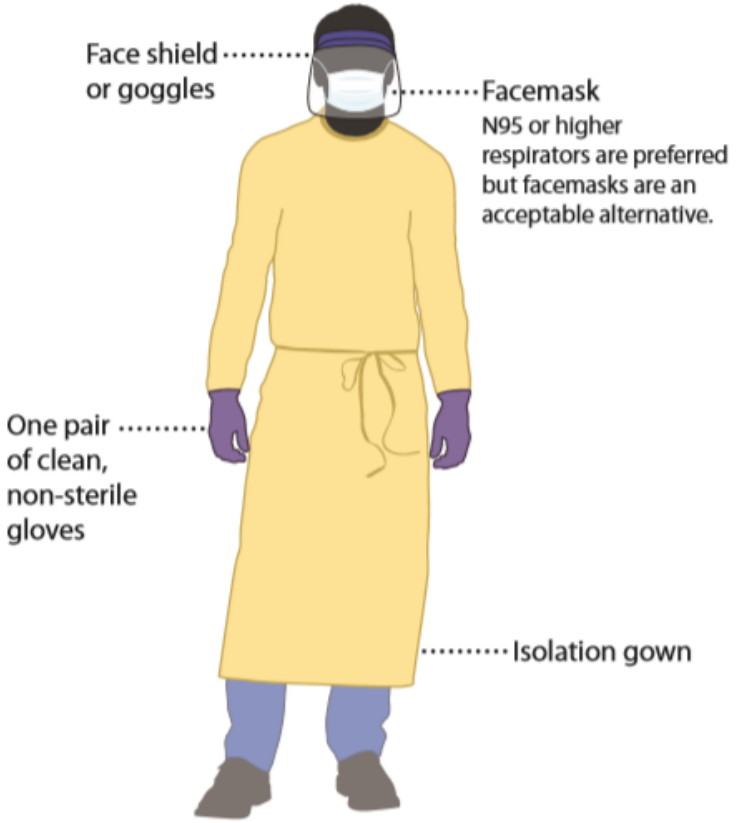
Protect wearer from environment

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

Preferred PPE – Use N95 or Higher Respirator



Acceptable Alternative PPE – Use Facemask



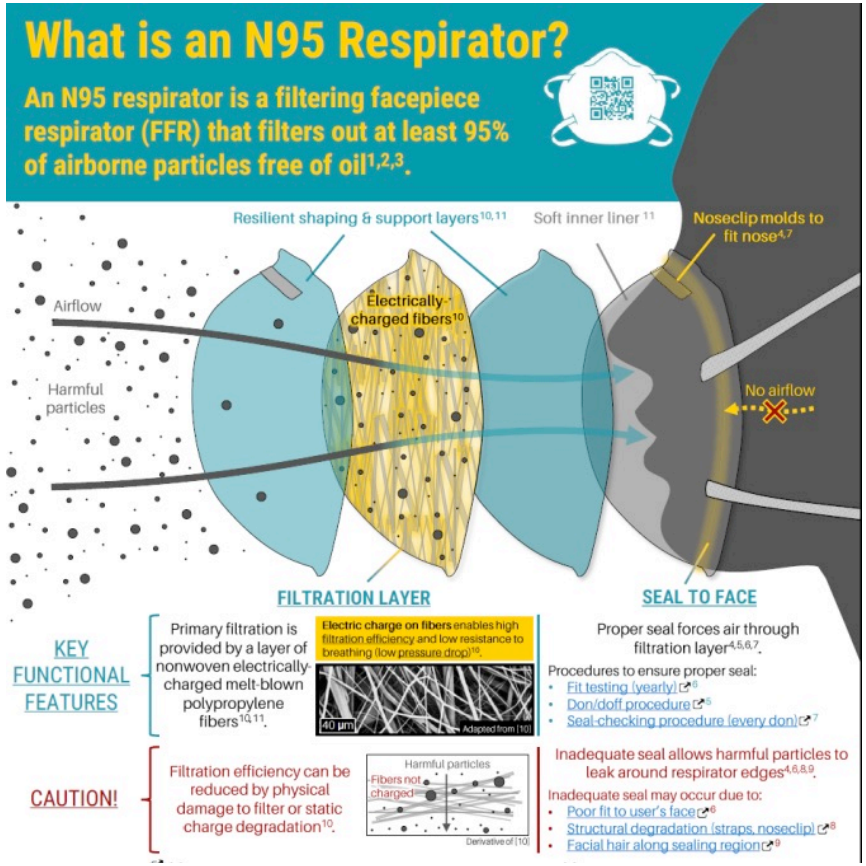
CDC

CS 315838-C 03/23/2020

cdc.gov/COVID19

C Tudor – 12 May 2020

N95 Respirator
(CDC NIOSH standard)



Source: www.N95decon.org

A filtering face piece respirator that filters out at least 95% of airborne particles during “worse case” testing using a “most-penetrating” sized particle is given a 95 rating.

N95 respirator (CDC NIOSH standards)

TABLE 4. Nonpowered air-purifying respirator filter classes certified in 42 CFR* 84

Resistance to efficiency filter degradation	Filter efficiencies†		
	95 (95%)	99 (99%)	100 (99.97%)
N (Not resistant to oil)	N95	N99	N100
R (Resistant to oil)	R95	R99	R100
P (Oil proof)	P95	P99	P100

* Code of Federal Regulations.

† The percentages in parenthesis indicate the minimum allowable laboratory filter efficiency value when challenged with 0.3 μm particles.

CEN Standards
(Initial Filter Penetration)

NaCl	**Paraffin Oil**
< 20% = P1	NA = P1
< 6% = P2	< 2% = P2
< 3% = P3	< 1% = P3

List of certified N95 respirators

NIOSH-Approved N95 Particulate Filtering Facepiece Respirators

The N95 respirator is the most common of the seven types of particulate filtering facepiece respirators. This product filters at least 95% of airborne particles but is not resistant to oil.

This web page provides a table of NIOSH-approved N95 respirators, listed alphabetically by manufacturer. You can select a particular manufacturer by clicking on the first letter of their name on the index below.

There are some products that are approved by NIOSH as an N95 respirator and also cleared by the Food and Drug Administration (FDA) as a surgical mask. These products are referred to as **Surgical N95 Respirators**. View a definition of Surgical N95 Respirators. For your convenience the Surgical N95 Respirators are indicated with the **Model Number/Product Line in bold text followed by (FDA)**. If you have a product you believe is NIOSH-approved and FDA-cleared that does not appear on this list, you will need to check with the FDA Center for Devices and Radiological Health at 1-800-638-2041 for validation of clearance. View a comprehensive table of Surgical N95 Respirators.

Disclaimer: The links in this section go to websites outside of CDC/NIOSH and should not be considered as an endorsement of their content, or as a statement of NIOSH policy. The donning procedure and/or user instruction, either on the websites or the PDF version, should not be considered an official endorsement of their content, or as a statement of NIOSH policy.

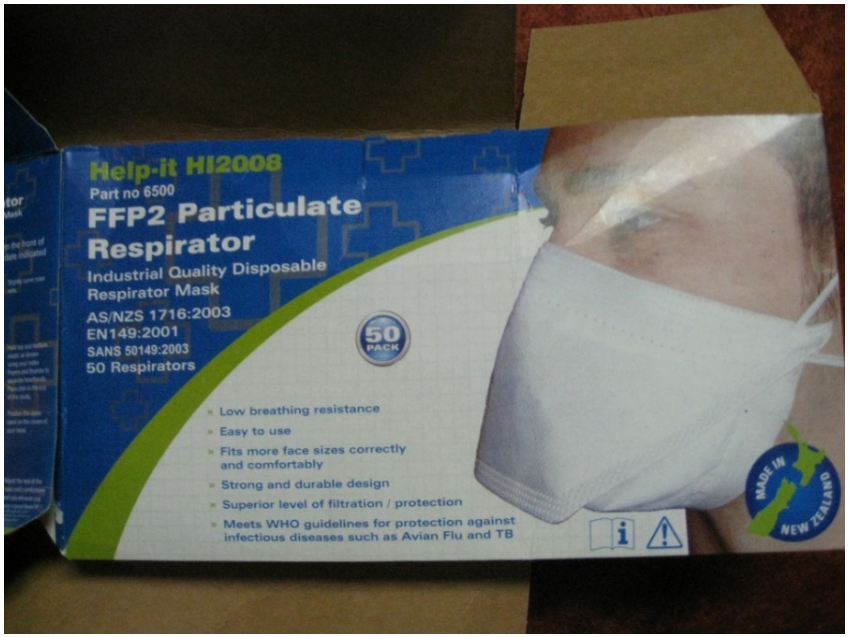
Index for N95 Manufacturers:

