



HIGHER HEALTH

Coronavirus Disease 2019 (COVID-19)

General Introduction

Professor Tim Tucker

ACKNOWLEDGEMENT

The information contained within this presentation has been developed and curated by Professor Tim Tucker, CEO of SEAD.



It includes work and guidance from sources, including peer reviewed articles, as well as the works of the WHO, DoH, NICD, DHET and other sources.

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Outline

- Welcome
- Nomenclature
- Virology – where does this come from
- Transmission
- Epidemiology
- Clinical presentation and outcomes
- Mortality and risk
- Prevention
- Drugs and vaccines

Other issues..... To follow in Webinar

- When to open and close
- Wellness clinic preparedness
- Screening and testing
- What happens when there are infections
- Managing absenteeism
- Ability to run residences
- Ability to support
 - Staff, students
 - Stigma
- Travel controls
- Sports, recreations and gatherings
- Security

HOW TO STAY INFORMED:

THIS SITUATION IS RAPIDLY EVOLVING

PLEASE CHECK FOR UPDATES ON THE NICD AND NDOH WEBSITES (www.nicd.ac.za and www.sacoronavirus.co.za)

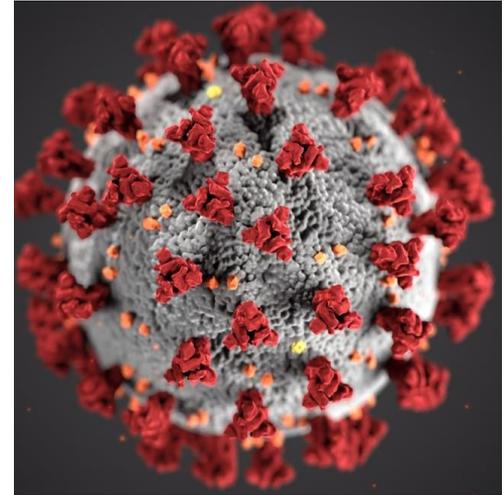
Nomenclature:

Virus vs disease

Virus vs Disease

- **Virus**
SARS-CoV-2

- **Disease**
CoronaVirus Disease-2019 (COVID-19)



Other coronavirus transmissions to humans

SARS - 2003

- SARS (severe acute respiratory syndrome) outbreak
- A new coronavirus transmitted from (probably) bats
- Guangdong province of southern China
- 8000 infections in >20 countries
- 8% mortality



MERS - 2012

- Middle East Respiratory Syndrome (MERS)
- A new coronavirus transmitted from camels
- +- 200 cases with 34% mortality



Epidemiology

An entirely predictable epidemic



Chinese and WHO declarations - timeline

31 December 2019

- World Health Organization (WHO) China country office reported a cluster of pneumonia cases in Wuhan, Hubei Province of China

7 January 2020

- Chinese identify virus as novel coronavirus

30 January 2020

- WHO declares a “Public Health Emergency of International Concern (PHEIC)

11 March 2020

- Pandemic
- “An epidemic occurring worldwide, or over a very wide area crossing international boundaries

What makes a new epidemic? 2 factors

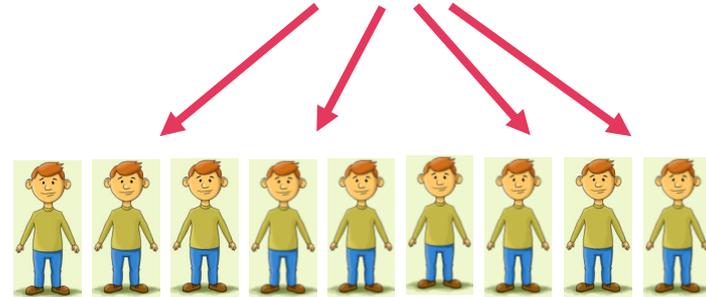
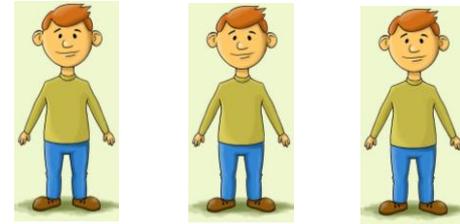


1: Animal to human spread



2: Human to human spread

- R0 factor > 1
 - Influenza = 1.3
 - SARS CoV-2 = 2 to 2.5



Transmission linked to epidemiology

COVID-19 transmission: How does it spread?

