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Medical Fitness to Work

Key Principles and how these relate to COVID-19

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Consulting. Systems. Training.

Presentation Overview

- Principles of “Medical Fitness to Work”

- 5 steps to establishing a **system** of certification of Fitness to Work
  - Applying general principles
  - **Making the links with COVID-19**

Presentation **Exclusions**

- Medical surveillance relating to SARS-CoV-2
  - (screening for occupational disease)
  - (the focus of the current Regulations for Hazardous Biological Agents)

- Medical assessment of FTW in the case of an employee returning to work after recovering from COVID-19 illness

Disclaimer!

PRINCIPLES NOT ALL THE DETAILS

- The slides have a lot of detail, and the presentation will be available to all viewers afterwards, for reference
- But my presentation will move through the details very rapidly, just to convey the key principles.

Preamble - Legal Setting in brief

- **OHSA (duties of the employer (s8) & duties of the employee (s14))**
  - **Employer** (section 8): as far as is reasonably practicable to maintain a safe working environment and without risks to the health of workers…(eg systems to ensure that employees are fit for duty or fit for work)
  - **Employee** (Section 14): duty to "*take reasonable care for the health and safety of himself and of other persons who may be affected by his acts or omissions*" (eg management of chronic disease leading to vulnerability impacting fitness to work, as well as adhering to behavioural controls)
- **Regulations for Hazardous Biological Agents (HBA risk assessment & surveillance)**
  - Aimed at screening for the presence of adverse health effects (occupational disease) consequent to exposure to HBA's in the workplace, not fitness to work
- **Regulations under the Disaster Management Act (protect the vulnerable)**
  - require employers to adopt "special measures" for vulnerable employees (>60years old, or with health issues or comorbidities, which may place such employees at a higher risk of complications or death if they are infected with COVID -19).
- **Dept of Employment & Labour Direction (protect workers generally & and especially the vulnerable)**
  - Fitness for duty screening at site entry for all employees
  - Special measures to mitigate the risk for vulnerable employees

So …

WHAT DOES MEDICAL FITNESS TO WORK MEAN?

What does “medically fit to work” mean?

Medically fit to fulfil the “Inherent requirements of the Job”

The “Inherent requirements of the Job”

Capable of performing the tasks required …

… in the working conditions associated with the job

To the required standard
(quality & effectiveness)

- **Quality** (eg. vision, dexterity)
- **Effectiveness** (eg. strength, endurance, flexibility)

Safely
(Without undue risk to self or others)

Can tolerate environments where heat, dust, chemicals, HBA, etc. are present.

- **Physiological reserves**
- **Vulnerable Conditions**
- **Can use required PPE (eg a respirator)**

SARS-CoV-2!!

7.1.2 The ‘inherent requirements of the job’ are those requirements the employer stipulates as necessary for a person to be appointed to the job and are necessary in order to enable an employee to perform the essential functions of the job.

* *Code of Good Practice employment of persons with disabilities (GG 23702 of 19 August 2002)*

“Fitness to **Work**” versus “Fitness for **Duty**”

Fit for Work		Fit for Duty	
Medically Fit	Physically Fit	Medically Fit	Generally Fit
Medical Exam	Physical Capability Test	Pre-deployment (emergency)	Pre-duty Checklist
Certificate of Fitness	Pass / Fail	Clearance Certificate	Proceed with duties

Certificates of Fitness and Pre-Duty checklists also apply to SARS-CoV-2

Sick Note = “unfit for duty”
BCEA = “proof of incapacity”

5 key steps in any FTW program

- **Step 1**: Determine the inherent requirements of the job, as per the Risk Assessment.
- **Step 2**: Determine medical tests to be performed, the minimum medical standards and outcomes management ("protocols, codes of practice")
- **Step 3**: Determine who does what (task assignment): nurse/OHN/med practitioner/OMP.
- **Step 4**:Conduct the testing, and medical adjudication
- **Step 5**: Manage the outcomes

Designing a Medical Testing Programme

Task Based Risk Assessments

Interviews

Assessments & Measurements

Inherent Job Capability Requirements

Job Positions

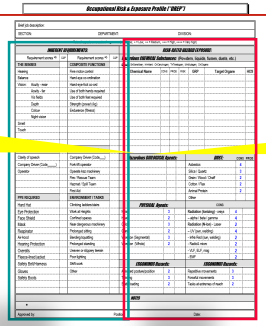
Hazard Effects

Hazard Tolerance Requirements

Health Risk Assessment

Qualitative & Quantitative

OREPs



Scores based on Min Capability req's

Scores based on exposure risk

Tests & stds based on tasks & capabilities

PROTOCOLS

Test Selection

Minimum Standards

Exclusions/ Restrictions

PROTOCOLS

Tests & stds based on hazard exposure

Fitness to work

PERFORM MEDICAL TEST

Early identification of Disease

Fitness to work

7.1.2 The ‘inherent requirements of the job’ are those requirements the employer stipulates as necessary for a person to be appointed to the job and are necessary in order to enable an employee to perform the essential functions of the job.