3M A B C D E F G H I J K L M N O P Q R S T U V W X Y Z Notes

Supplier/Manufacturer and Contact Information	Model Number/ Product Line	Approval Number	Valve Yes/No	Manufacturer's Donning Procedure User Instructions
3M Company 888-3M HELPS or web form *(Distribution Availability - See instructions below for steps to find these 3M products.)*	**1860 (FDA)**	**84A-0006**	No	1860 [PDF - 72 KB]
3M Company 888-3M HELPS or web form *(Distribution availability for all products listed for 3M)*	8110S 8210 8216 8217 7048	84A-0007	No	8210 [PDF - 103 KB] 8110S, 8210, 7048 [PDF - 187 KB]
3M Company 888-3M HELPS or web form	N95	84A-0008	No	Not available
3M Company 888-3M HELPS or web form	8212 8214 8512 8514	84A-0454	Yes	8212, 8512 [PDF - 125 KB] 8214, 8514 [PDF 156 KB]
3M Company 888-3M HELPS or web form	8211 8511 8515 8516	84A-1299	Yes	8211, 8511 [PDF - 59 KB] 8515 [PDF - 156 KB] 8516 [PDF - 81 KB]
3M Company	9211 N95	84A-2668	Yes	9211 N95 [PDF - 326 KB]

http://www.cdc.gov/niosh/npptl/topics/respirators/disp_part/n95list1.html

Counterfeit N95 respirators



PA Jensen – 12 May 2020

PA Jensen


HI-TECH
NIOSH N95
PARTICULATE
RESPIRATOR
PA Jensen


HI-TECH
SH9550
NIOSH N95
PARTICULATE
RESPIRATOR
TC-84A-3713

PA Jensen

Supplier/Manufacturer and Contact Information	Model Number/ Product Line	Approval Number	Valve Yes/No	Manufacturer's Donning Procedure User Instructions
Hakugen Company, Ltd. [*I] 886-2-2683-0356	SGPR-N95	84A-4635	No	SGPR-N95 [PDF - 133 KB]
Harbor Freight Tools [*E] 800-379-9929	94785A 61438	84A-5411	No	All Models [PDF - 538 KB]
Harbor Freight Tools [*E] 800-379-9929	47518A 61434	84A-5460	Yes	All Models [PDF - 538 KB]
Henox Marketing SDN. [*E] 800-379-9929	109015	84A-3323	No	109015 [PDF - 5.6 MB]
Hi-Tech Equipment, Inc. [*I] 886-2-2683-0356	SH9550	84A-3713	No	SH9550 [PDF - 214 KB]
Hi-Tech Equipment, Inc. [*I] 886-2-2683-0356				SH9550V [PDF - 214 KB]
Hi-Tech Equipment, Inc. [*I] 886-2-2683-0356			No	SH2550 [PDF - 264 KB]
Hi-Tech Equipment, Inc. [*I] 886-2-2683-0356			Yes	SH2550V [PDF - 247 KB]
Ho Cheng Enterprise Company, Ltd. [*E] 800-379-9929 (Distribution availability for all products listed for Ho Cheng Enterprise Company, Ltd.)			No	910-N95 [PDF - 842 KB]
Hogy Medical Company, Ltd. [*D] 81-547-45-4125			No	All Models [PDF - 61 KB]
The Home Depot [*E] 800-379-9929			No	H950 [PDF - 586 KB]
The Home Depot [*E] 800-379-9929			Yes	H950V [PDF - 586 KB]
The Home Depot [*E] 800-379-9929			No	H950S [PDF - 586 KB]
The Home Depot [*E] 800-379-9929			No	H910F [PDF - 178 KB]
The Home Depot [*E] 800-379-9929			Yes	H910FV [PDF - 178 KB]
Homeland Safety International [*I] 886-2-2683-0356			No	FFN95-OV/AG [PDF - 221 KB]
Honeywell International USA (former Sperian) 800-430-5490	N1110ML	84A-7283	No	Pending NIOSH receipt from company

PA Jensen

N95 (or FFP2) respirator use

- N95/FFP2 disposable respirators are generally acceptable for most TB situations
- Higher level of protection may be necessary during high-risk procedures
  - Bronchoscopy
  - Autopsy
  - Sputum induction
  - Intubation / extubation

Selection of Respirators

One size does not fit all

3M 1860

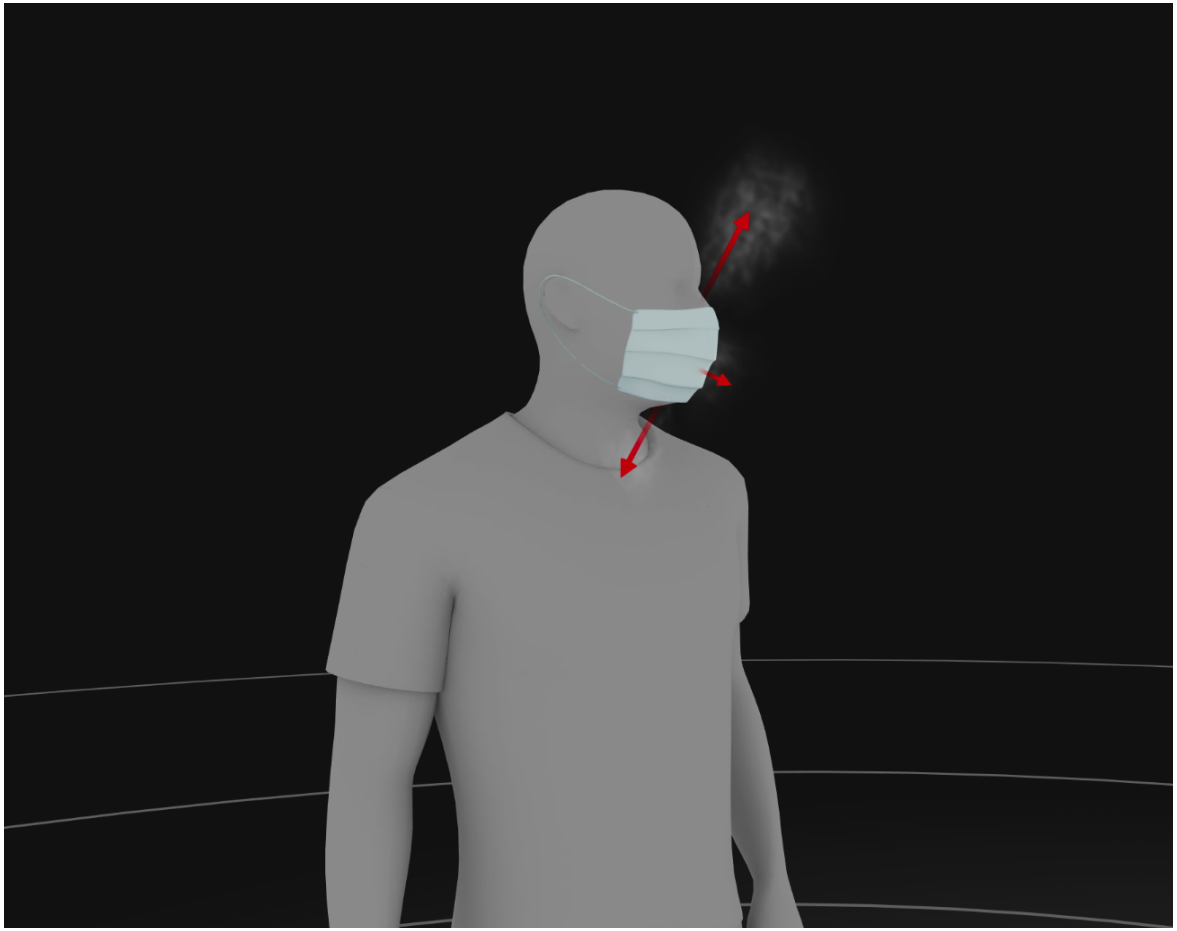
3M 1860S

Half-piece elastomeric respirator

A respirator in which the air pressure inside the facepiece is negative during inhalation with respect to the ambient air pressure outside the respirator

Other Classes of Respirators

- Powered air-purifying respirator (PAPR)
- Atmosphere-supplying respirators
  - Supplied air respirator
  - Self-contained breathing apparatus
  - Emergency escape



