NATIONAL HEALTH LABORATORY SERVICE

NATIONAL INSTITUTE FOR OCCUPATIONAL HEALTH
Division of the National Health Laboratory Service

NATIONAL INSTITUTE FOR COMMUNICABLE DISEASES
Division of the National Health Laboratory Service

Preparing the Workplace for Coronavirus

HEALTH WORKERS

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NHLS

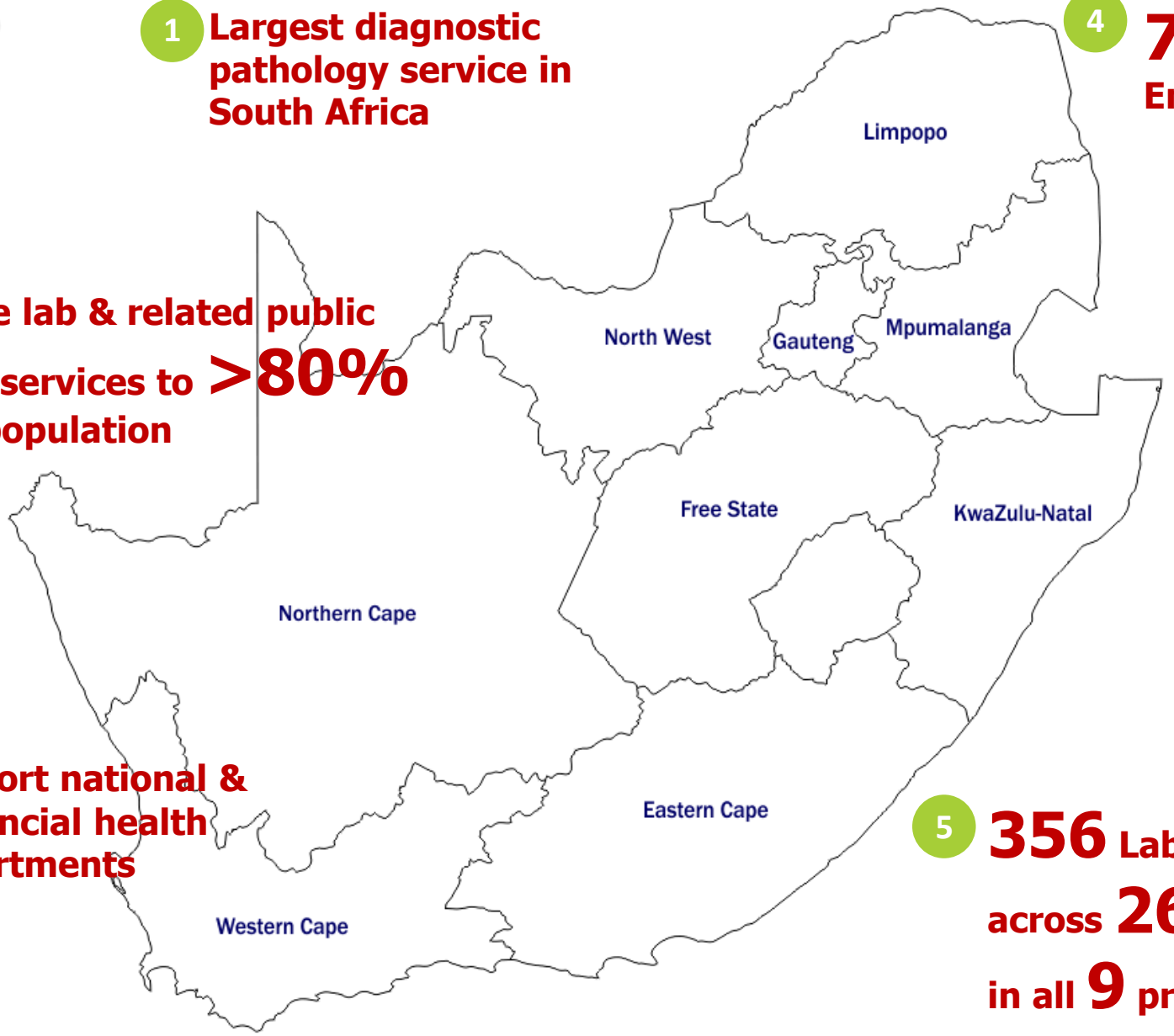
1. **Largest diagnostic pathology service in South Africa**

2. **Provide lab & related public health services to >80% of SA population**

3. **Support national & provincial health departments**

4. **7515 Employees**

5. **356 Laboratories across 260 sites, in all 9 provinces**



NATIONAL INSTITUTE FOR OCCUPATIONAL HEALTH

Division of the National Herald Laboratory Service

Healthy, Safe and Sustainable Workplaces

PROMOTING DECENT WORK THROUGH CUTTING EDGE RESEARCH SERVICE DELIVERY AND TRAINING

Improve and promote workers' health and safety

Catalyst for a mind set change towards greater prevention

Inform regulation, policy and standards

Public and private sectors of the economy

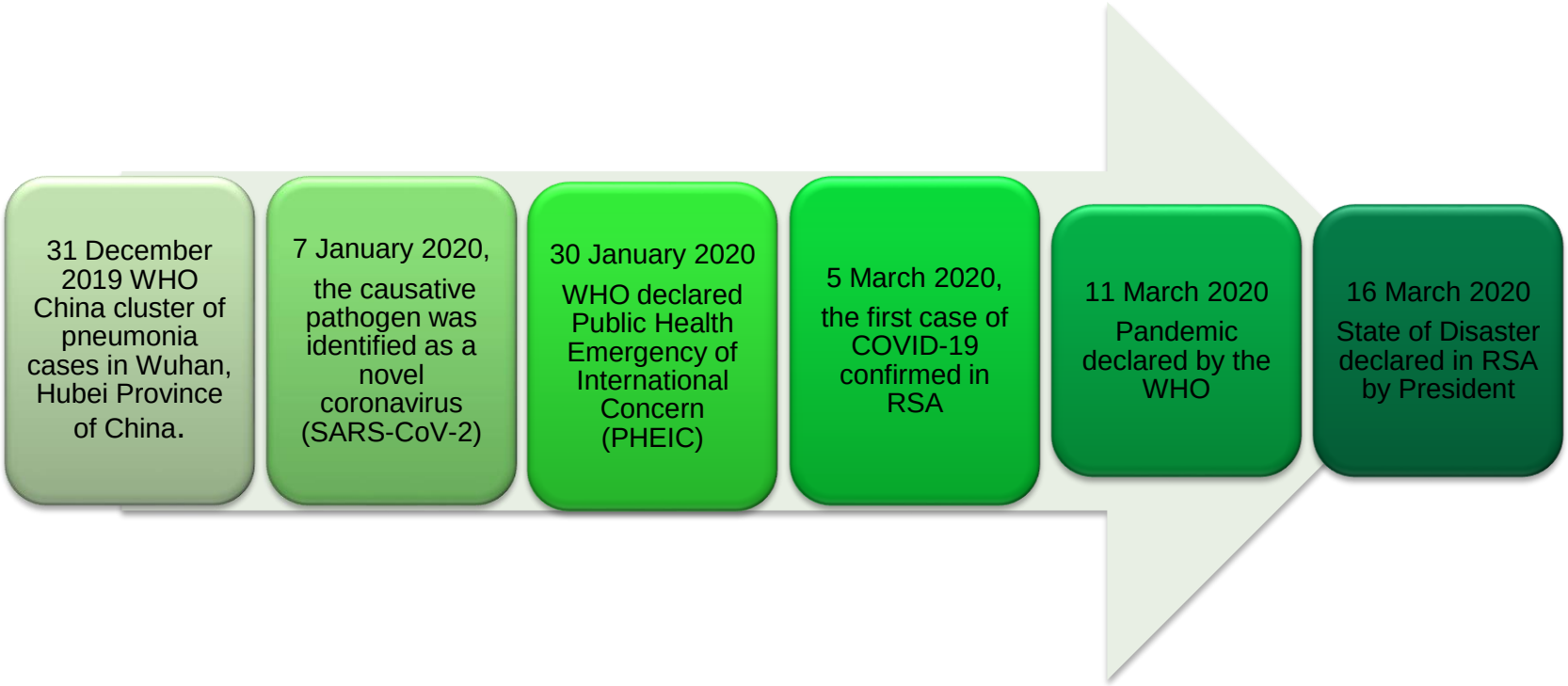
Formal and informal economies

HOW TO STAY INFORMED:
THIS SITUATION IS RAPIDLY EVOLVING
Please check for updates on the NICD, NIOH and NDOH websites
www.nicd.ac.za | www.nioh.ac.za www.ndoh.gov.za