* *Code of Good Practice employment of persons with disabilities (GG 23702 of 19 August 2002)*

Lay the foundations…

STEP 1: THE INHERENT REQUIREMENTS & THE “OREP”

Establish the inherent job requirements (the "OREP")

Occupational Risk & Exposure Profile ("OREP")

Brief job description:

SECTION: DEPARTMENT: DIVISION:

Rate all aspects on a scale of +⇨++++. (/ = None; + = Low; ++ = Medium, +++ = High, ++++ = Very high)

INHERENT REQUIREMENTS: | **RISK-RATED HAZARD EXPOSURE:**

Requirement scores ⇨ CAP | Requirement scores ⇨ CAP | **Hazardous CHEMICAL Substances:** (Powders, liquids, fumes, dusts, etc.)

THE SENSES | COMPOSITE FUNCTIONS | Groups: S=Sensitiser; I=Irritant; C=Carcinogen; T=Teratogen; M=Mutagen; O=Organs

Hearing | Fine motor control | Chemical Name | CONS | PROB | RISK | GRP | Target Organs | HCS

Balance

Vision: Acuity - near

Acuity - far

Table of Guidelines for allocation of "Capability Requirement" Standards:

CAPABILITY	+ score	++ score	+++ score
Night vision	dependent tasks in poor lightning conditions. Eg. Dark room work	visually dependent tasks in poor lightning conditions. eg. Night patrol security workers.	dependent tasks in poor lightning conditions. eg. Occupational night driving (Standby/

HAZARD CONSEQUENCE CRITERIA			PROBABILITY CRITERIA				
	TYPES OF IMPACT		INCREASING PROBABILITY SCORE ⇨				
SCORE	HEALTH RISK	SAFETY RISK	1(A)	2(B)	3(C)	4(D)	5(E)
0	None (No toxic, harmful, corrosive, irritant or asphyxiant effects) (Chemicals: ACGIH A5 carcinogens. Those with no OEL's.)	None	VL (0)	VL (0)	VL (0)	VL (0)	VL (0)
1	Reversible Health Effects. (eg. awkward posture, Heat rash, heat stress). HBA containment cat 1. Chemicals: CONTROL BAND (OEL >50 PPM ; OEL >1 mg/m3) - ACGIH A4 & IARC 3 (weak association with cancer) - irritants, defatting agents, mild skin sensitizers	Minor Injuries. (No lost time) First Aid case	VL (1)	VL (2)	L (3)	L (4)	M (5)
2	Reversible Significant Health Effects. (eg. repetitive tasks (WRULDs), Heat exhaustion). HBA containment cat 1. Chemicals: CONTROL BAND 2 (OEL 5 - 50 PPM; OEL 0.1-1mg/m3) - ACGIH A3 & IARC 2B (Known animal carcinogens, no human studies) - severe dermatitis, reversible organ effects	Moderate Injuries (Medical Treatment case)	VL (2)	L (4)	M (6)	M (8)	M (10)
3	Irreversible Significant Health Effects (eg. Noise, poor manual handling). HBA containment cat 2. Chemicals: CONTROL BAND 3 (OEL 0.5 - 4.9 PPM; OEL 0.1-0.01mg/m3) - ACGIH A2 IARC 2A (Suspected human carcinogens) - irreversible organ effects (eg. lung fibrosis), respiratory sensitizers, (eg asthma)	Disabling Injury (Lost Time Injury)	L (3)	M (6)	M (9)	H (12)	H (15)
4	Life-threatening Health Effects. (eg. Ionizing radiation, heat stroke, avian flu). HBA containment cat 3. Chemicals: CONTROL BAND 4 (OEL 0.05-0.49 PPM; OEL 0.01-0.001mg/m3) - ACGIH A1 & IARC 1 (Confirmed human carcinogens) - Potent respiratory sensitizers (ie at low exposures)	Multiple Major Injuries / Disabilities Single fatality	L (4)	M (8)	H (12)	H (16)	VH (20)
5	Extreme Health Hazard. HBA containment cat 4. Chemicals: CONTROL BAND 5 (OEL <0.05 PPM; OEL <0.001 mg/m3) - Mutagens, Teratogens.	Multiple Fatalities	M (5)	H (10)	H (15)	VH (20)	VH (25)