Why we ask people to wear masks

Source: https://www.nytimes.com/interactive/2020/04/14/science/coronavirus-transmission-cough-6-feet-ar-ul.html

Use and Reuse of N95/ffp2 respirators

Recommendations for extended use and reuse

1275 K Street, NW, Suite 1000
Washington, DC 20005-4006
Phone: 202/789-1890
Fax: 202/789-1899
apicinfo@apic.org
www.apic.org

APIC Position Paper: Extending the Use and/or Reusing Respiratory Protection in Healthcare Settings During Disasters

Co-Authored by APIC Emergency Preparedness Committee, Public Policy Committee and Regulatory Review Panel

Lead Author:
Terri Rebmann, PhD, RN, CIC

II. Recommendations for extending the use and/or reusing respirators

Disposable N-95 respirators, when used solely to prevent occupational exposure to *Mycobacterium tuberculosis*, can be safely reused until contaminated, damaged, or no longer form a good seal.[5] Unlike *Mycobacterium tuberculosis,* which is transmitted exclusively via airborne droplet nuclei, most other respiratory pathogens are transmitted primarily via direct and indirect (droplet) contact with respiratory secretions. Therefore the exterior of respiratory protection used in caring for patients with respiratory pathogens other than tuberculosis can become contaminated and serve as a reservoir for infectious agents. Special precautions must be taken when extending the use or reusing disposable respiratory protection to prevent healthcare personnel exposure.

Extended use of respiratory protection is defined as the wearing of a disposable respirator during serial patient encounters without the removal or re-donning of the device between encounters.[3] Reuse of respiratory protection consists of removing and re-donning the device between encounters.[3] Both of these actions pose a transmission risk to healthcare personnel due to potential respirator contamination. This transmission risk can be minimized if healthcare personnel adhere stringently to hand hygiene before and after handling the respiratory protection device.

https://www.apic.org/Resource_/TinyMceFileManager/Advocacy-PDFs/APIC_Position_Ext_the_Use_and_or_Reus_Resp_Prot_in_Hlthcare_Settings1209l.pdf

Respirator use and reuse

- Respirator may be used until damaged, breathing becomes difficult, or contaminated with blood or other body fluids
- Respirators are to be inspected prior to each use to ensure proper fit and seal
  - Store in a dry place
  - Do NOT write on the respirator
  - Do NOT bend the respirator
- Dispose of respirator if you question its performance

Storage of N95 respirators

Dalian, China (C. Tudor)

Manzini, eSwatini (C. Tudor)

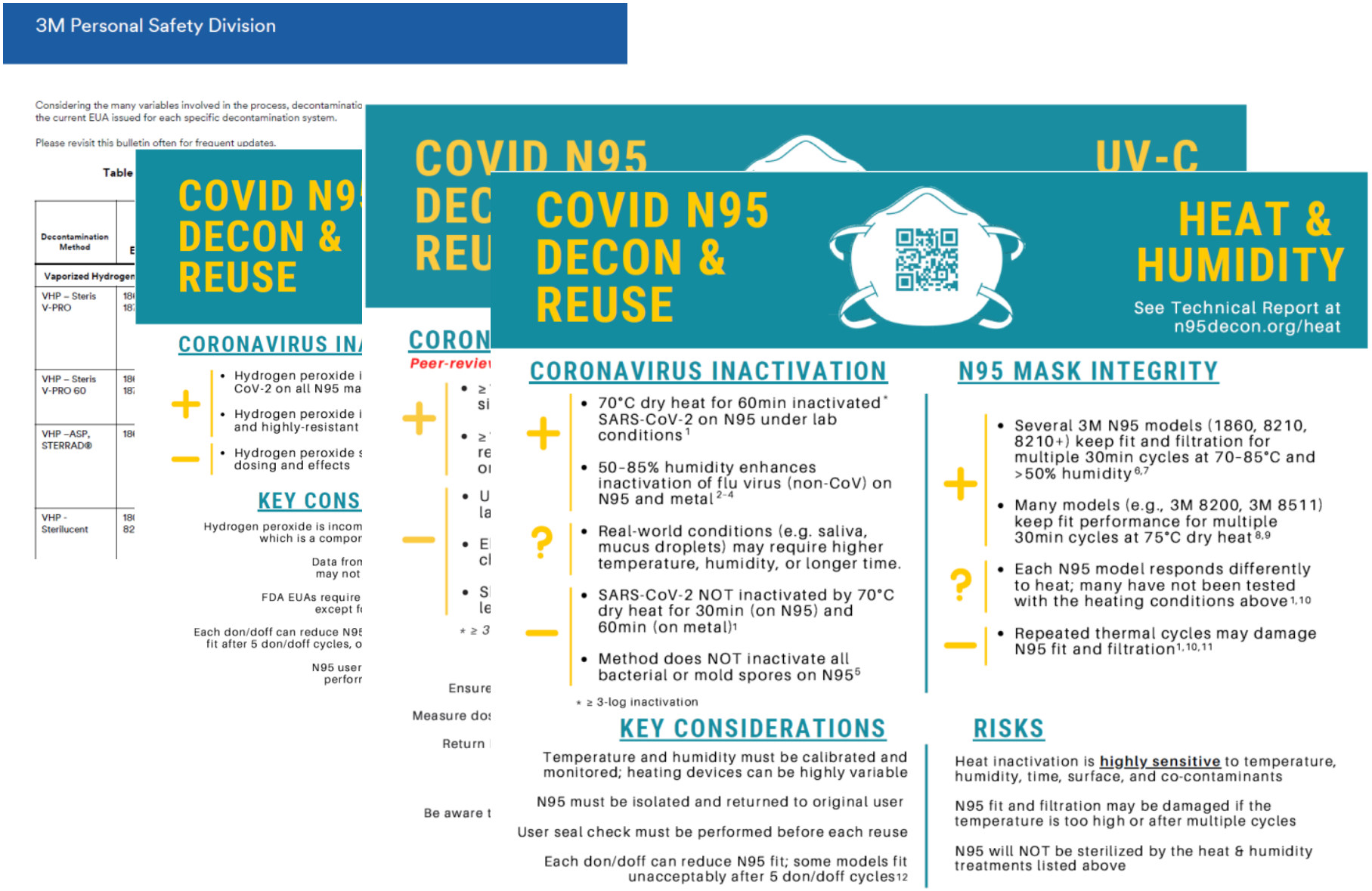
Suggestions to extend use

Disinfection of N95/FFP2 Respirators

- Vaporized Hydrogen Peroxide (VHP)
- Ultraviolet Germicidal Irradiation (UVGI) / Germicidal Ultraviolet (GUV)
- Dry heat
- Autoclave (wet heat)
- Ethylene Oxide (EtO)
- Formalin or Formaldehyde
- Bleach (Sodium hypochlorite)
- Soap & Water
- Alcohol (Ethanol or Isopropanol)

Disinfection of N95/FFP2 Respirators

- Vaporized Hydrogen Peroxide (VHP)
- Ultraviolet Germicidal Irradiation (UVGI) / Germicidal Ultraviolet (GUV)
- Dry heat
- Autoclave (wet heat)
- Ethylene Oxide (EtO)
- Formalin or Formaldehyde
- Bleach (Sodium hypochlorite)
- Soap & Water
- Alcohol (Ethanol or Isopropanol)

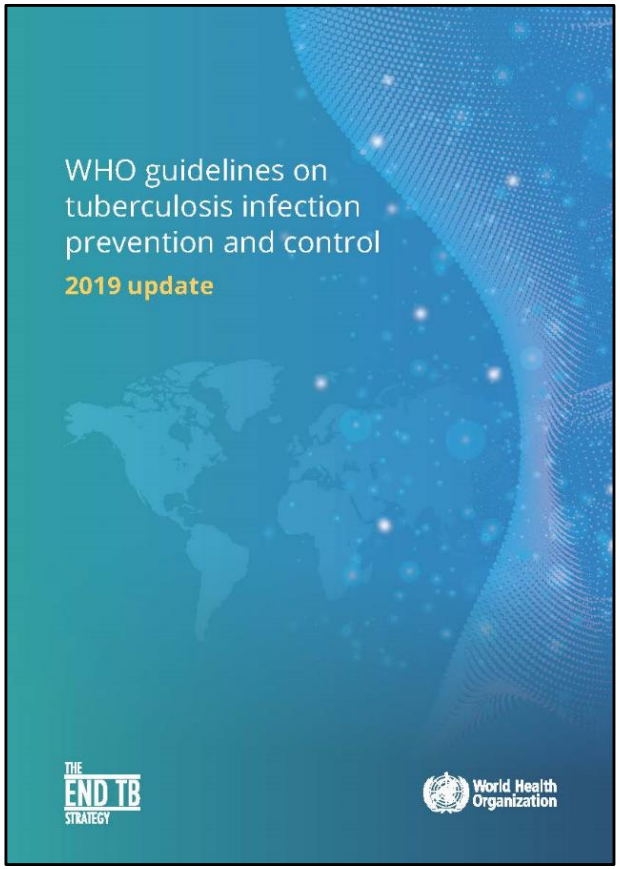


Source: www.N95decon.org & https://multimedia.3m.com/mws/media/1824869O/decontamination-methods-for-3m-filtering-facepiece-respirators-technical-bulletin.pdf