Latest updated information on the spread of COVID-19
https://www.who.int/emergencies/diseases/novel-coronavirus-2019/situation-reports

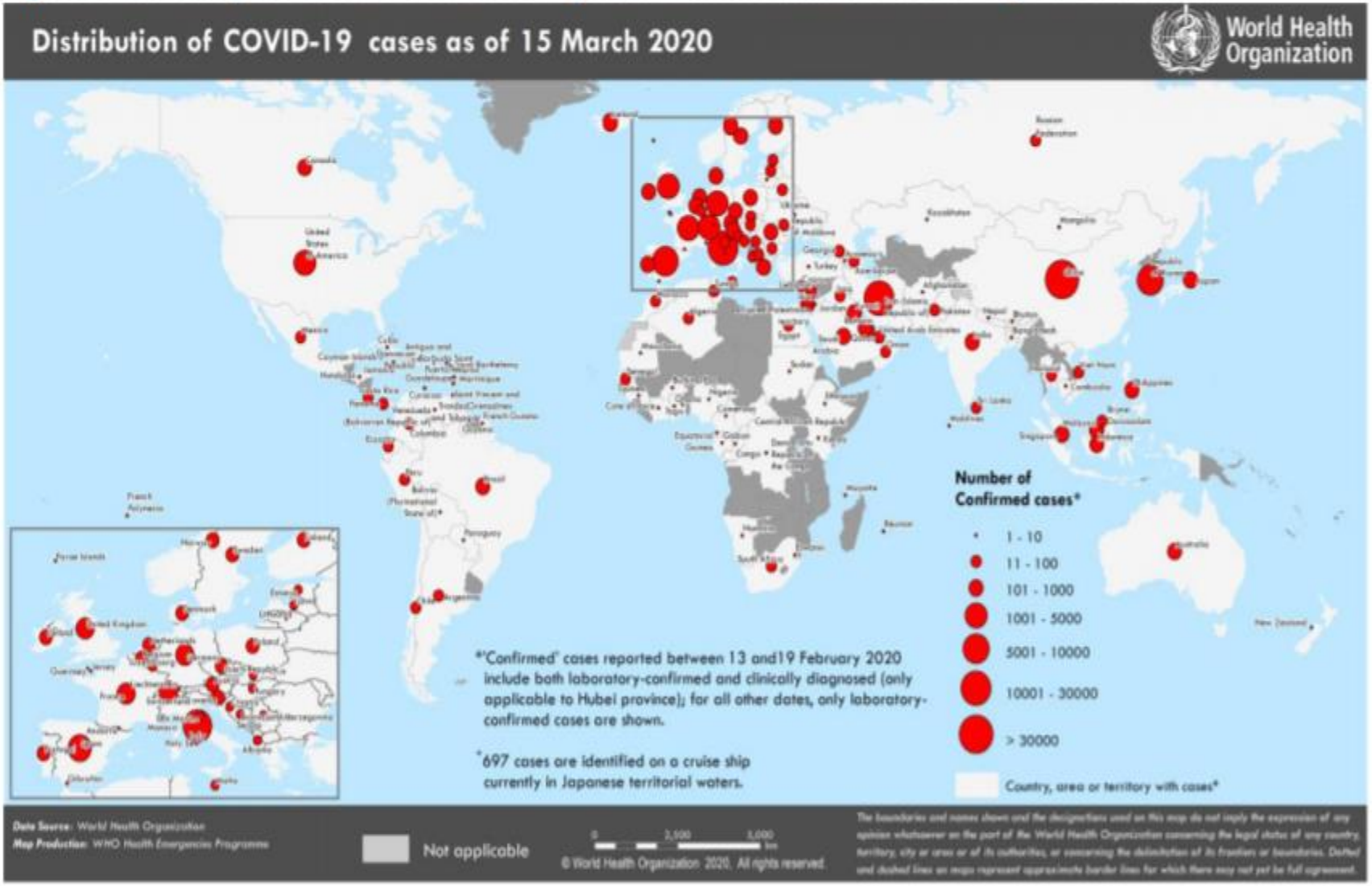
Advice and guidance
https://www.who.int/emergencies/diseases/novel-coronavirus-2019
https://www.ilo.org/beijing/information-resources/public-information/WCMS_736744/lang--en/index.htm

Background


31 December 2019 WHO China cluster of pneumonia cases in Wuhan, Hubei Province of China.
7 January 2020, the causative pathogen was identified as a novel coronavirus (SARS-CoV-2)
30 January 2020 WHO declared Public Health Emergency of International Concern (PHEIC)
5 March 2020, the first case of COVID-19 confirmed in RSA
11 March 2020 Pandemic declared by the WHO
16 March 2020 State of Disaster declared in RSA by President

Global cases-153 517 confirmed cases Deaths- 5735

Figure 1. Countries, territories or areas with reported confirmed cases of COVID-19, 15 March 2020

