

Exceptionally Precise Medical Expertise

SIAS

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MEDICAL
INTELLIGENCE 

SARS-CoV-2 & COVID-19

Coronaviruses

Current Viral Pandemic

Disease Course

Treatments

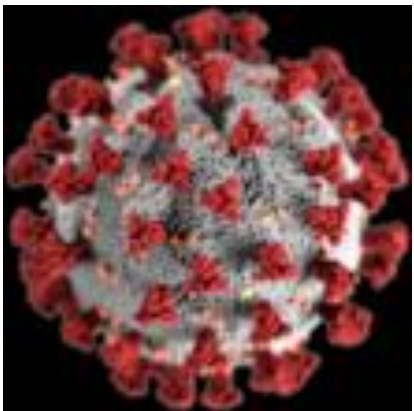
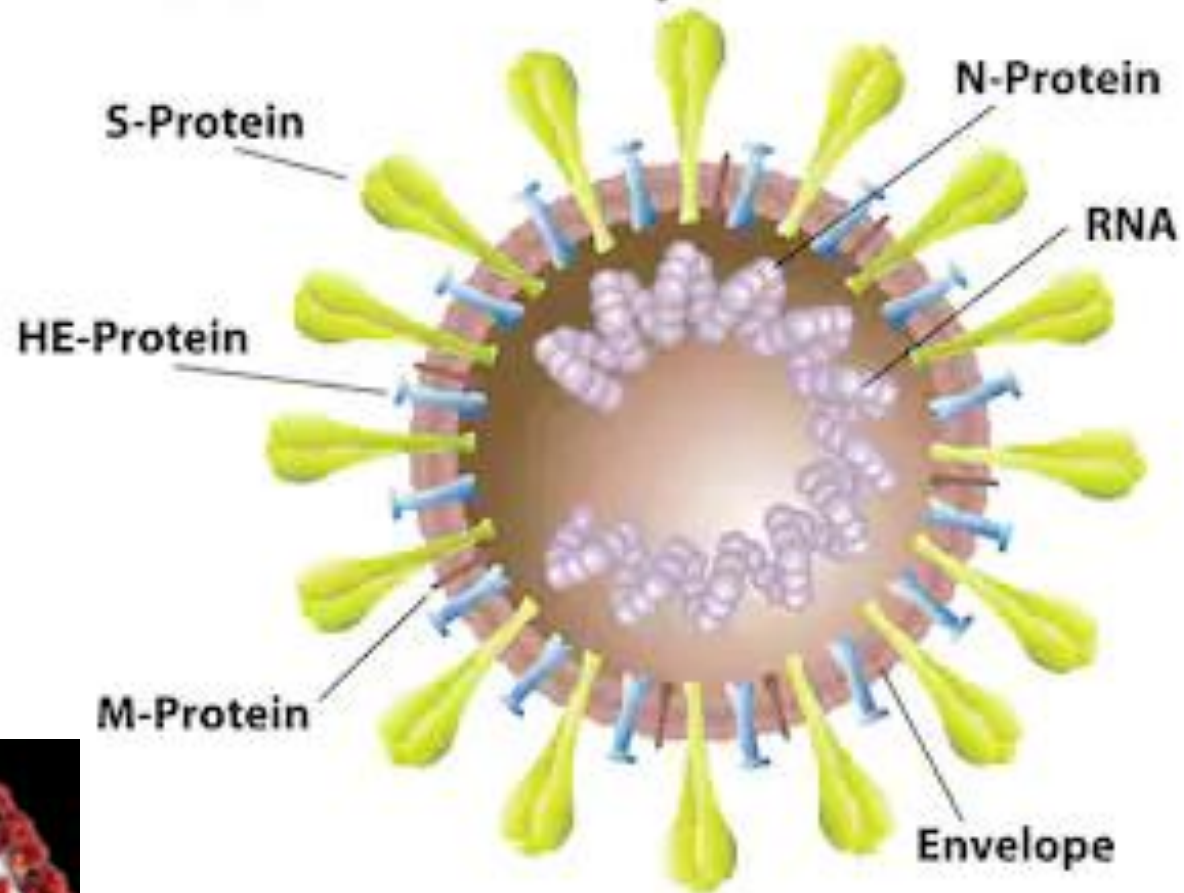
Testing