INCREASING SEVERITY SCORE (CONSEQUENCE) ⇩

Overalls

Fleece-lined jac

Safety Belt/Harn

Gloves	Other	Awkward posture/position	2	Repetitive movements	3
Safety Boots		Twisting	3	Forceful movements	3
		Static loading	2	Tasks at extremes of reach	2

NOTES

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Approved by: Position: Date:

Occupational Risk & Exposure Profile ("OREP")

Brief job description: Operator of mobile equipment, such as loaders, excavators, etc.

SECTION: DEPARTMENT: DIVISION:

Rate all aspects on a scale of +⇨++++. (/ = None; + = Low; ++ = Medium, +++ = High, ++++ = Very high)

INHERENT REQUIREMENTS:

Requirement scores ⇨	CAP	Requirement scores ⇨	CAP
THE SENSES		COMPOSITE FUNCTIONS	
Hearing	+	Fine motor control	+
Balance	++	Hand-eye co-ordination	+++
Vision: Acuity - near	+++	Hand-eye-foot co-ord	+++
Acuity - far	+++	Use of both hands required	+++
Vis fields	++++	Use of both feet required	+++
		...ver) (kg)	
		...ness)	+
		...Y TASKS	✓
		...ver (Code___)	
		...ator	
		...machinery	++++
		...Team	
		...l Team	
		...NT / TASKS	CAP
		...ers/stairs	++++
		...nts	
		...ces	+
		...us machinery	+
		...ting	++++
		...tting	
		...nding	
		...ppery terrain	++
Safety Belt/Harness		Shift work	+
Gloves	+	Other	
Safety Boots	+++		

RISK-RATED HAZARD EXPOSURE:

Hazardous CHEMICAL Substances: (Powders, liquids, fumes, dusts, etc.)

Groups: S=Sensitiser; I=Irritant; C=Carcinogen; T=Teratogen; M=Mutagen; O=Organs

Chemical Name	CONS	PROB	RISK	GRP	Target Organs	HCS
Chemical / environ. dust		+++				

Hazardous BIOLOGICAL Agents:

COVID?

DUST:	CONS	PROB
Asbestos	4	
Silica / Quartz	3	+
Grain / Wood / Chaff	2	
Cotton / Flax	2	
Animal Protein	2	
Other		

PHYSICAL Agents:			CONS		
Noise	3	+++	Radiation (Ionizing) - xrays	4	-
Heat	2	+	– alpha / beta / gamma	4	-
Cold	3	++	Radiation (N-Ion) - Laser	2	-
Glare	2	+++	– UV (sun, welding)	4	+++
Vibration (Segmental)	3	+	- Infra Red (sun, welding)	2	+
Vibration (Whole)	2	+++	- Radio& micro	2	-
			- VLF, ELF, mag	2	-
			- EMF	2	-

ERGONOMIC Hazards:			ERGONOMIC Hazards:		
Awkward posture/position	2	+++	Repetitive movements	3	+++
Twisting	3	++	Forceful movements	3	+
Static loading	2	+	Tasks at extremes of reach	2	+

NOTES

The two key requirements of operators of mobile equipment are:

- The able to operate the equiment in a safe manner (as per drivers of large vehicles on a public road).
- There may be dust and noise exposure, given the nature of the work. The employer should take steps to minimise this, but consideration should be given to this, in worker selection.

Approved by: Position: Date:

From “OREP” to “Medical Protocol”

STEP 2: TEST SELECTION & STANDARD SETTING

Step 2: Test selection & standard setting (**fitness to work**)

Medically fit to fulfil the "Inherent requirements of the Job"

The "Inherent requirements of the Job"

TESTS AND STANDARDS FOR ABILITY TO DO THE JOB

Capable of performing the tasks required …

To the required standard

(quality & effectiveness)

- **Quality** (eg. vision, dexterity)
- **Effectiveness** (eg. strength, endurance, flexibility)

Safely

(Without undue risk to self or others)

… in the working conditions associated with the job

TESTS AND STANDARDS FOR "HAZARD TOLERANCE"

Can tolerate environments where heat, dust, chemicals, HBA, etc. are present.