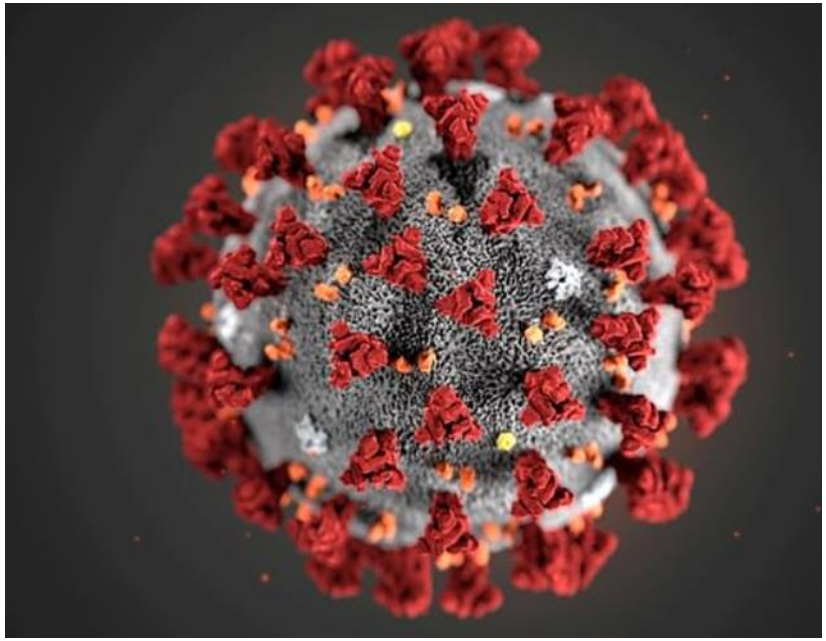


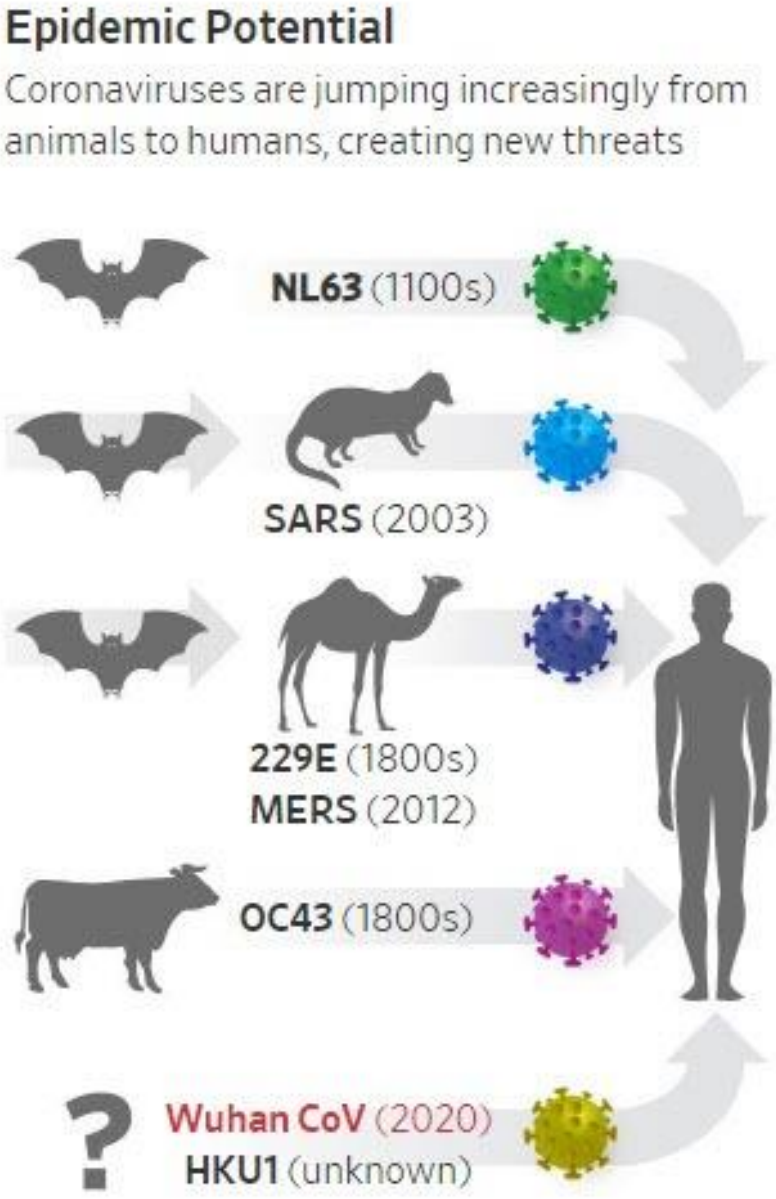
South African COVID-19 cases

- 5 March 2020, South African Minister of Health Dr. Zweli Mkhize announced the country's first confirmed coronavirus (COVID-19) case.
- 62 confirmed cases
- With travel and local transmission

Microbiology and epidemiology

- Coronaviruses are enveloped, single-stranded positive-sense RNA viruses.
- The envelope of the coronaviruses is covered with club-shaped glycoproteins which look like ‘crowns’, or ‘halos’ – hence the name ‘coronavirus.’
- **Coronaviruses are responsible for the common cold, and usually cause self-limited upper respiratory tract infections**.

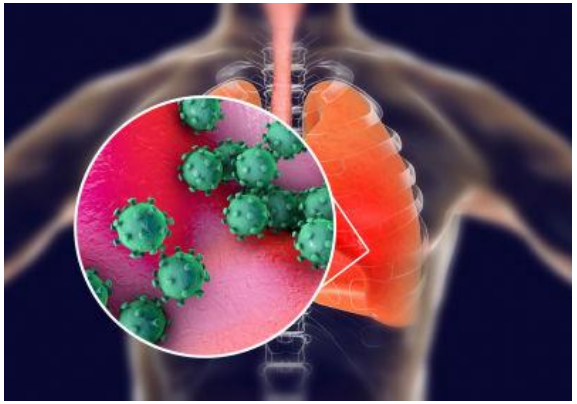




- SARS-CoV (2002-2003 global outbreak; spread to **37 countries** within **2 weeks** of original outbreak reporting; **8,098** probable cases and **774 deaths**)
- MERS-CoV (first ID-ed in 2012; >**2400 lab-confirmed cases** with >**850 deaths**; high mortality; mostly contained within the **Middle East**, but has been detected in **17 other countries**.)

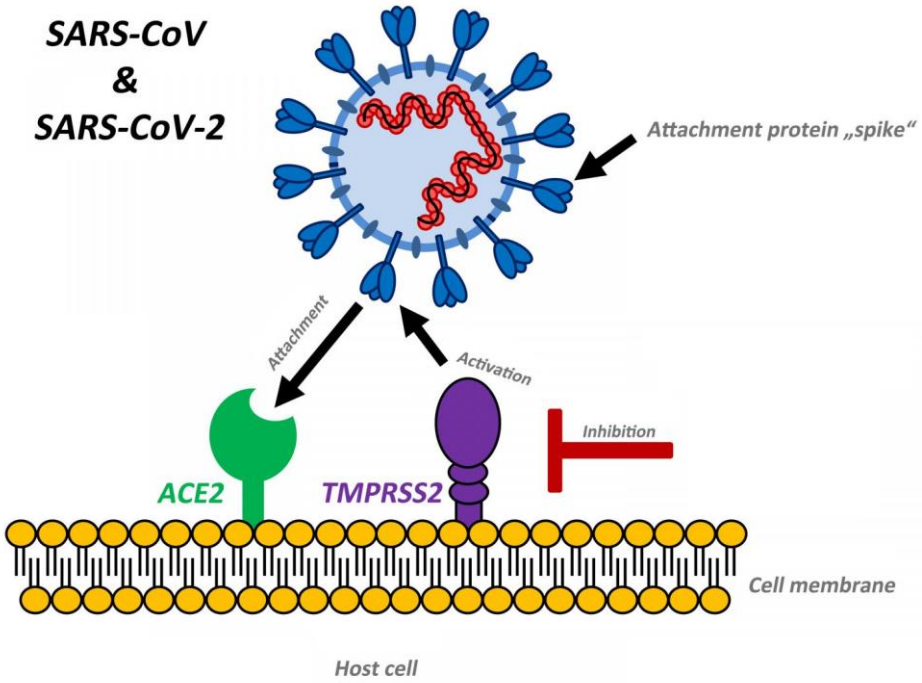
INCUBATION PERIOD

- Mean incubation period **5.2 days** (95% C, 4.1 to 7.0), 95th percentile of the distribution at **12.5 days** (can go to 27 days)
- **14 days** of isolation or quarantine is suggested as it allows a window of **1.5 additional days.** (Li, 2020)
- Basic reproductive number was estimated 2.28 (95% CI, 1.4 to 3.9) - on average each infectious case gives rise to just over 2 infectious cases.
- Generally not infectious during incubations period
- More infectious when symptoms show (e.g. coughing & sneezing)