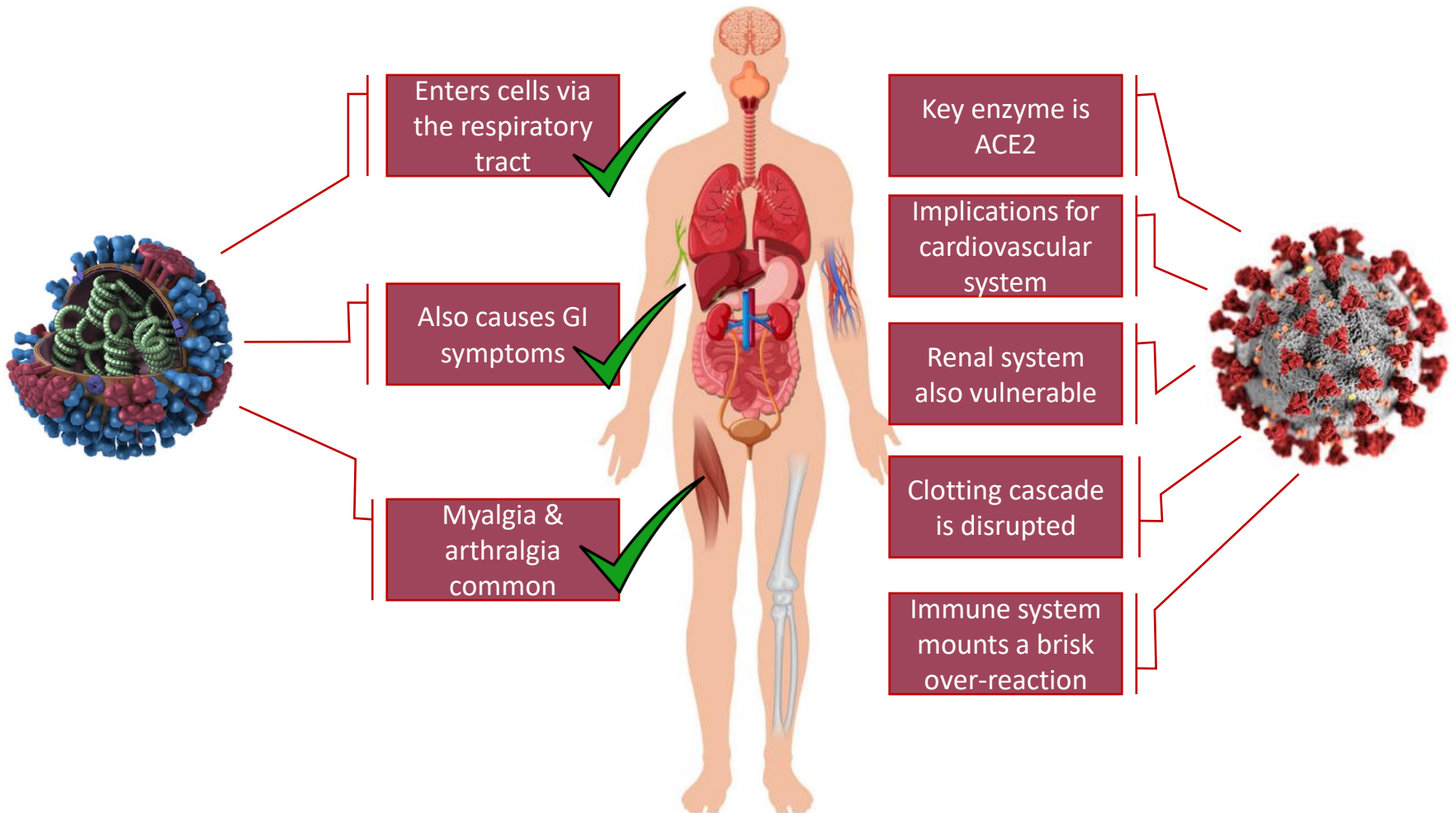
Health Infrastructure

Mortality

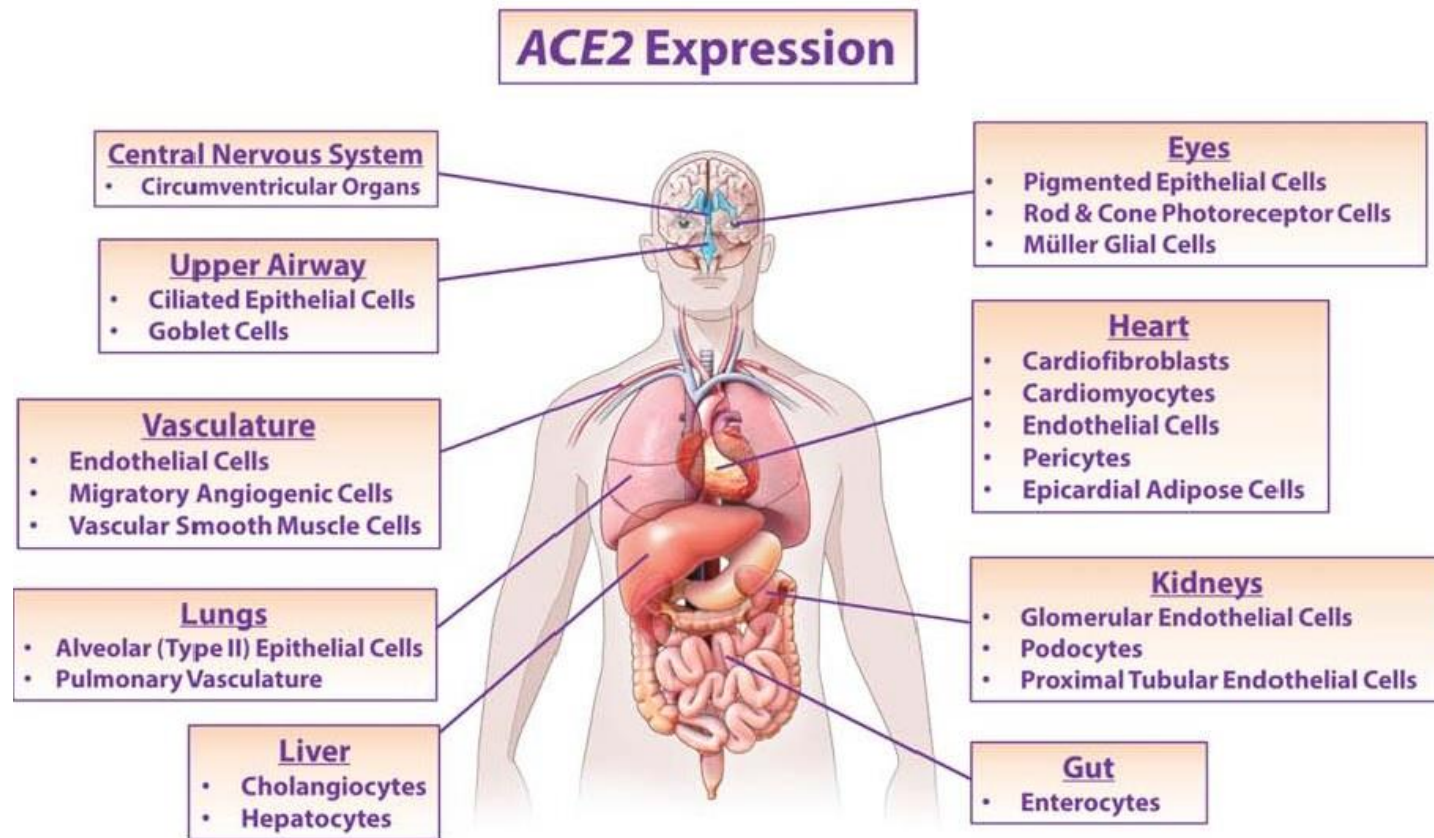
Comorbidities

Coronavirus Cell Anatomy





Since ACE2 is expressed and plays important roles in a variety of organs and tissues (lungs, cardiovascular system, gut, kidneys, central nervous system, and adipose tissue), it provides the critical link between infection by SARS-CoV-2, immunity, inflammation and cardiovascular disease





Vaccines

It takes between
6 to 36 months
to produce,
package and
deliver high
quality vaccines
to those who
need them

Developer	Clinical Phase
Moderna Therapeutics (US)	Phase One
CanSino Biologics (China)	Phase One
Arcturus Therapeutics (US)	Preclinical
BioNTech (Germany)	Preclinical
CureVac (Germany)	Preclinical
Eli Lilly/AbCellera (Canada)	Preclinical
GlaxoSmithKline/Clover Pharmaceuticals (China)	Preclinical
Inovio Pharmaceuticals (US)	Preclinical
Johnson & Johnson (US)	Preclinical
Regeneron Pharmaceuticals (US)	Preclinical
Sanofi (France)	Preclinical
Novavax (US)	Preclinical
Altimune (US) (Intranasal delivery)	Preclinical
Migal Galilee Research Institute (Israel)	Preclinical
Tonix Pharmaceuticals (US)	Preclinical
Vaxart (US) (Oral vaccine)	Preclinical
Serum Institute of India/ Codagenix (India)	Preclinical