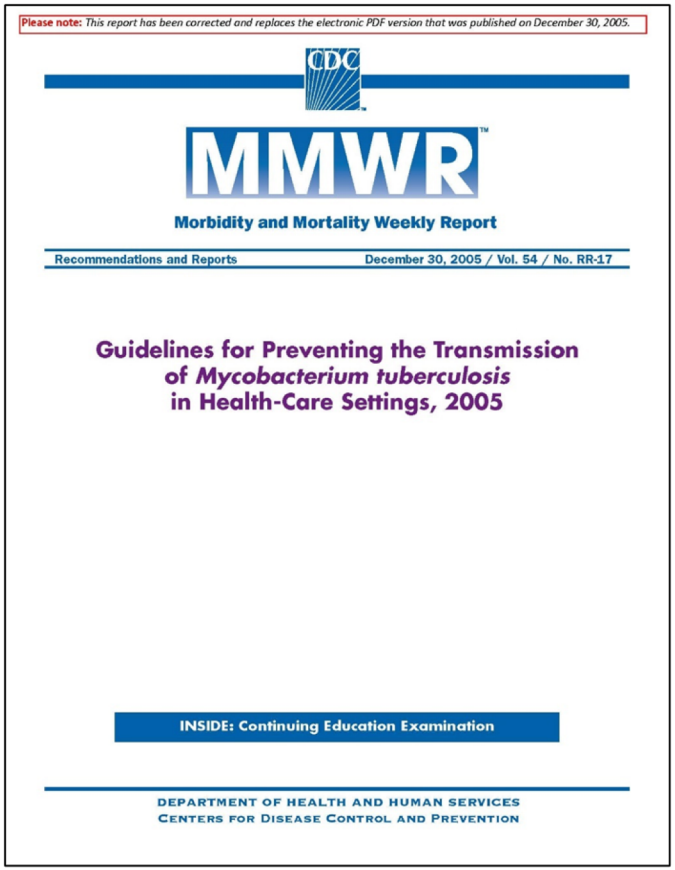
What Can You Do?

- Be proactive
- Research and select well-designed respirators
- Take care of your respirator
  - ~~Decontamination~~ Not easily!
  - ~~Cleaning~~ Not FFP respirators!
  - Keep your respirator clean! Cover with a mask
  - Storage Clean & dry place!
- Take care when reusing respirator – closely monitor hygiene and service life
- Dispose of respirator if you question its cleanliness or performance

TB infection control guidelines

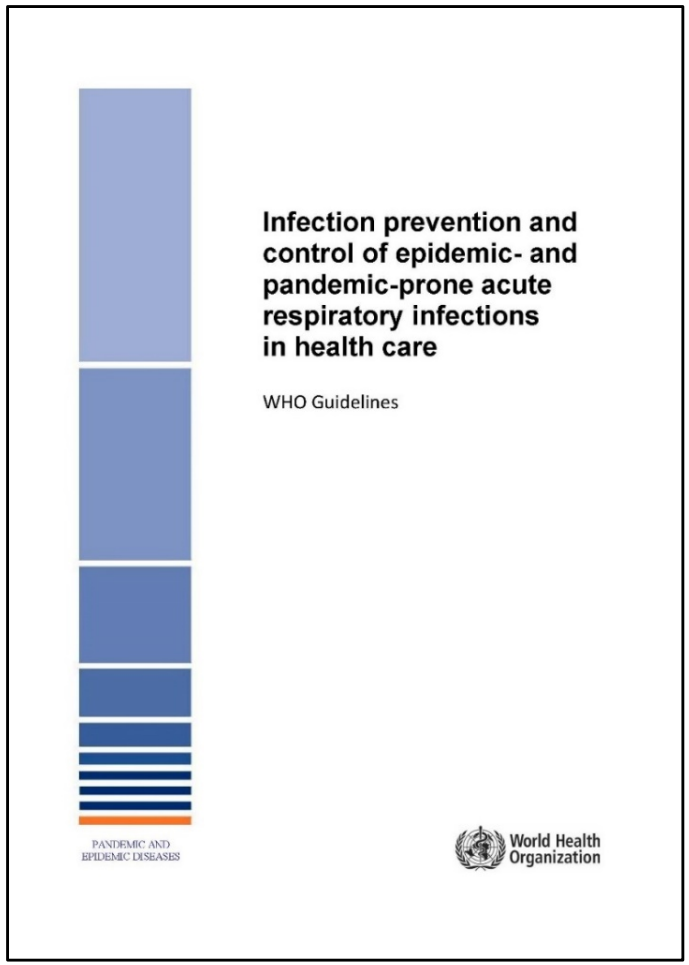


https://apps.who.int/iris/bitstream/handle/10665/311259/9789241550512-eng.pdf



https://www.cdc.gov/mmwr/pdf/rr/rr5417.pdf

Respiratory infection IPC



C Tudor – 12 May 2020

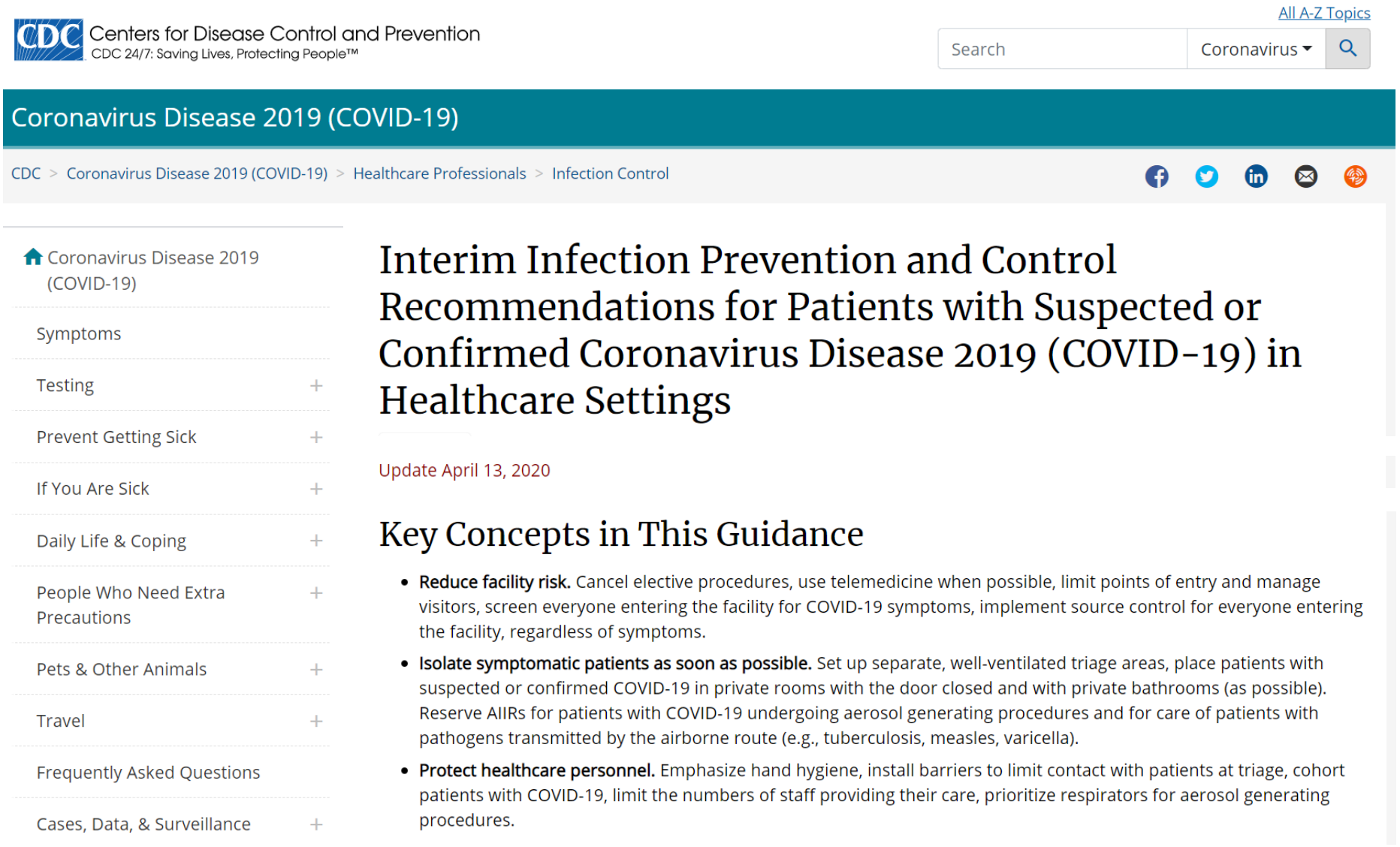
https://www.who.int/csr/bioriskreduction/infection_control/publication/en/