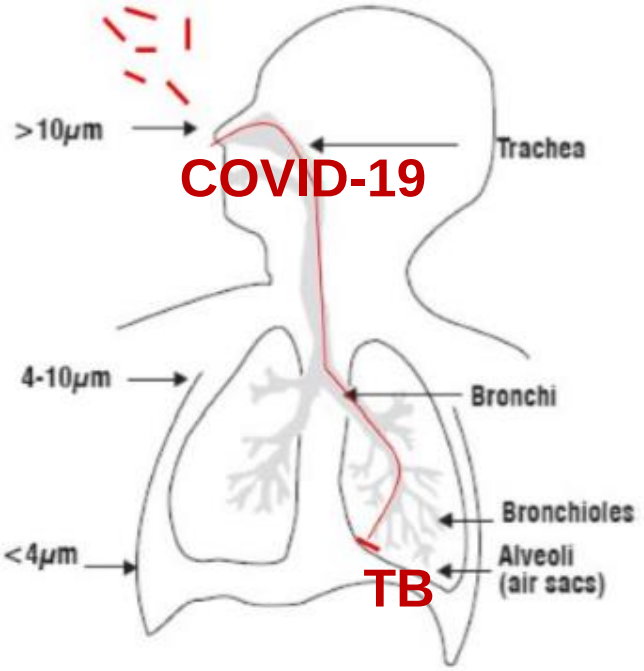


How is SARS-CoV-2 transmitted?

- The virus must ATTACH to a cell
- Viruses attach to specific proteins on the surface of human cells
- After attachment, they are able to enter the cell and cause disease.
- The site of the **specific receptor** tells us how the organism is transmitted.
- Coronaviruses of the beta-coronavirus clade must attach to proteins on the surface of epithelial cells in the upper airways called **Angiotensin Converting Enzyme**
- **Therefore 'carrier droplets' need not be very small.**

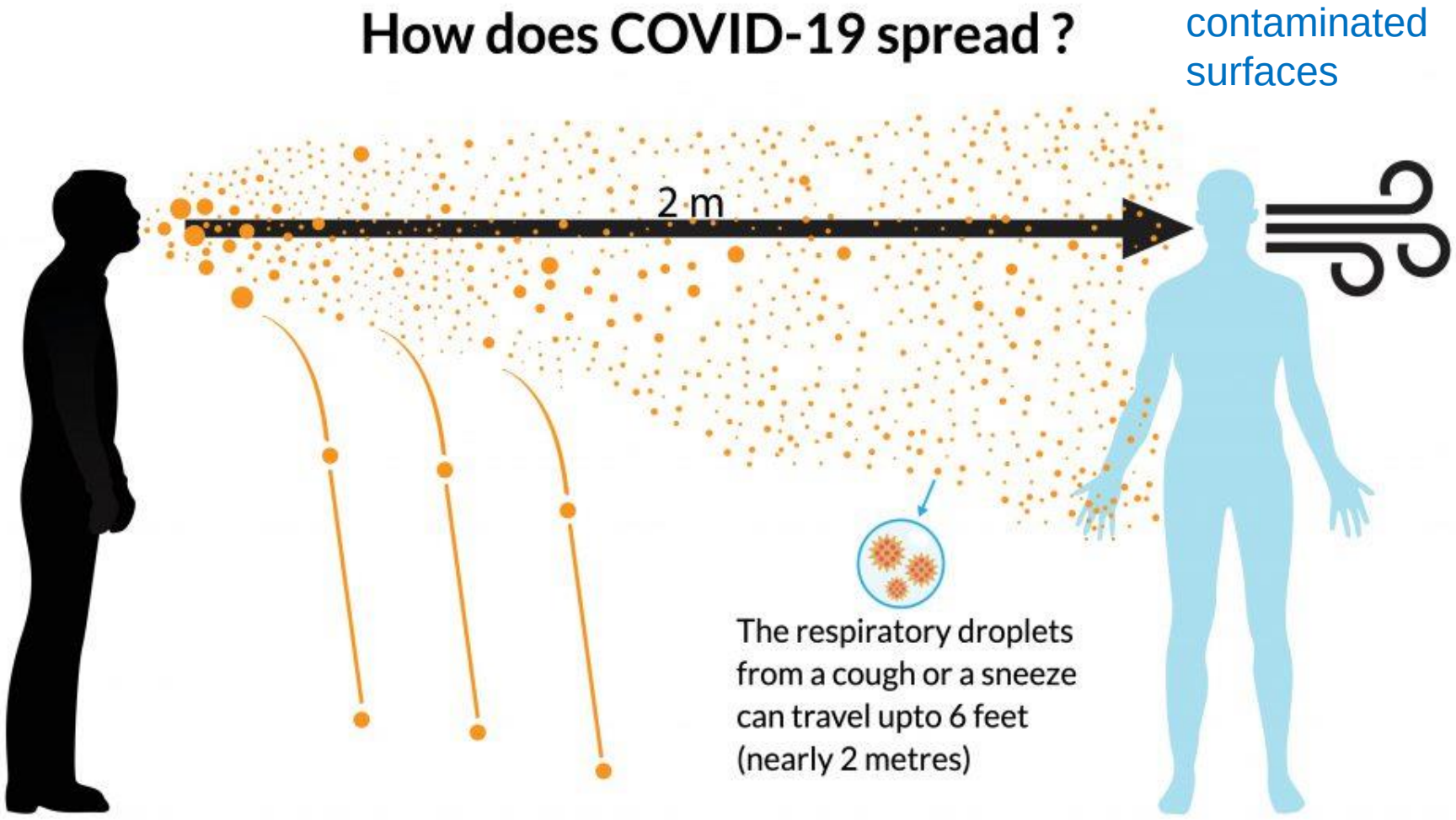


Sizes of droplet nuclei and the site of deposition in the respiratory tract



How it spreads?

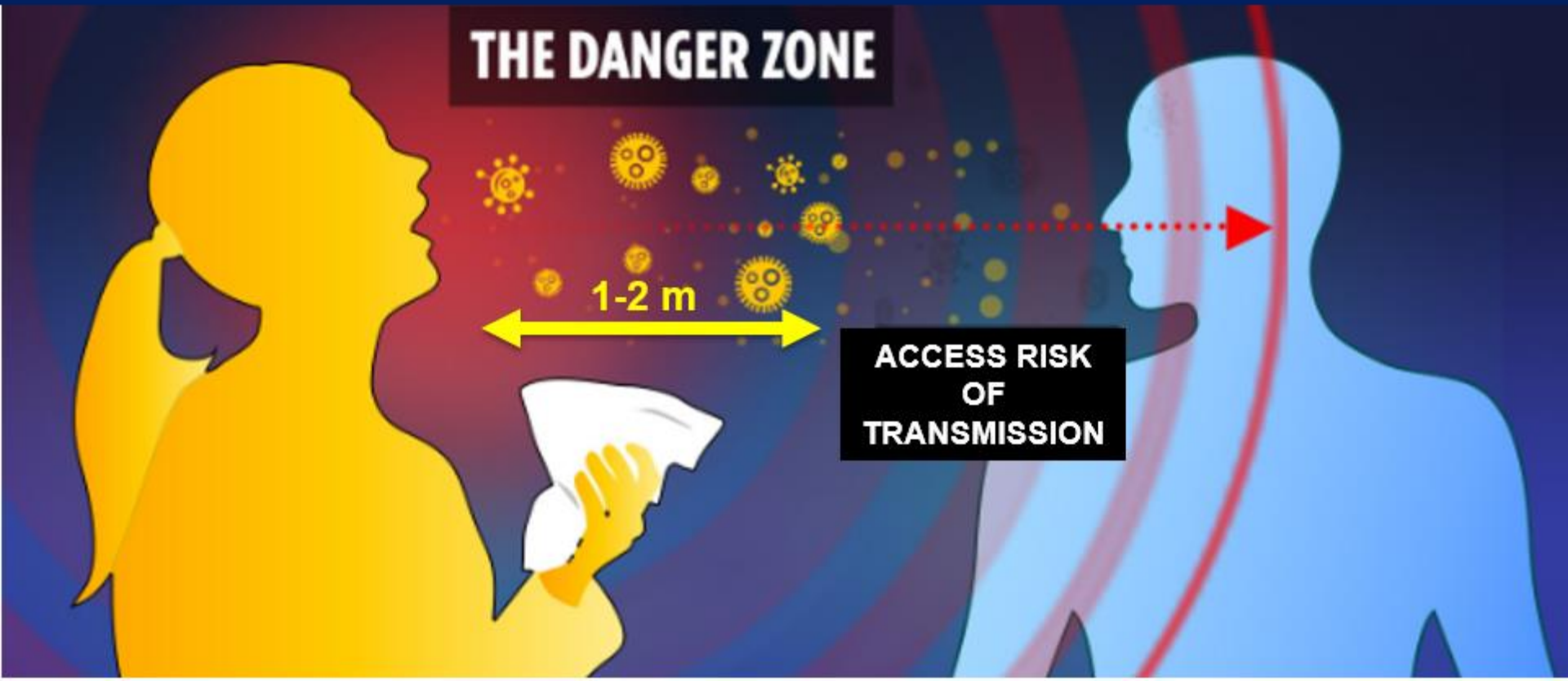
- Person to person
- Touching contaminated surfaces