- **Physiological reserves**
- **Vulnerable Conditions**
- **Can use required PPE (eg a respirator)**

Step 2: Test selection & standard setting (**capability**)

OREP CRITERIA	TEST SELECTION		STANDARDS REQUIRED			
	Phase 1 (screening)	Phase 2 (diagnostic)	+ (low requirement) (high tolerance)	++	+++	++++ (high requirement) (low tolerance)
Hearing:	Interview, Audiometry	Audiometry	Can hear normal spoken speech	-	Completely normal hearing	-
Balance:	Interview					
Vision: **Visual Acuity** **(Near and Far)**	Snellen chart, Biopter, Orthorater, clinical reading tests.	Optician Eye exar				
Vision: **Visual fields**	Clinical tests ("Which fingers are moving?"), Orthorator.					
Vision: **Range of motion**	Clinical tests ("follow the finger/light").	-				
Memory / Cognitive function / Clarity of Thought	Generally done by impression only. Mini-mental state test.	"7 from 100" test. Psychomotor tests.	"Mini-mental state" exam Sedatives used in reduced dose (eg. antihistamines).			"Mini-mental state" exam "7 from 100" test. No sedatives.

	TEST SELECTI		STANDARDS REQUIRED			
	Phase 1 (screening)		+ (low requirement) (high tolerance)	++	+++	++++ (high requirement) (low tolerance)
	e test, on-th ecific		on	On-the-job testing required. Eg: Driving	Clinical tests of cerebellar function. Eg: Special equipment operators (cranes, loaders, etc.)	Psychomotor tests Eg: Special equipment operators, involving complex & critical tasks.
			al observation cates satisfactory dexterity. Eg: Clothing industry workers	On-the-job testing required. Consider cerebellar tests. Copy the pre-set diagrams in the Synergee examination sheet. Eg: Laboratory work , electronics, jewellery work.	-	-
			nt.	No tests relevant. Relative requirement.	No tests relevant. Absolute requirement.	No tests relevant. Absolute requirement.
	on. Are both nal?			No tests relevant. Relative requirement.	No tests relevant. Absolute requirement.	No tests relevant. Absolute requirement.
	Clinical Musculoskeletal screen. Endurance testing not feasible in a clinic. On the job testing.	Whe special biokinetics	al heavy al work. No specific test required. Eg: Engineering maintenance	Frequent heavy manual work. Clinical judgement. Eg: Construction	Constant heavy manual work. Physical capability testing (PCT) recommended. Eg: Underground mining	Added difficult environmental circumstances, and/or use of awkward PPE. Physical capability testing (PCT) required. Eg: Rescue (proto) teams

NOT APPLICABLE FOR SARS-COV-2 IN GENERAL WORKPLACES (MAY BE APPLICABLE IN CERTAIN HEALTH CARE SETTINGS OR RESEARCH LABS)

Step 2: Test selection & standard setting (“hazard tolerance”)