COVID-19 infection control guidelines

https://www.who.int/emergencies/diseases/novel-coronavirus-2019

C Tudor – 12 May 2020

COVID-19 infection control guidelines (2)



Centers for Disease Control and Prevention
CDC 24/7: Saving Lives, Protecting People™

All A-Z Topics

Search | Coronavirus

Coronavirus Disease 2019 (COVID-19)

CDC > Coronavirus Disease 2019 (COVID-19) > Healthcare Professionals > Infection Control

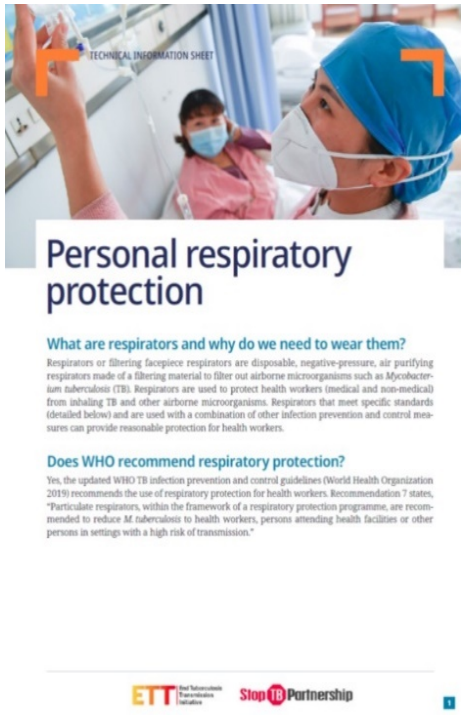
- Coronavirus Disease 2019 (COVID-19)
- Symptoms
- Testing
- Prevent Getting Sick
- If You Are Sick
- Daily Life & Coping
- People Who Need Extra Precautions
- Pets & Other Animals
- Travel
- Frequently Asked Questions
- Cases, Data, & Surveillance

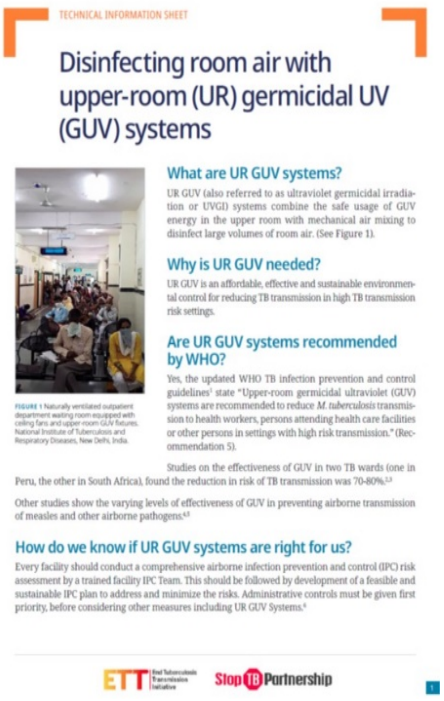
Interim Infection Prevention and Control Recommendations for Patients with Suspected or Confirmed Coronavirus Disease 2019 (COVID-19) in Healthcare Settings

Update April 13, 2020

Key Concepts in This Guidance

- **Reduce facility risk.** Cancel elective procedures, use telemedicine when possible, limit points of entry and manage visitors, screen everyone entering the facility for COVID-19 symptoms, implement source control for everyone entering the facility, regardless of symptoms.
- **Isolate symptomatic patients as soon as possible.** Set up separate, well-ventilated triage areas, place patients with suspected or confirmed COVID-19 in private rooms with the door closed and with private bathrooms (as possible). Reserve AIIRs for patients with COVID-19 undergoing aerosol generating procedures and for care of patients with pathogens transmitted by the airborne route (e.g., tuberculosis, measles, varicella).
- **Protect healthcare personnel.** Emphasize hand hygiene, install barriers to limit contact with patients at triage, cohort patients with COVID-19, limit the numbers of staff providing their care, prioritize respirators for aerosol generating procedures.





http://www.stoptb.org/wg/ett/resources.asp

This presentation was made possible through the support of Stop TB Partnership's End TB Transmission Initiative (ETTi) Working Group provided by the United States Agency for International Development (USAID), under the terms of cooperative agreement number STBP/USAID/GSA /2020-04.

https://www.icn.ch/what-we-docampaigns/international-nurses-day

Thank you!

Рақмет сізге!

Спасибо!

Sag boluň!

Muito obrigado

Rahmat!

Merci beaucoup!

谢谢!

Tashakor!

Muchas gracias!

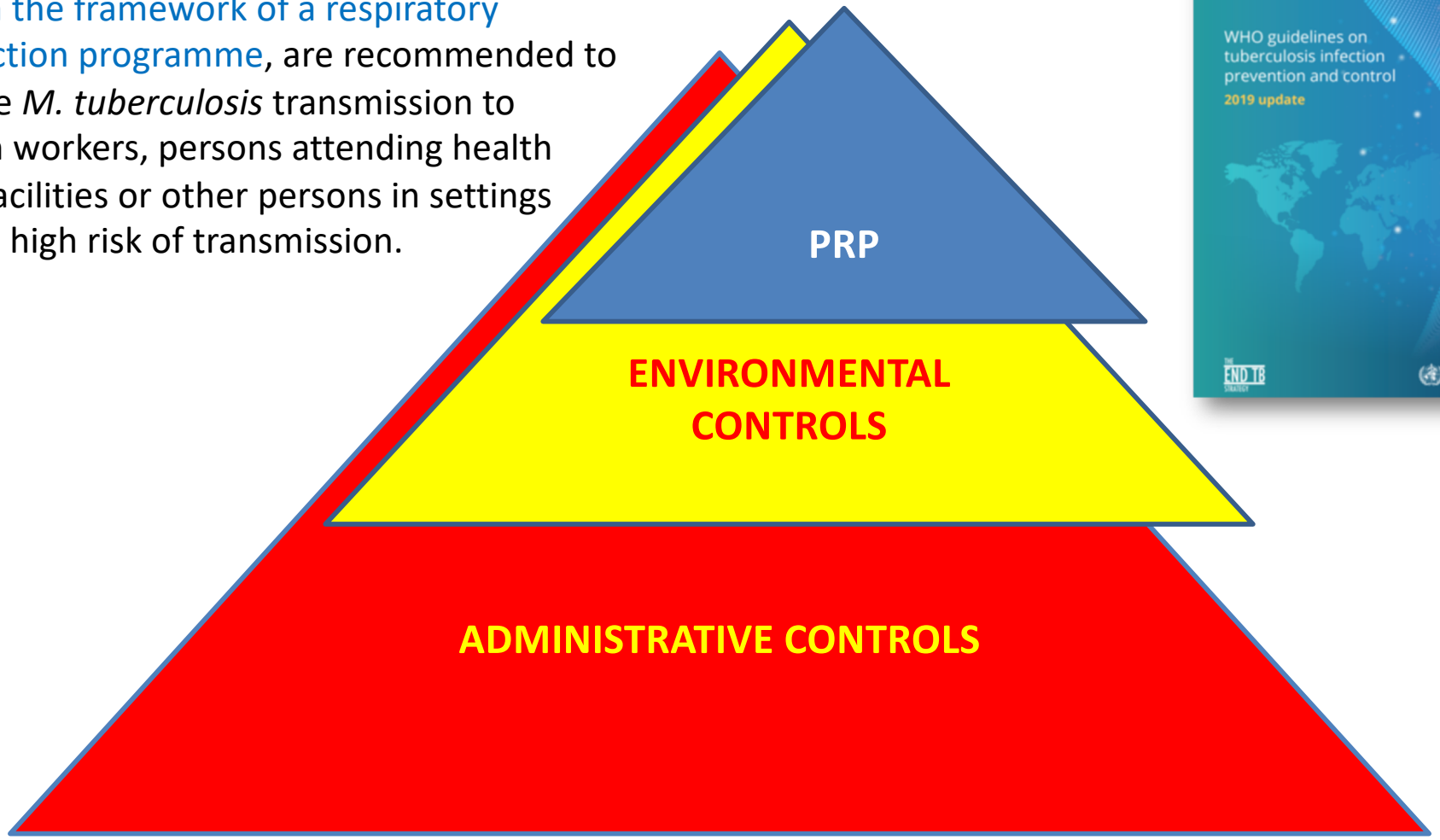
Personal Respiratory Protection Programme for Airborne IPC