Estimated incubation period is between 2-14 days

More infectious when symptoms show (e.g. coughing & sneezing)

TRANSMISSION



Direct contact: Touching an ill persons or a contaminated surface
Droplet transmission: inhaling droplets

- **Coughing & sneezing generates droplets of different sizes**
- **Larger droplets fall to the ground within a 1-2m radius of the person within a few seconds**

Update on persistence of COVID-19

- COVID-19 virus has a fragile outer membrane - it is less stable in the environment and can be killed by simple disinfectants
- There is no evidence, to date, on survival of the COVID-19 virus in water or sewage. Based on its structure, it probably does not survive long.
- It is not certain how long COVID-19 virus survives on surfaces: studies have shown survival on inanimate surface – 12 hrs - 6 days
- Survival time in the environment depends on
  - pH
  - Innoculum size
  - Dryness
  - Temperature
  - Exposure to disinfectants
  - Type of surface
- Common disinfectants such as 70% ethanol and bleach can kill the virus

Symptomatic persons – case definition

acute respiratory illness with sudden onset of the following:

- cough,
- sore throat,
- shortness of breath or
- fever [≥ 38°C (measured) or history of fever

AND

- In the 14 days prior to onset of symptoms,

  - Were in **close contact** with a confirmed or probable case of SARS-CoV-2 infection;

    OR

  - **History of travel** to areas with presumed ongoing community transmission of SARS-CoV-2

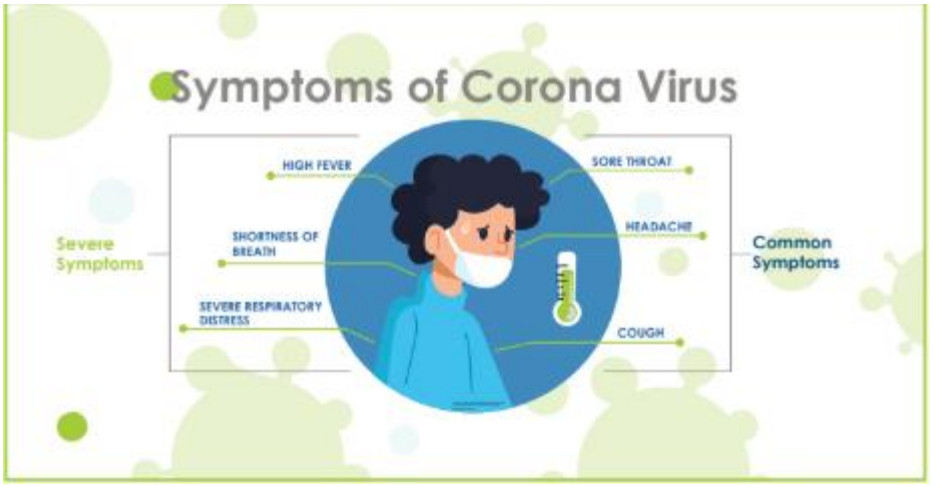
    OR

  - Worked in, or attended a **health care facility** where patients with **SARS-CoV-2 infections** were being treated

    OR

  - Admitted with **severe pneumonia of unknown aetiology**

Symptoms and clinical outcome

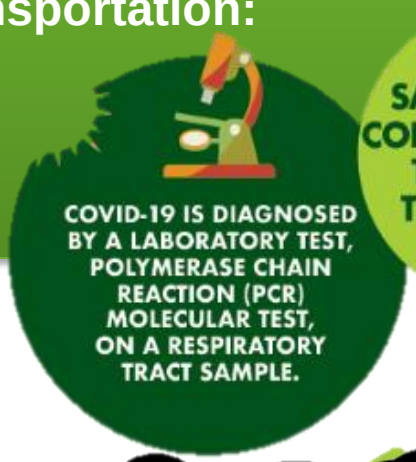


- 80% of persons have mild-moderate disease (common ‘flu’ or cold)
- 15% of cases require hospital admission
- 5 % of cases are become critically ill and require ICU of which 2% die
- Persons with underlying co-morbid illness esp pulmonary disease, elderly

HOW IS COVID-19 DIAGNOSED

Who should be tested?

- Currently, only persons who are Person Under Investigation (PUI).
- All cases to be discussed with NICD doctor on call before collecting samples
- Costs - free of charge for patients meeting the case definitions above
- For specific guidance on sample collection and transportation:
- PLEASE VISIT THE NICD WEBSITE
- http://www.nicd.ac.za
- TOLL-FREE NUMBER 0800 029 999