Healthcare innovations to combat Covid-19



DIAGNOSTICS

40 **41** 42

Regulatory authorized
diagnostic tests



TREATMENTS

22 **23** 24

Assets in human
clinical trials



VACCINES

4 **5** 6

Assets in human
clinical trials

DIAGNOSTICS

Diagnostic Test Type

Scientific assay/technology
used for detection

35

Polymerase chain
reaction (PCR)

3

PCR -
Point-of-care

2

Next-generation
sequencing (NGS)

1

Isothermal
amplification

Diagnostics Approval Status

FDA-Emergency
Use Authorization

20

CE mark (approval
to sell in Europe)

17

Lab developed
test (LDT)

1

Discontinued

3

Result Time

< 1 hr

7

2-8 hr

23

12+ hr

11

Company	Test Type	Result Time (hr)	Approval Status
Abbott	PCR	4-6	FDA - EUA
Abbott	Isothermal amp. - PoC	<1	FDA - EUA
Avellano Labs	PCR	24-48	FDA - EUA
BGI	PCR	3	FDA - EUA
BioMérieux - BioFire Defense	PCR	<1	FDA - EUA
CDC	PCR	24-72	FDA - EUA
Cepheid	PCR-PoC	<1	FDA - EUA
DiaSorin Molecular	PCR	1	FDA - EUA
GenMark Diagnostics	PCR	2	FDA - EUA
Hologic	PCR	3	FDA - EUA
LabCorp	PCR	24	FDA - EUA
Luminex Molecular Diagnostics	PCR	4	FDA - EUA
Mesa Biotech	PCR-PoC	<1	FDA - EUA
PerkinElmer	PCR	4-6	FDA - EUA
PrimerDesign	PCR	2	FDA - EUA
Quest	PCR	96-120	FDA - EUA
Quidel	PCR	4-6	FDA - EUA
Roche	PCR	24	FDA - EUA
Thermo Fisher	PCR	4	FDA - EUA
Wadsworth Center, NY State Dept of Public Health (CDC)	PCR	24-72	FDA - EUA
3D Medicines	PCR	4-6	CE Mark
AB ANALITICA	PCR	4-6	CE Mark
Anatolia Geneworks	PCR	2	CE Mark
AusDiagnostics	PCR	4-6	CE Mark
Bioneer	PCR	8	CE Mark
CancerPop	PCR	2	CE Mark
CerTest Biotech, BD	PCR	3	CE Mark
Co-Diagnostics	PCR	1-2	CE Mark
Credo Diagnostics Biomedical	PCR-PoC	<1	CE Mark
Genomica/PharmMar Group	PCR	5	CE Mark
Kogene Biotech	PCR	4-6	CE Mark
Osang Healthcare	PCR	4-6	CE Mark
Qiagen (acq. by Thermo Fisher)	PCR	1	CE Mark
Seegene	PCR	4	CE Mark
SolGent	PCR	2	CE Mark
Vision Medicals	NGS	>12	CE Mark
Beijing Applied Biological Technologies (AABT)	PCR	4-6	CE Mark
10x Genomics	NGS	24-48	LDT
Carbon Health	PCR	72-144	discontinued
Everlywell	PCR	48	discontinued
Nurx, Molecular Testing Labs	PCR	48	discontinued

Source: FDA, WHO, company websites, news. Available upon request.