Respiratory transmission

- Aerosols
Evidence to support smaller droplet sizes that remain airborne
- Droplets
Person infected coughs, sneezes, exhales
Larger droplets fall on nearby surfaces and objects



Introduction – global spread

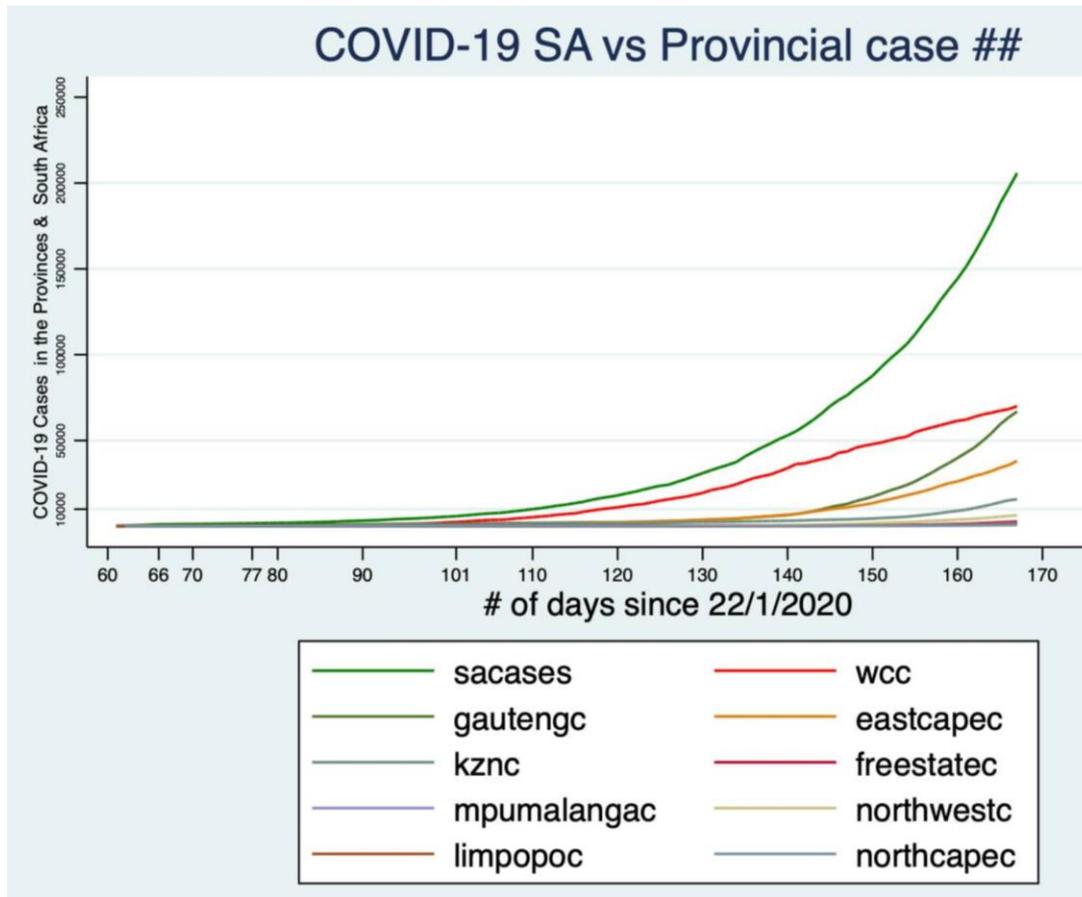


SA epidemic

Case Data

Province	Total cases for 6 July 2020	Percentage total
Eastern Cape	38081	18,5
Free State	2804	1,4
Gauteng	66891	32,5
KwaZulu-Natal	15819	7,7
Limpopo	1785	0,9
Mpumalanga	2173	1,1
North West	6410	3,1
Northern Cape	820	0,4
Western Cape	70938	34,5
Unknown	0	0,0
Total	205721	100,0