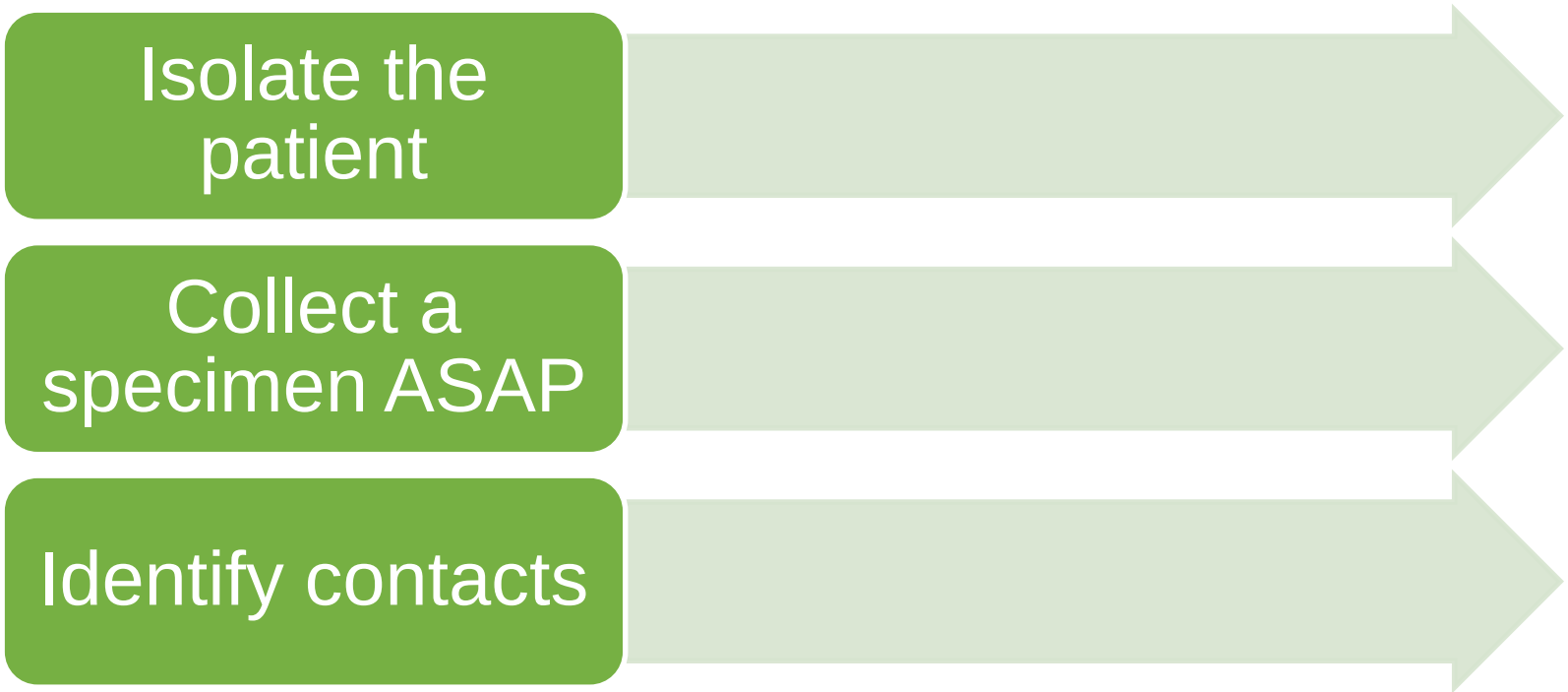
The test will only be positive if a person has active disease (which may vary from very mild to severe)

• The test does not identify persons who are incubating the infection • A turn-around time of 48 hours after reaching the lab.

Asymptomatic persons are not tested

Testing is not done to determine exposure or give the 'all clear'

If testing is indicated, then

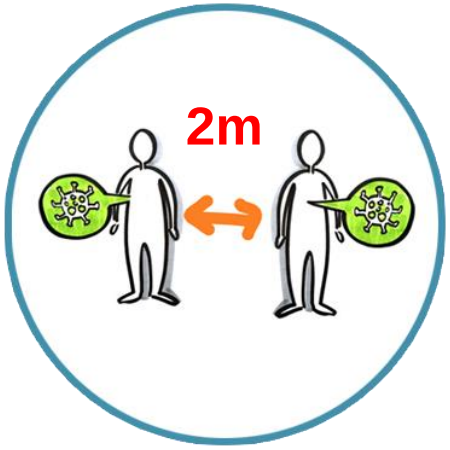


How to do contact tracing and monitoring of close contacts •

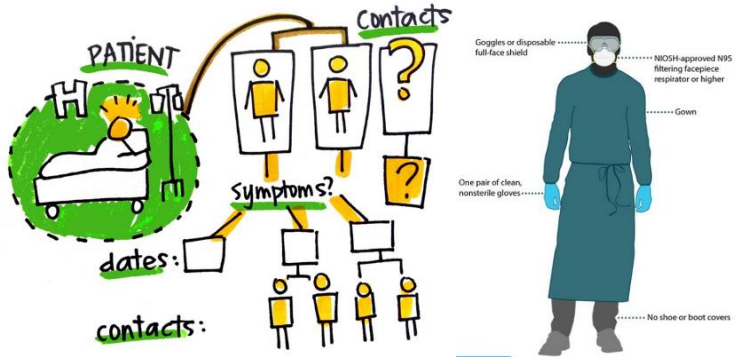
- Once laboratory testing confirms COVID-2019 infection:
- Provincial CDCC needs to identify close contacts, and make make a contact line list using Appendix in guidelines (see next slide)
- EVERY contact to complete the contact demographic section on the contact monitoring form PDF version at: http://www.nicd.ac.za/diseases-a-zindex/novel-coronavirus-infection/ (see next slide)
- Completed linelist and contact form also to be emailed to ncov@nicd.ac.za
- Close contacts will be asked to self-quarantine at home for 14 days since exposure to the confirmed COVID-2019 and take their temperature daily (thermometers need to be issued)
- CDC / NICD/ delegated person will call contacts telephonically to identify if symptoms are present

CONTACT TRACING

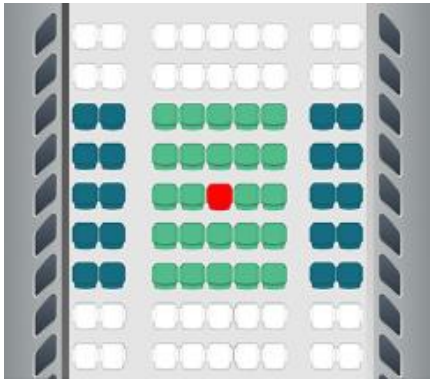
Any person who has had **close contact with a confirmed case** while the confirmed case was **ill** or in the **7 days preceding illness**:



Face-to-face or close environment



HCW or other person providing care while not wearing recommended PPE



CDC's 2 row seating guidance

Close contacts under monitoring should be advised to:

- Close contacts MUST self-quarantine at home for 14 days after exposure to the confirmed COVID-2019 and take their temperature daily
- Remain at home (NICD/CDC will provide an official letter for employment or
  education facilities)
- Avoid unnecessary social contact or travel
- Remain reachable for monitoring

Quarantine

- Quarantine means **separating asymptomatic persons who are exposed** to a disease from non-exposed persons
- Quarantine is to be distinguished from isolation, which is the act of separating a sick individual with a contagious disease from healthy individuals without that contagious disease
- Quarantine procedures can be effective in **limiting and slowing the introduction of a novel pathogen into a population** but may entail the use of considerable resources and may infringe on the rights of members of society.
- Quarantine may take place
  - in the home
  - or in a designated facility.
- Depending on level of risk, and intensity of the exposure, different levels of quarantine will be employed, for example
  - If a person is expatriated from Wuhan, voluntary quarantine at a facility will be recommended.
  - A household member of a confirmed case will be asked to stay in their home for 14 days
  - if health worker wearing appropriate PEP is exposed to a confirmed case, the health worker would be allowed to work but would be requested to self-quarantine if symptoms develop within 14 days.