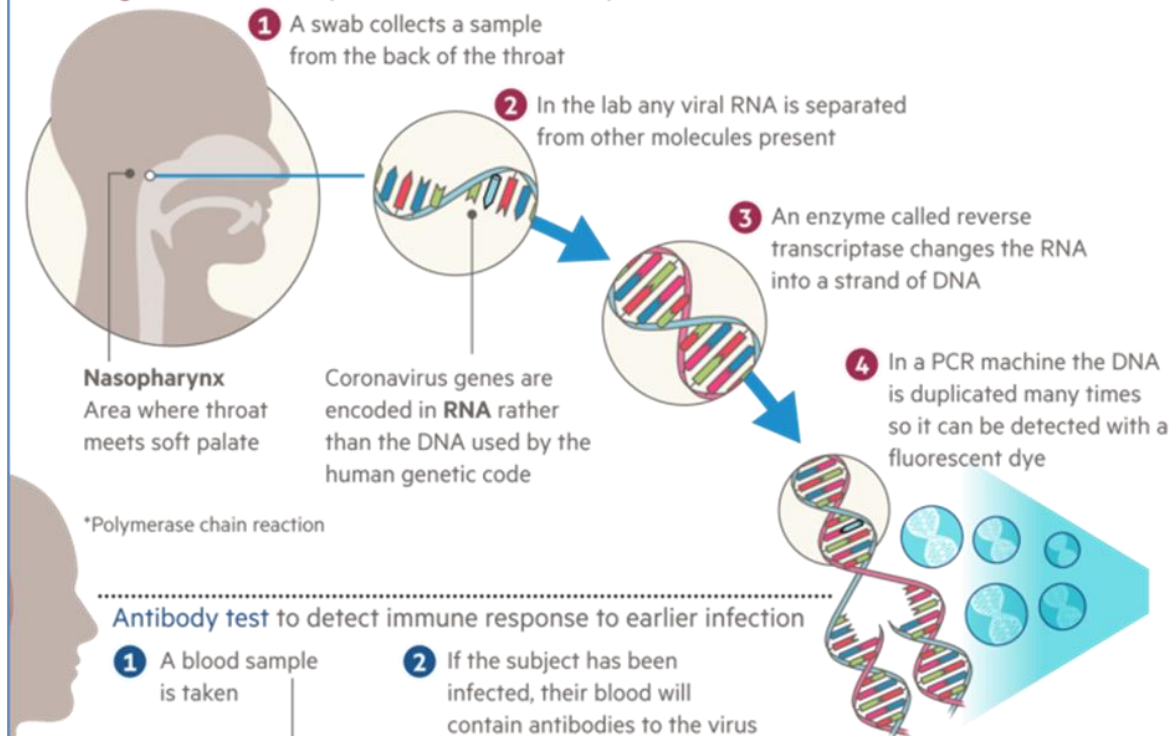
A microscopic view of several COVID-19 virus particles. The particles are spherical with a textured surface and numerous spike-like protrusions (glycoproteins) extending from them. They are set against a dark blue background with some smaller, out-of-focus particles.

“Solidarity” clinical trial for COVID-19 treatments

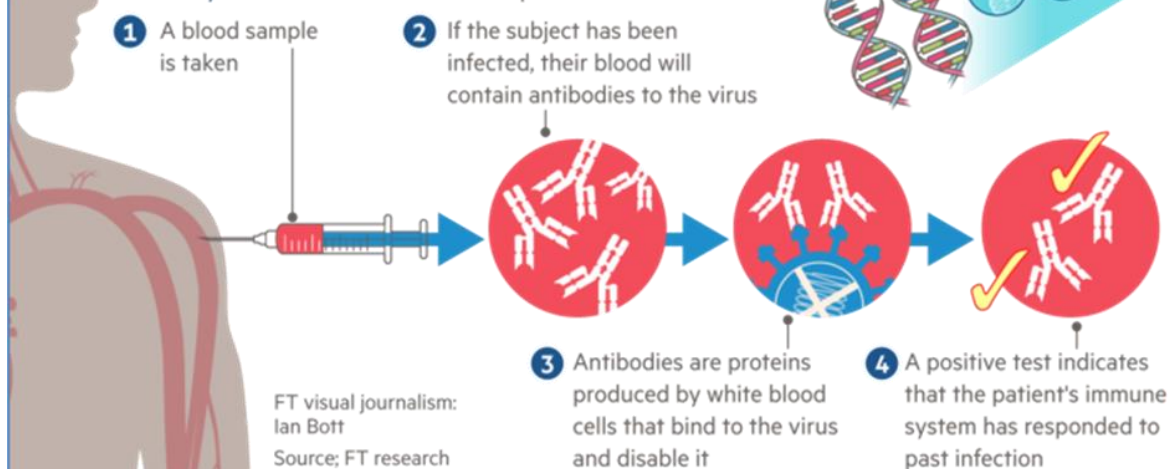


Coronavirus testing methods

PCR* antigen test to detect presence of virus in body



Antibody test to detect immune response to earlier infection



FT visual journalism:
Ian Bott
Source: FT research
© FT

Healthcare Capacity

Country	ICU Beds/100,000	Acute beds/100,000	Nurses/1000	Doctors/1000
UK	6.6	2.5	7.8	2.9
Spain	9.7	3	5.7	3.9
Italy	12.5	3.2	6.7	4
Germany	29.2	8	12.9	4.3
US	34.7	2.8	11.7	2.6
Canada	9.5	2.5	10	2.8
France	11.6	6	10.8	3.4
S. Korea	10.6	12.3	6.9	2.3
Japan	7.3	13.1	11.3	2.4
Switzerland	11	4.5	17.2	4.3