Stages of SA's COVID-19 response



Clinical Presentation

COVID-19

COVID-19: Clinical presentation

Incubation period

- Averages around 5.5 days

Influenza-like symptoms

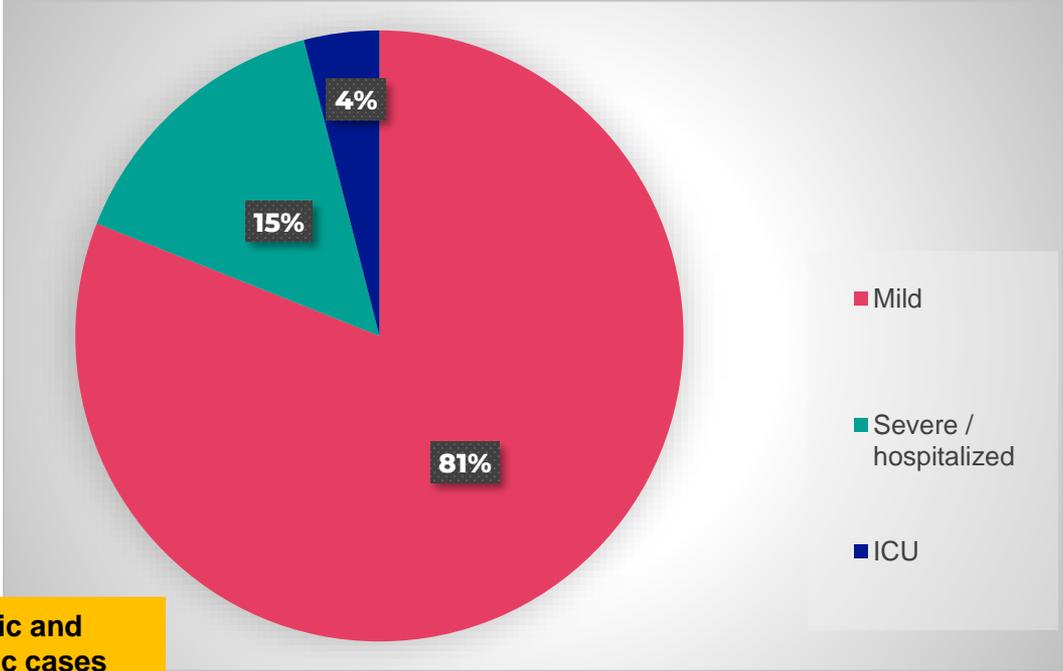
- Most common presenting symptom has been **fever**
~90%, but only about half on admission
- Other common symptoms include
cough (68%), **fatigue** (38%), **sputum production** (34%), **shortness of breath** (19%), **myalgia or arthralgia** (15%), **sore throat** (14%), **headache** (13.6%) and **chills** (12%)
Recent **loss of taste or smell**
- Gastrointestinal symptoms such as nausea or vomiting (5%) and diarrhoea (3.8%) appear to be uncommon.

Chest X-ray and CT scan

- Abnormalities are visible on chest X-ray in ~60% of COVID-19 patients,
- In ~85% of patients' chest CT scans.

COVID-19: Clinical severity

Severity



Role of asymptomatic and minimally symptomatic cases

COVID-19: Clinical presentation – a more generalized second wave for some

- Vasculitis central feature
- Encephalitis
- Carditis
- Kidney disease
- Liver disease
- Gut
- Others too



Mortality

COVID-19: Clinical risk and mortality

Different figures from around the world

- Approx. 1.5-2%
- Some countries up to >5% (Italy)