Grigory Volchenkov,

Vladimir, Russia

Personal respiratory protection to prevent airborne transmission of TB and COVID-19

Recommendation 7: Particulate respirators, within the framework of a respiratory protection programme, are recommended to reduce *M. tuberculosis* transmission to health workers, persons attending health care facilities or other persons in settings with a high risk of transmission.



Hierarchy of controls

Personal respiratory protection to prevent airborne transmission of TB and COVID-19

Education & Training

Risk Assessment

Risk Related Zoning and Signage

Model/size Selection and Procurement

Respirator Fit Testing

Proper use of Respirators and Surgical Masks

Effective Programme Components

Personal respiratory protection to prevent airborne transmission of TB and COVID-19

Who are HIGH risk Airborne Infections transmitters?

- Undetected, undiagnosed patients with (or without) respiratory symptoms
- RT-PCR-confirmed cases of COVID-19
- TB patients which do not receive EFFECTIVE treatment
  - Treatment delay, interruption, default
  - Ineffective treatment regimen
  - TB patients on palliative care
- Fluoroquinolone resistant patients during the first 2(?) weeks after EFFECTIVE treatment initiation

Airborne Transmission Risk Assessment

Factors to consider:

- Patients and visitors with fever, cough and other respiratory symptoms
- TB patients
  - Sputum smear AFB positive, rapid molecular testing confirmed, DST (risk of DR TB)
  - Is treatment regimen adequate?
  - Is patient compliant?
  - Cough etiquette, mask use
- Work practices and aerosol generating procedures
- Environment
  - Crowding
  - Air stagnation
- Engineering controls: installation, maintenance, certification, use
- Subject's immune status

Personal respiratory protection to prevent airborne transmission of TB and COVID-19

Risk Related Zoning and Signage

БЕЗОПАСНОСТЬ ПРЕЖДЕ ВСЕГО

Без респиратора не входить!

“Safety first!
Do not enter without respirator!”

Put warning signage at entrance to high risk areas

Personal respiratory protection to prevent airborne transmission of TB and COVID-19

Respirator use and fit testing policy

- Authorized responsible staff
- Annual training and fit testing for all HCWs
- Respirators distribution according to risk level (models, sizes, amount and protection class)
- Proper respirator use is mandatory in designated high risk areas and during such procedures
- Supervision, education and motivation

Respirator Fit Testing

- Must be performed before a respirator is first issued to a HCW and is recommended annually thereafter.
- Additional fit test is required whenever there are changes in the users face physical condition
- NOTE: a separate USER SEAL CHECK must be performed each time the respirator is worn

Qualitative Fit Test

Respirator Qualitative Fit Testing kit

Respirator Fit Testing

- Nebulizer
- Test hood
- Collar
- Sensitivity solution (sweet & bitter)
- Fit test solution (sweet & bitter)

Costs USD 200 – 250, lasts forever

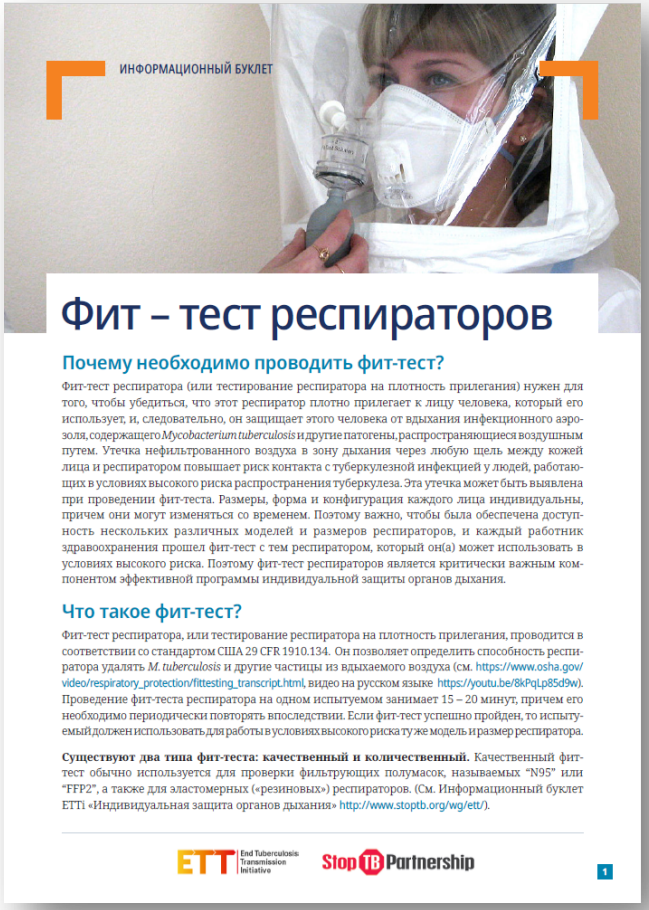
Preparation of Bitrex Solutions

Respirator Fit Testing

- The Sensitivity Test Solution is prepared by adding 13.5 milligrams of Bitrex to 100 ml of 5% salt (NaCl) solution in distilled water.
- The Fit Test Solution is prepared by adding 337.5 mg of Bitrex to 200 ml of a 5% salt (NaCl) solution in warm water.

10 minutes per test

Respirator Fit Testing


ИНФОРМАЦИОННЫЙ БУКЛЕТ

Фит – тест респираторов

Почему необходимо проводить фит-тест?

Фит-тест респиратора (или тестирование респиратора на плотность прилегания) нужен для того, чтобы убедиться, что этот респиратор плотно прилегает к лицу человека, который его использует, и, следовательно, он защищает этого человека от вдыхания инфекционного аэрозоля, содержащего *Mycobacterium tuberculosis* и другие патогены, распространяющиеся воздушным путем. Утечка нефильтрованного воздуха в зону дыхания через любую щель между кожей лица и респиратором повышает риск контакта с туберкулезной инфекцией у людей, работающих в условиях высокого риска распространения туберкулеза. Эта утечка может быть выявлена при проведении фит-теста. Размеры, форма и конфигурация каждого лица индивидуальны, причем они могут изменяться со временем. Поэтому важно, чтобы была обеспечена доступность нескольких различных моделей и размеров респираторов, и каждый работник здравоохранения прошел фит-тест с тем респиратором, который он(а) может использовать в условиях высокого риска. Поэтому фит-тест респираторов является критически важным компонентом эффективной программы индивидуальной защиты органов дыхания.

Что такое фит-тест?

Фит-тест респиратора, или тестирование респиратора на плотность прилегания, проводится в соответствии со стандартом США 29 CFR 1910.134. Он позволяет определить способность респиратора удалять *M. tuberculosis* и другие частицы из вдыхаемого воздуха (см. https://www.osha.gov/video/respiratory_protection/fittesting_transcript.html, видео на русском языке https://youtu.be/8kPqLp85d9w). Проведение фит-теста респиратора на одном испытуемом занимает 15 – 20 минут, причем его необходимо периодически повторять впоследствии. Если фит-тест успешно пройден, то испытуемый должен использовать для работы в условиях высокого риска тот же модель и размер респиратора.

Существуют два типа фит-теста: качественный и количественный. Качественный фит-тест обычно используется для проверки фильтрующих полумасок, называемых "N95" или "FFP2", а также для эластомерных («резиновых») респираторов. (См. Информационный буклет ETTi «Индивидуальная защита органов дыхания» http://www.stoptb.org/wg/ett/).