Completed in nine days, massive NHS Nightingale hospital opens in London

By MATT HICKMAN • April 6, 2020



Health Systems Respond to COVID-19

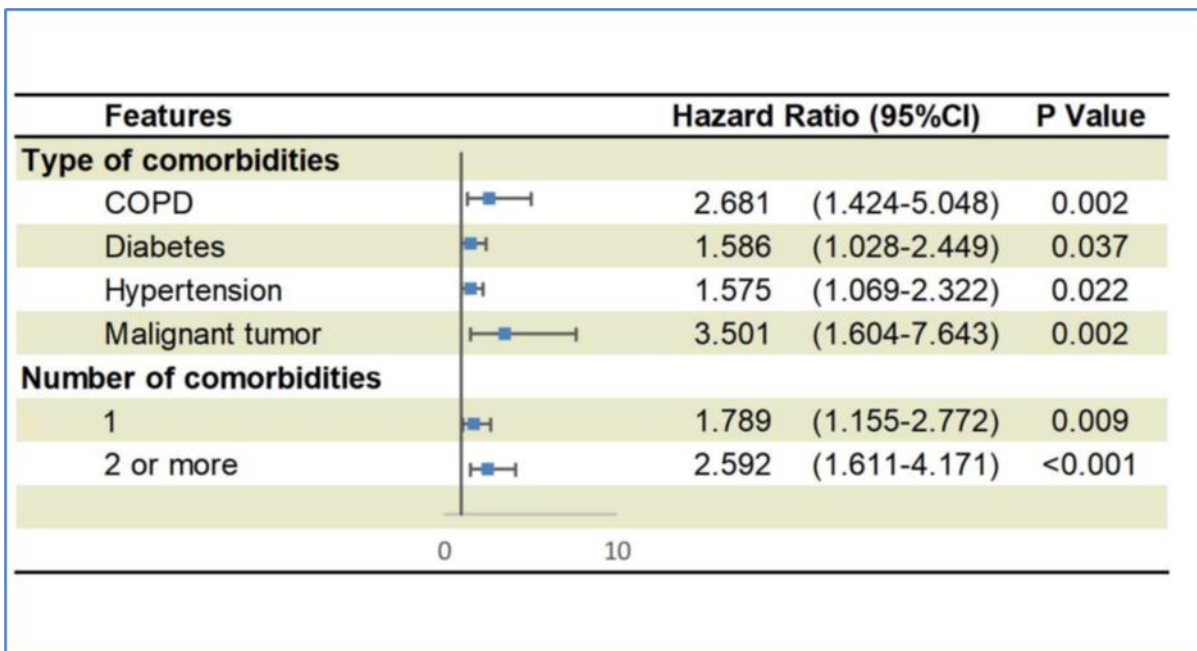
Technical Guidance #2

Creating surge capacity for acute
and intensive care Recommendations
for the WHO European Region (6 April 2020)

Age	Death Rate
80+ years old	14.8%
70-79 years old	8.0%
60-69 years old	3.6%
50-59 years old	1.3%
40-49 years old	0.4%
30-39 years old	0.2%
20-29 years old	0.2%
10-19 years old	0.2%
0-9 years old	no fatalities

Sex	Death Rate
Male	2.8%
Female	1.7%

Pre-existing Condition	Death Rate
Cardiovascular disease	10.5%
Diabetes	7.3%
Chronic respiratory disease	6.3%
Hypertension	6.0%
Cancer	5.6%
no pre-existing conditions	0.9%



COMMENT | [ONLINE FIRST](#)

Beware of the second wave of COVID-19

[Shunqing Xu](#)  • [Yuanyuan Li](#)

Published: April 08, 2020 • DOI: [https://doi.org/10.1016/S0140-6736\(20\)30845-X](https://doi.org/10.1016/S0140-6736(20)30845-X) •



 PlumX Metrics

Antibodies?

Reinfection

Exit & Control
Strategies

Thank You

Questions?

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