Treatment

- Currently **no specific treatment** for disease caused by SARS-CoV-2 infection
- Early supportive **therapy and monitoring**
  - Give supplemental oxygen therapy immediately to patients with SARI and respiratory distress, hypoxaemia, or shock.
  - Use conservative fluid management in patients with SARI when there is no evidence of shock.
  - Give empiric antimicrobials
  - Do not routinely give systemic corticosteroids
- Closely monitor patients
- Understand the patient's co-morbid condition(s) to tailor the management of critical illness and appreciate the prognosis.
- Communicate proactively with patients and families and provide support and prognostic information
- Contact tracing.
- There is early evidence that some medications used to treat HIV (lopinavir, ritonavir) may benefit patients with COVID-19 infection but further data are needed.
- **Info available on the WHO website and NICD guidance document**

Vaccinations

- Currently no vaccines for COVID-19 however
- Advisable to take the flu vaccine to prevent influenza and unnecessary testing for COVID-19

Workers at risk of infection

- Every person may be at risk of exposure to COVID-19, however..
- The risk is higher for workers interacting with persons that may be potentially infected
- Workers' individual risk factors
  - older age
  - presence of chronic medical conditions, including immunocompromising conditions;
  - pregnancy, asthma
  - diabetes
  - heart disease
  - Cancer

High exposure risk group workers

- **Airline operations** (e.g. airline cabin crew, aircraft cleaners, mechanics)
- **Boarder control** (e.g. security officials, and other boarder officials)
- **Health care** (e.g. EMS workers, nurses, doctors, other medical staff)
- **Laboratories** (e.g. medical technologists, scientists, laboratory aids and researchers)
- **Pathology and funeral services** (e.g. mortuary attendants, autopsy technicians and funeral directors)
- **Solid waste and wastewater management** (e.g. waste pickers, water treatment plant workers)
- **Care facility workers**

MITIGATION OF RISK IN THE WORKPLACE

Primary prevention

- Minimise risks of transmission in the workplace. HRA including controls (Engineering, Administrative and PPE)
- Business continuity and pandemic preparedness - Policies
- Education and Training /HP (risk communication)

Secondary Prevention

- Identify persons at risk early and respond appropriately
- Medical Surveillance

Tertiary prevention

- Rehabilitation
- Respond appropriately to a case of COVID amongst staff- incident investigation and contact tracing
- Compensation/COIDA
- Leave

Legislation

2 No. 14918 GOVERNMENT GAZETTE, 2 JULY 1993

Act No. 85, 1993 OCCUPATIONAL HEALTH AND SAFETY ACT, 1993

ACT

To provide for the health and safety of persons at work and for the health and safety of persons in connection with the use of plant and machinery; the protection of persons other than persons at work against hazards to health and safety arising out of or in connection with the activities of persons at work; to establish an advisory council for occupational health and safety; and to provide for matters connected therewith.

(English text signed by the State President.)
(Assented to 23 June 1993.)

GOVERNMENT NOTICE
GOEWERMENTSKENNISGEWING

DEPARTMENT OF LABOUR
DEPARTEMENT VAN ARBEID

. R. 1390 **27 December 2001**

OCCUPATIONAL HEALTH A ND SAFETY ACT, 1993

REGULATIONS FOR HAZARDOUS BIOLOGICAL AGENTS

The Minister of Labour has under section 43 of the Occupational Health and Safety Act, 1993 (Act No. 85 of 1993) on the recommendation of the Advisory Council for Occupational Health and Safety, made the regulations in the Schedule.

DEPARTMENT OF LABOUR

NOTICE 191 OF 2019

COMPENSATION FOR OCCUPATIONAL INJURIES AND DISEASSES ACT, 1993 (ACT NO.130 OF 1993), AS AMENDED

COVID-19 WORKPLACE PREPAREDNESS for Health care workers

Transmission of COVID 19 to HCWs

- occurs in the **absence of standard precautions**, when **basic infection prevention and control measures for respiratory infections** are not in place, and when **handling patients whose COVID-19 infection is yet to be confirmed**

- Although airborne transmission is not considered the principal transmission route, we recommend a cautious approach because of possible **transmission through aerosols**

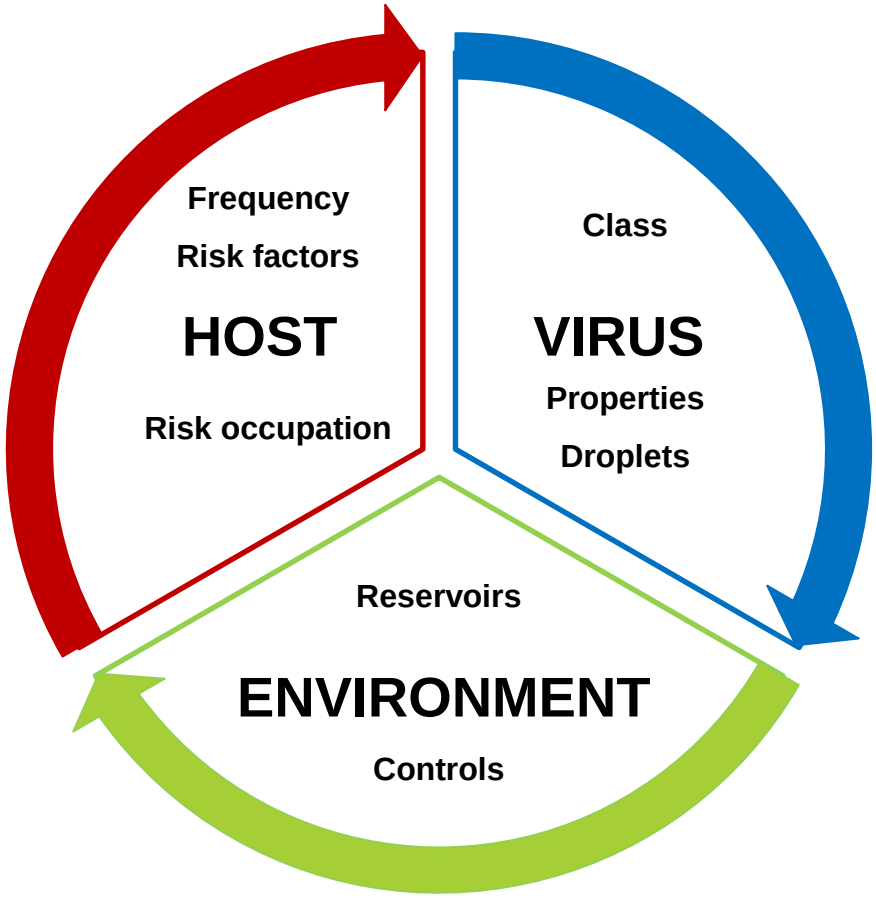
Back to basics….

Hazard identification & Risk assessment

- A risk assessment should be conducted in the workplace to

  determine the **RISK** of **EXPOSURE** to **COVID-19** and be **communicated to all workers**.

- This should be assessed with all other hazards
  - Biological, Physical, Chemical, Ergonomic
  - Psychosocial - exposure to long working hours, psychological distress, fatigue, occupational burnout, stigma, physical and psychological violence



Different workers have different risk exposures: based on job specific risk assessments, consider the following:

Engineering controls

- Engineering controls involve isolating employees from work related hazards.
- In workplaces where they are appropriate, these types of controls reduce exposure to hazards without relying on worker behaviour and can be the most cost-effective solution to implement.
- Engineering controls for SARS-CoV-2 include:
  - Installing **high-efficiency air filters**.
  - **Increasing ventilation** rates in the work environment particularly in isolation rooms
  - **Installing physical barriers**, such as clear plastic sneeze guards especially inareas like reception, triage or pharmacy
  - Specialized **negative pressure ventilation** in some settings, such as for aerosol generating procedures (e.g., airborne infection isolation rooms in healthcare settings and specialized autopsy suites in mortuary settings).
  - **Controlled access** to high risk areas
  - Surface cleaning devices are recommended (e.g. UVGI).