ETT End Tuberculosis Transmission Initiative Stop TB Partnership

1


TECHNICAL INFORMATION SHEET

Respirator fit testing

Why is fit testing important?

Fit testing is important to ensure the respirator fits tightly to the face of the wearer (user) and protects them from inhaling infectious aerosol containing *Mycobacterium tuberculosis* and other airborne pathogens. Leakage of unfiltered air into the breathing zone through any gap between the face and the respirator increases the risk of TB exposure to individuals working in high TB transmission risk settings. This leakage can be detected by performing a respirator fit test. The size, shape and configuration of every face is different and can potentially change over time. Therefore, it is important that several different respirator models and sizes are available, and every health worker should be fit tested with respirators he/she may use in high risk settings. This is why respirator fit testing is an essential component of an effective personal respiratory protection program.

What is fit testing?

A "respirator fit test" (29 CFR 1910.134) tests the efficiency of a respirator to remove *M. tuberculosis* and other particles from the air (see https://www.osha.gov/video/respiratory_protection/fittesting_transcript.html). It takes about 15-20 minutes per person to complete a fit test and is performed periodically thereafter. After passing a fit test with a respirator, you must use the exact same make, model, style, and size respirator on the job.

There are two types of fit tests: qualitative and quantitative. Qualitative fit testing is normally used for filtering facepiece respirators called "N95" or "FFP2" as well as for elastomeric ("rubber") respirators. (See ETTI respirator technical information sheet here: http://www.stoptb.org/wg/ett/).

ETT End Tuberculosis Transmission Initiative Stop TB Partnership

1

ETTi educational materials available

http://www.stoptb.org/wg/ett/resources.asp

Education & Training

- Initial instruction and fit-testing for new staff
- Annual Infection Control training related HCWs
- Annual qualitative test for all staff
- Posters and signage

Staff Education

Personal respiratory protection to prevent airborne transmission of TB and COVID-19

3M-6000 (FFP3) respirator use for the highest risk procedures

Risk Assessment

- Cough/sputum induction procedures
- Bronchoscopy
- Endotracheal in- and ex-tubation in ER & OR
- Autopsy

Lasts longer, lower long term cost than for disposal respirators

Disposable respirators needs assessment based on risk level and work load.

Model/size Selection and Procurement

For **TB facilities** our estimates are:

- High risk area – 1 respirator per 2 working days
- Medium risk area – 1 respirator per 4-5 working days
- Low risk area – 1 respirator per 10-20 working days

Respirators procurement

1. Models and sizes selection based on staff fit testing
2. Certified respirators
   - European Standard: EN149:2001+A1:2009 Respiratory protective devices - Filtering half masks to protect against particles - Requirements, testing, marking
   - US NIOSH Standard: 42 C.F.R. PART 84 — Approval of Respiratory Protective Devises

Avoid counterfeit goods!

Counterfeit/poor quality respirators

Personal respiratory protection to prevent airborne transmission of TB and COVID-19

http://www.cdc.gov/niosh/npptl/topics/resp

Model/size Selection and Procurement

CDC Home | CDC Search | CDC Health Topics A-Z

CDC SAFER·HEALTHIER·PEOPLE™

NIOSH National Institute for Occupational Safety and Health

Search NIOSH | NIOSH Home | NIOSH Topics | Site Index | Databases and Information Resources | NIOSH Products | Contact Us

NPPTL The National Personal Protective Technology Laboratory

NIOSH-Approved Particulate Filtering Facepiece Respirators

NIOSH-Approved N95 Particulate Filtering Facepiece Respirators

NIOSH Science Blog: N95 Respirators and Surgical Masks
Read the blog and leave your comments.

The N95 respirator is the most common of the seven types of particulate filtering facepiece respirators. This product filters at least 95% of airborne particles but is not resistant to oil.

This web page provides a table of NIOSH-approved N95 respirators, listed alphabetically by manufacturer. You can select a particular manufacturer by clicking on the first letter of their name on the index below.

There are some products that are approved by NIOSH as an N95 respirator and also cleared by the Food and Drug Administration (FDA) as a surgical mask. These products are referred to as **Surgical N95 Respirators**. View a definition of Surgical N95 Respirators. For your convenience the Surgical N95 Respirators are indicated with the **Model Number/Product Line** followed by (FDA) appearing in a **RED FONT**. If you have a product you believe is NIOSH-approved and FDA-cleared that does not appear on this list, you will need to check with the FDA Center for Devices and Radiological Health at 1-800-638-2041 for validation of clearance. View a comprehensive table of Surgical N95 Respirators.

Disclaimer: The links in this section go to websites outside of CDC/NIOSH and should not be considered as an endorsement of their content, or as a statement of NIOSH policy. The donning procedure and/or user instruction, either on the websites or the PDF version, should not be considered an official endorsement of their content, or as a statement of NIOSH policy.

Back to NIOSH-Approved Particulate Filtering Facepiece Respirators Main Page

This site contains documents in PDF format. You will need Adobe Acrobat Reader to access the file. If you do not have the Acrobat Reader, you may download a free copy from the Adobe Web site.

Index for N95 Manufacturers: 3M A B C D E F G H I J K L M N O P Q R S T U V W X Y Z Notes

NPPTL Directory
- NPPTL Home
- About NPPTL
- Contact NPPTL
- Employment
- NPPTL Site Index

Resources
- Respirator Standards
- Certified Equipment List
- Safety and Health Topic: Respirators
- Safety and Health Topic: Protective Clothing

Supplier/ Manufacturer	Contact Information	Model Number/ Product Line	Approval Number	Valve Yes or No	Manufacturer's Donning Procedure User Instructions
3M Company *(Distribution Availability) - See instructions below for steps to find these 3M products.*	888-3M HELPS or web form	**1860 (FDA)**	**84A-0006**	No	PDF Only 72 KB (4 pages)

Proper use of Respirators and Surgical Masks

- Select a fit tested respirator
- Place over nose, mouth and chin
- Fit flexible nose piece over nose bridge
- Secure on head with elastic
- Adjust to fit
- Perform a USER SEAL CHECK –
  - Inhale – respirator should collapse
  - Exhale – check for leakage around face

Disposable Respirator Donning

Personal respiratory protection to prevent airborne transmission of TB and COVID-19

Re-use of disposable respirators

Definition

Proper use of Respirators and Surgical Masks

Definition: *Single-use respirator* means a respirator that is entirely discarded after excessive resistance, sorbent exhaustion, or physical damage renders it unsuitable for further use.

US NIOSH Standard: 42 C.F.R. PART 84—APPROVAL OF RESPIRATORY PROTECTIVE DEVICES

Mind contact SARS-CoV-2 transmission from contaminated respirator!

HCW Compliance Issues

Proper use of Respirators and Surgical Masks

Reason	Measures
Skepticism	Educate
Negligence	Motivate
Discomfort	Train, offer other models/sizes
Communication difficulty	Educate, offer other model

Compliance among staff is growing in time and initially is much higher among younger HCWs

Proper use of Respirators and Surgical Masks

Disposal respirators

- Never clean, wash, disinfect, repair
- Keep in dry cloth
- Dispose if:
  - Worn
  - Damaged
  - Contaminated
  - Does not provide seal
- Replace if it gets wet

Elastomeric face piece respirators

- Can be cleaned and disinfected (not filters!)
- Replace filters if
  - Damaged
  - Contaminated
  - Excessive resistance to breathing