Risk factors

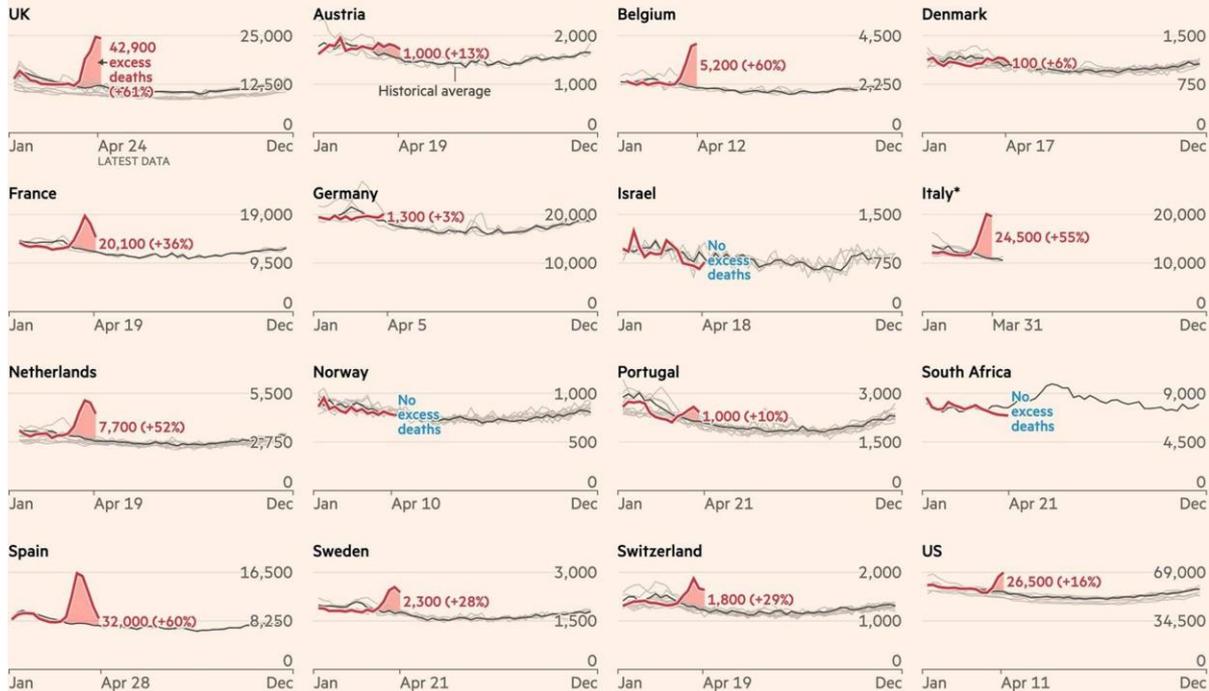
- Underlying UNCONTROLLED illnesses especially lung disease, high blood pressure, diabetes, obesity and cancer
- HIV and TB comorbidities – learning more
- Striking age-related mortality
 - Zero dead under age of 9 years in China
 - Of those who are symptomatic!

Age	Mortality
10-39	0,2%
40-49	0,4%
50-59	1,3%
60-69	3,6%
70-79	8%
>80	14,8%

COVID-19: Mortality

Death rates have climbed far above historical averages in many countries that have faced Covid-19 outbreaks

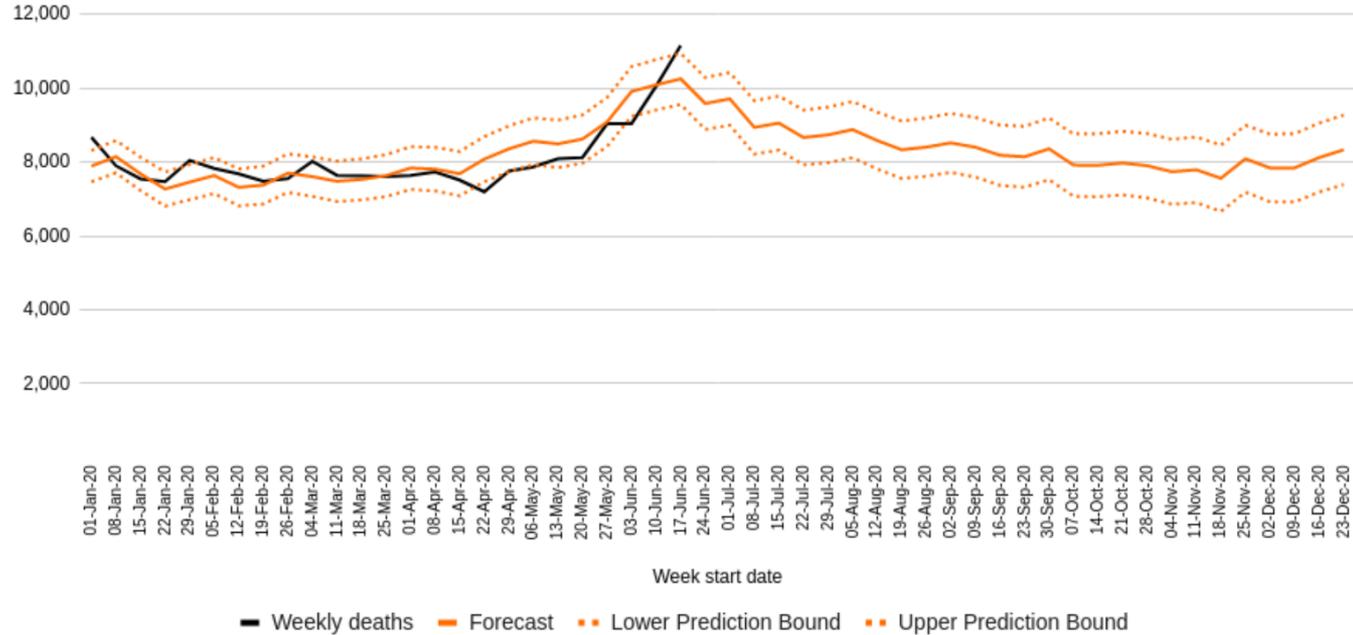
Number of deaths per week from all causes, 2020 vs recent years:  Shading indicates total excess deaths during outbreak