Administrative Controls

- Should be in place and communicated to employees and managers which includes:
  - A **workplace plan** of action for preparedness
  - Clear **infection prevention and control** and standard precautions
  - **Occupational health policies**
  - **Appropriate and rapid triage** and proper patient placement
  - **Controlled access** to high risk areas and laboratories
  - Adequate staff to patient ratios, appropriate working hours and breaks need to be maintained
  - Ensure **proper signage** and **risk communication** to staff and visitors to health facilities.
  - **Appropriate and updated travel policies** to ensure safety of staff
  - **Cleaning and disinfection procedures**
  - **Ensure safe waste management** practices and procedures
  - The occupational health or infection control personnel should establish points of contact between the organisation, personnel and local health authority
  - Established **public health reporting procedures** should be swiftly followed
  - A **blame free working environment** needs to be provided
  - Establish and ensure workers have access to **employee assistance programmes**

Educate and inform employees (risk communication)

- Give people facts about how the disease is transmitted
- Infection prevention and control including hand and respiratory hygiene practices
- Correct donning and doffing and disposal of PPE
- Advise workers on self-assessment, symptom reporting and sick leave policies if exposed
- Influenza vaccinations to prevent possible co infection with influenza
- Clear policies regarding sick leave.
  - Don’t punish people for staying away for ‘flu’
  - Make it possible to work from home
- Understand travel risks and make informed decisions re risk-benefit of travelling
- Public Hotline number 0800 029 999

Minimise risks of transmission in the workplace

- Isolate affected patients and limit contact and movement
- Promote regular and thorough handwashing by employees, contractors and customers
- Respiratory hygiene
- Avoid touching your face, especially while working.
- Encourage / insist that symptomatic persons stay away / self isolate

https://www.who.int/docs/default-source/coronaviruse/getting-workplace-ready-for-covid-19.pdf

Minimise risks of transmission in the workplace

Regarding travel

Before

- Evaluate the necessity for travel through risk/benefit assessment.
  - Be informed
  - Persons with underlying illness or older persons are at higher risk of severe illness

During

- Wash hands regularly, avoid sick persons, practice cough etiquette.
- Masks not helpful

After

- No official policy on quarantine of persons returning from an area affected by COVID, asymptomatic persons should self-monitor for symptoms for 14 days after return
- If symptoms develop, self-isolate until testing confirms a negative result

https://www.who.int/docs/default-source/coronaviruse/getting-workplace-ready-for-covid-19.pdf

Medical surveillance

- To ensure early detection of COVID 19 disease and facilitation of testing and treatment and prevent transmission from potentially contagious HCP to patients and other colleagues
- Hospitals should maintain a record of all staff providing care for confirmed COVID-19 cases
- This can include:
  - monitoring for symptoms and rapidly isolation and tested should symptoms develop particularly if they are in contact with confirmed cases.
- This should be determined **according to the risk**
- **At the guidance of the company OMP**

Employee Monitoring

- ***Self-monitoring***
  - HCW should monitor themselves
  - fever by taking their temperature twice a day and remain alert for respiratory symptoms
  - should be provided a plan for whom to contact if symptomatic
- ***active monitoring***
  - the state or local public health authority
  - with potentially exposed people to assess for the presence of fever or respiratory symptoms
- ***self-Monitoring with delegated supervision*** in a
  - HCP perform self-monitoring with oversight by their healthcare facility's occupational health

Epidemiologic risk factors	Exposure category	Recommended Monitoring for COVID-19 *(until 14 days after last potential exposure)*	Work Restrictions for Asymptomatic HCP
Prolonged close contact with a COVID-19 patient who was wearing a facemask (i.e., source control)			
HCP PPE: None	Medium	Active	Exclude from work for 14 days after last exposure
HCP PPE: Not wearing a facemask or respirator	Medium	Active	Exclude from work for 14 days after last exposure
HCP PPE: Not wearing eye protection	Low	Self with delegated supervision	None
HCP PPE: Not wearing gown or gloves[a]	Low	Self with delegated supervision	None
HCP PPE: Wearing all recommended PPE (except wearing a facemask instead of a respirator)	Low	Self with delegated supervision	None

Interim U.S. Guidance for Risk Assessment and Public Health Management of Healthcare Personnel with Potential Exposure in a Healthcare Setting to Patients with Coronavirus Disease (COVID-19)

March 7, 2020

Prolonged close contact with a COVID-19 patient who was not wearing a facemask (i.e., no source control)			
HCP PPE: None	High	Active	Exclude from work for 14 days after last exposure
HCP PPE: Not wearing a facemask or respirator	High	Active	Exclude from work for 14 days after last exposure
HCP PPE: Not wearing eye protection[b]	Medium	Active	Exclude from work for 14 days after last exposure
HCP PPE: Not wearing gown or gloves[a,b]	Low	Self with delegated supervision	None
HCP PPE: Wearing all recommended PPE (except wearing a facemask instead of a respirator)[b]	Low	Self with delegated supervision	None

Interim U.S. Guidance for Risk Assessment and Public Health Management of Healthcare Personnel with Potential Exposure in a Healthcare Setting to Patients with Coronavirus Disease (COVID-19)

March 7, 2020

Personal Protective Equipment (PPE)

- PPE is an effective measure within a **complete package of mitigation and control strategies**.
- Ensure adequate and appropriate PPE is available. As a guide consider the following **based on a risk assessment:**
  - **A single pair of disposable patient examination gloves, Disposable isolation gown, Respiratory protection (i.e., N-95 respirator), and Eye protection (i.e., goggles or disposable face shield that fully covers the front and sides of the face).**
- Health care workers involved in **aerosol generating procedures**
  - tracheal intubation, non-invasive ventilation, cardiopulmonary resuscitation, tracheostomy, bronchoscopy
  - **respirators, eye protection, gloves, gowns and aprons if the gowns are not fluid resistant.**
- Used PPE should be **considered contaminated and discarded in accordance with safe practice**.
- Surgical masks should be available for **patients with respiratory symptoms** that are being cared for in the community.
- It is not recommended for **asymptomatic individuals** to wear a mask of any type.

All healthcare workers should with appropriate PPE according to the setting and task. The WHO guidance on appropriate PPE use is found in https://apps.who.int/iris/bitstream/handle/10665/331215/WHO-2019-nCov-IPCPPE_use-2020.1-eng.pdf

Rational use of personal protective equipment for coronavirus disease 2019 (COVID-19)

Interim guidance
27 February 2020

World Health Organization

Table 1. Recommended type of personal protective equipment (PPE) to be used in the context of COVID-19 disease, according to the setting, personnel and type of activity[a]

Setting	Target personnel or patients	Activity	Type of PPE or procedure
Healthcare facilities			
Inpatient facilities			
Patient room	Healthcare workers	Providing direct care to COVID-19 patients.	Medical mask Gown Gloves Eye protection (goggles or face shield).
		Aerosol-generating procedures performed on COVID-19 patients.	Respirator N95 or FFP2 standard, or equivalent. Gown Gloves Eye protection Apron
	Cleaners	Entering the room of COVID-19 patients.	Medical mask Gown Heavy duty gloves Eye protection (if risk of splash from organic material or chemicals). Boots or closed work shoes
	Visitors[b]	Entering the room of a COVID-19 patient	Medical mask Gown Gloves
Other areas of patient transit (e.g., wards, corridors).	All staff, including healthcare workers.	Any activity that does not involve contact with COVID-19 patients.	No PPE required
Triage	Healthcare workers	Preliminary screening not involving direct contact[c]	Maintain spatial distance of at least 1 m. No PPE required
	Patients with respiratory symptoms.	Any	Maintain spatial distance of at least 1 m. Provide medical mask if tolerated by patient.

If you suspect you have been exposed to COVID-19

- Alert your supervisor and occupational health clinic immediately
- If you are experiencing symptoms, inform your health care provider about any contacts and recent travel to areas affected by COVID-19

Enquiries : **info@nioh.ac.za**

For more information contact NICD: 080 002 9999

www.nicd.ac.za or www.nioh.ac.za

ACKNOWLEDGEMENTS

- NHLS Management
- NIOH Outbreak Response Team
- NICD

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- OH Outbreak Response Team
- NICD
- NHLS Management

For more information

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