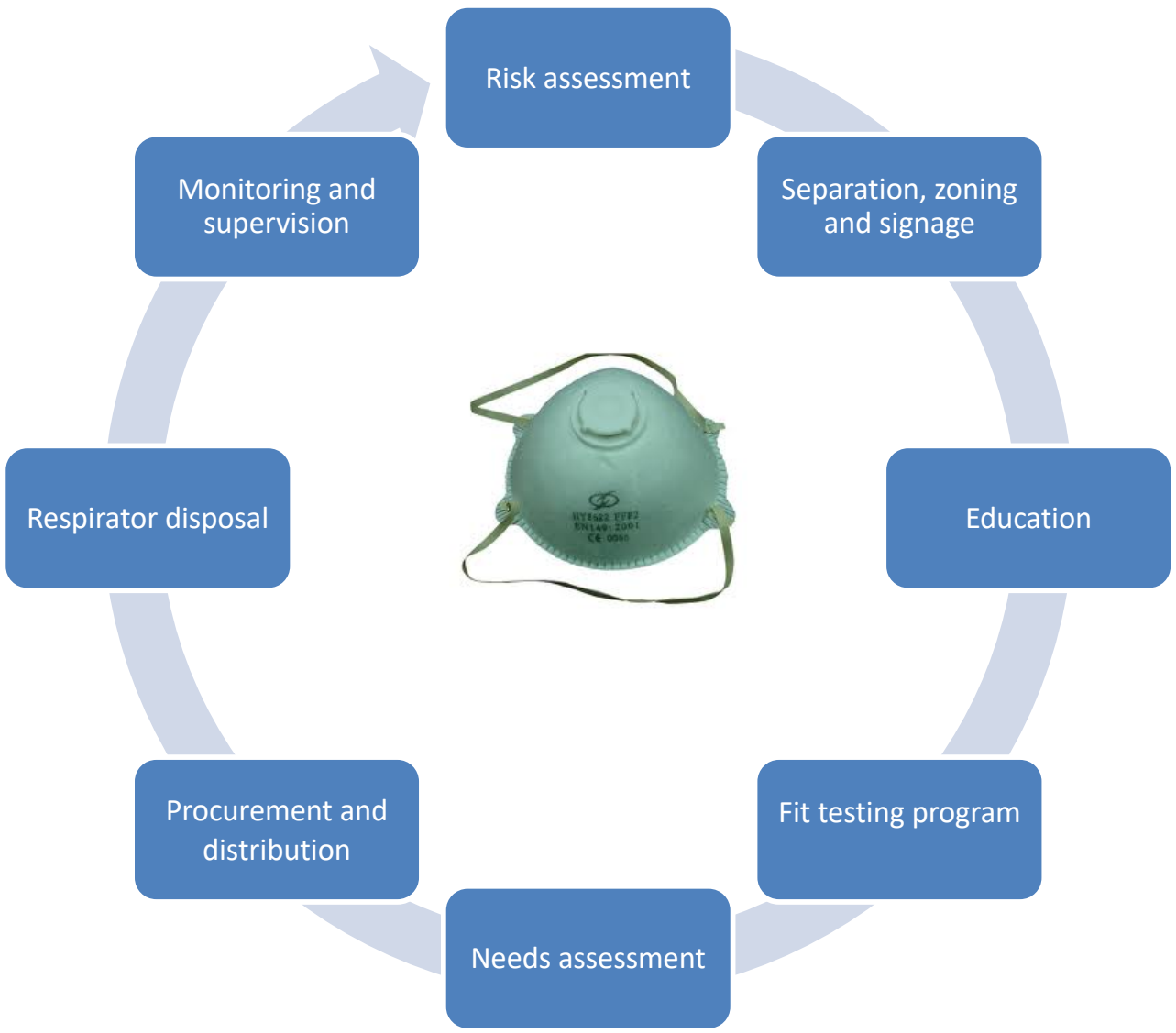
Respirator Care

Personal respiratory protection to prevent airborne transmission of TB and COVID-19

Respirator disposal

Proper use of Respirators and Surgical Masks

- Re-aerosolisation of infectious particles from respirator is extremely unlikely
- Contaminated respirators may pose risk of contact infections, including SARS-CoV-2, not TB
- Used respirator should be disposed with other potentially infected medical waste according to national regulations



Personal respiratory protection program cycle

Personal respiratory protection to prevent airborne transmission of TB and COVID-19

Conclusions

- Personal respiratory protection program can be feasible if based on adequate administrative and environmental controls
- Compliance among staff is growing in time and much higher among younger HCWs
- This program contains important educational component for HCW, patients and visitors on Airborne Precautions (THINK RISK!)

Thank You!

vlchnkv@yahoo.com

Grigory Volchenkov, Vladimir, Russia

ЦСФП

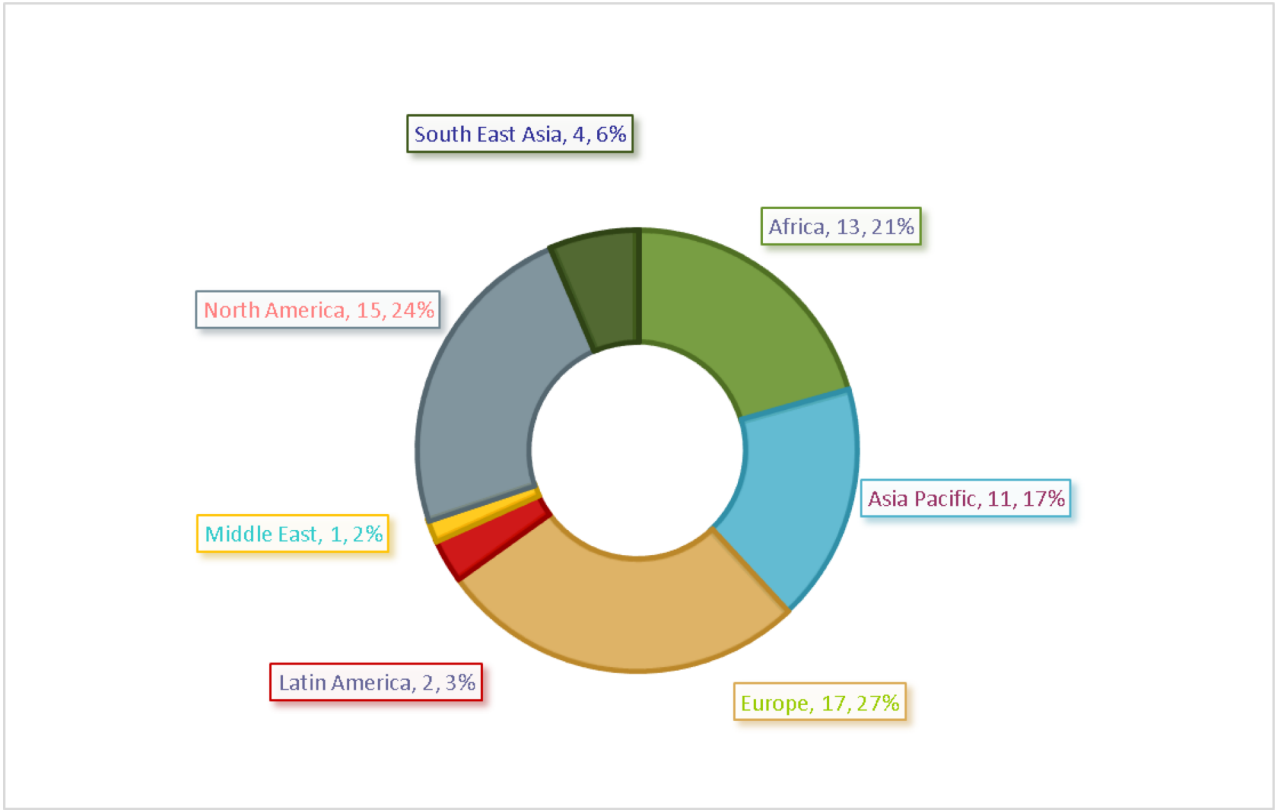
ETT End Tuberculosis Transmission Initiative

Personal respiratory protection to prevent airborne transmission of TB and COVID-19

Questions?

Follow us on:
Twitter @TheUnion_TBLH
Facebook @TheUnionLungHealth & @UnionConference
LinkedIn The International Union Against Tuberculosis and Lung Disease

NAPS Membership



NAPS Sub-Section of the TB Section
Membership across all regions
Members representing TB, HIV, Adult & Child Lung Health and Tobacco Control
A strength of the group and members is the diversity of knowledge, skills and expertise within their global community of practice

NAPS Activities

- Conference Planning
  - Contribute to the scientific program annual WHLC
  - Develop post graduate course/workshops/tracks/sessions for sub-section
  - Host training and Education Materials discussion session
  - Coordinate conference activities for members
- Working Groups
  - TB Education & Training (updated TOR)
  - Membership Development (new)
  - Conference Activities Planning (new)
- Webinars
- 25 year retrospective of NAPS

NAPS Leadership

CHAIR:

- Amanda Christensen, Australia
- amandachristensen@thearc.org.au

PROGRAMME SECRETARY/Representative CCSA:

- Niesje Jansen, Netherlands
- niesje.jansen@kncvtbc.org

The Union

International Union Against Tuberculosis and Lung Disease

Health solutions for the poor

THANK YOU

Register now for upcoming webinars :

https://www.theunion.org/news-centre/covid-19

Join us in championing change for lung health.

MEMBERSHIP.THEUNION.ORG/REGISTER