*Italian data are a representative sample of 86% of the country
 Source: FT analysis of mortality data. Data updated May 06
 FT graphic: John Burn-Murdoch / @burnmurdoch
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COVID-19: Mortality

South Africa Weekly Deaths from All Causes 1+ years : 1 Jan - 23 Jun 2020



Prevention



COVID-19: Prevention

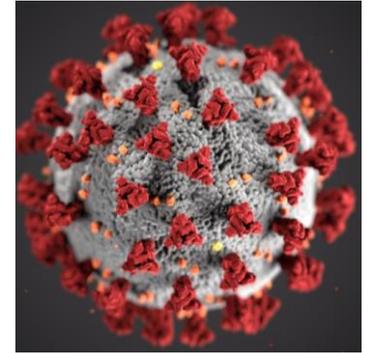
- Wash hands
 - Ordinary soap and water
 - Alcohol hand wash - 70%
- Physical distance
 - Stay >1,5m from people
 - Limit social contact
 - Work from home
- Face masks
- Cough into elbow – not on hand
- Do not touch mouth, eyes and nose
- PPE – according to guidelines



COVID-19: Prevention

Cleaning

- Large surfaces
 - Soap and water
 - Dilute bleach
 - 70% alcohol
- No such thing as “deep clean”
- Do not:
 - Fog, fumigate, tunnels
 - Remember – no virus after 1 week



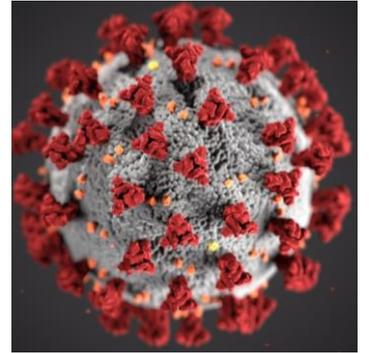
Managing infections and contacts

COVID-19: Managing infections

Learning to live with the virus

Infections will happen

- The importance of following national guidelines



Managing contacts

- The importance of following national guidelines

Treatment & Vaccines

Drugs and vaccines for COVID-19

Drugs

- ~~• Nothing yet~~
- Dexamethasone demonstrated to work in those needing oxygen support
- Ramdesivir?

Vaccines

- >135 groups working on this
- Long development process
- Then massive process to manufacture enough for the world

What are the developments made so far

Major developments

Understanding the virus

- Identified
- Diagnostic test

Understanding the disease

- Respiratory infection
- Entire body affected in “second wave” of disease
- Risk factors
- HIV and TB risk

Prevention

- We know how to prevent
- Need personal commitment

Preparing for

- Flattening the curve
- Developing clinical capacity
- Living with the virus into the future

Education sector specific

- Shut down to slow infection rates
- Developing systems to prevent spread

Some promising leads on medications

- Dexamethazone for those in ICU
- Remdesivir
- Others in development

Final concluding thought

**We need to learn to
live with this virus**

Thank You