Hazards	Key Target Organs	Main Biological Effects	Conditions that increase vulnerability (“fitness”) (Task restrictions or exclusions)	Tests: Phase 1 (screening)	Tests: Phase 2 (diagnostic)	Standard
Haz. Chemical Subst (HCS): **(Welding Fumes)**	Eyes Respiratory Tract Nervous System	Arc Eyes. Rhinitis, chronic bronchitis, asthma, metal fume fever, pneumonitis, pulmonary siderosis. CNS & PNS damage (lead).	Asthma, severe respiratory impairment.	EFFECT: Interview, clin exam Lungs: PFT, CXR FITNESS: Interview, clin exam Lungs: PFT, CXR.	EFFECT: CT scan, Pulmonologist opinion FITNESS: OMP opinion Pulmonologist opinion	HCS Regulations
Haz. Biological Agents (HBA): **Target Organ Toxicity** **(Sewerage, Lab Health Care workers)**	Organism specific	According to target organs	Inadequate immunity ▪ Not vaccinated ▪ Immune compromise (many conditions, including AIDS) Medical conditions that involve the HBA’s target organs ▪ E.g.: Someone with compromised lungs who may be exposed to TB. **IMMUNISE WHERE POSSIBLE!!!**	EFFECT: FBC, incl diff. Target organs dependant – see HCS. FITNESS: FBC, incl diff. Status of Immunity Target organs dependant	EFFECT: Target organs dependant Rising Ab titre. FITNESS: OMP opinion Physician opinion	HBA Regulations
Noise	Ears	Noise Induced Hearing Loss.	Ototoxins: ▪ Chemicals: n-butanol, toluene. ▪ Medications: aminoglycosides, lasix, ethacrynic acid, bumetanide. Whole body vibration exposure ▪ Vibration at 3 – 8 kHz Non-industrial Noise exposure ▪ Disco workers, noisy D-I-Y work	EFFECT: Audiometry. FITNESS: Interview (vulnerability) Clin Exam (PPE)	EFFECT: Audio Questionnaire. Diagnostic audio. OMP evaluation. ENT specialist opinion FITNESS: OMP evaluation	(NIHL Regulations) SABS 083 COIDA Instruction 171 & supplement.
Heat	CVS CNS Fluid Homeostasis	Heat rash Heat stress Heat exhaustion Heat stroke.	Reduced cardiovascular system reactivity ▪ Medications (beta-blockers) ▪ CCF, valvular heart disease, ischaemic heart disease ▪ Diabetes mellitus Impaired thermoregulation ▪ Medications (antihistaminic or anticholinergic properties) ▪ Skin conditions that impair thermoregulation (extensive psoriasis) ▪ Pyrexial illness, active pulmonary TB ▪ Very low body weight (<50kg) Impaired oxygenation ▪ Anaemia ▪ Poor lung function Disordered fluid homeostasis: ▪ Dehydration (diarrhoea, vomiting), excessive alcohol consumption, diabetes mellitus. ▪ Medication: Diuretics. General: ▪ Liver impairment, renal impairment	EFFECT: Interview (checklist) (Exclude Risk Factors) FITNESS: Heat Tolerance Test. Interview (vulnerability). Clin Exam (vulnerability).	EFFECT: Post Incident / accident: ▪ Hyperthermia ▪ Renal function ▪ Liver Function ▪ Muscle breakdown FITNESS: Stress ECG. Others, as required (CXR, PFT, FBC, GGT).	Env. Regulations.

So the FTW medical assessment for SARS-CoV-2 is dominated by the “**vulnerability**” assessment

cal
ator)

nts where heat,
tc. are present.

cal reserves

Conditions

ired PPE (eg a
irator)

Lets look more closely at SARS-CoV-2 “vulnerability”

Refers to factors that increase the **likelihood** that the person may experience a **more severe illness**, if the person contracts COVID-19.

Vulnerability & Co-morbidity (CDC)

- **Age > 65 years**
- **People who live in a nursing home or long-term care facility**
- **People of all ages with underlying medical conditions, *particularly if not well controlled*.** The CDC list* was updated on 22 July 2020 as follows:
- **Conditions with strong & consistent evidence**
  - Serious heart conditions, such as heart failure, coronary artery disease, or cardiomyopathies
  - Cancer, Chronic kidney disease, Chronic Obstructive Pulmonary Disease (COPD)
  - Obesity (BMI> 30)
  - Type 2 diabetes mellitus
  - Sickle cell disease, Solid organ transplantation
- **Conditions with mixed evidence**
  - Asthma, Cerebrovascular disease, Hypertension
  - Pregnancy
  - Smoking
  - Use of corticosteroids or other immunosuppressive medications
- **Conditions with limited evidence**
  - Bone marrow transplantation, HIV, Immune deficiencies, Inherited metabolic disorders
  - Neurologic conditions, Other chronic lung diseases, Liver disease, Type 1 diabetes, Thalassaemia
  - Paediatrics (children)

** CDC. Updated July 22, 2020. https://www.cdc.gov/coronavirus/2019-ncov/need-extra-precautions/evidence-table.html*

Vulnerability & Co-morbidity (DOH)

health
Department:
Health
REPUBLIC OF SOUTH AFRICA

Guidance on vulnerable employees and workplace accommodation in relation to COVID-19 (V4: 25 May 2020)

The major categories include:

1. 60 years and older

2. One or more of the underlying commonly encountered *chronic medical conditions* (of any age) particularly if not well controlled:

- chronic lung disease: moderate to severe asthma, chronic obstructive pulmonary disease (COPD), bronchiectasis, idiopathic pulmonary fibrosis, active TB and post-tuberculous lung disease (PTLD)
- diabetes (poorly controlled) or with late complications
- moderate/severe hypertension (poorly controlled) or with target organ damage
- serious heart conditions: heart failure, coronary artery disease, cardiomyopathies, pulmonary hypertension; congenital heart disease
- chronic kidney disease being treated with dialysis
- chronic liver disease including cirrhosis

3. Severe obesity (body mass index [BMI] of 40 or higher)

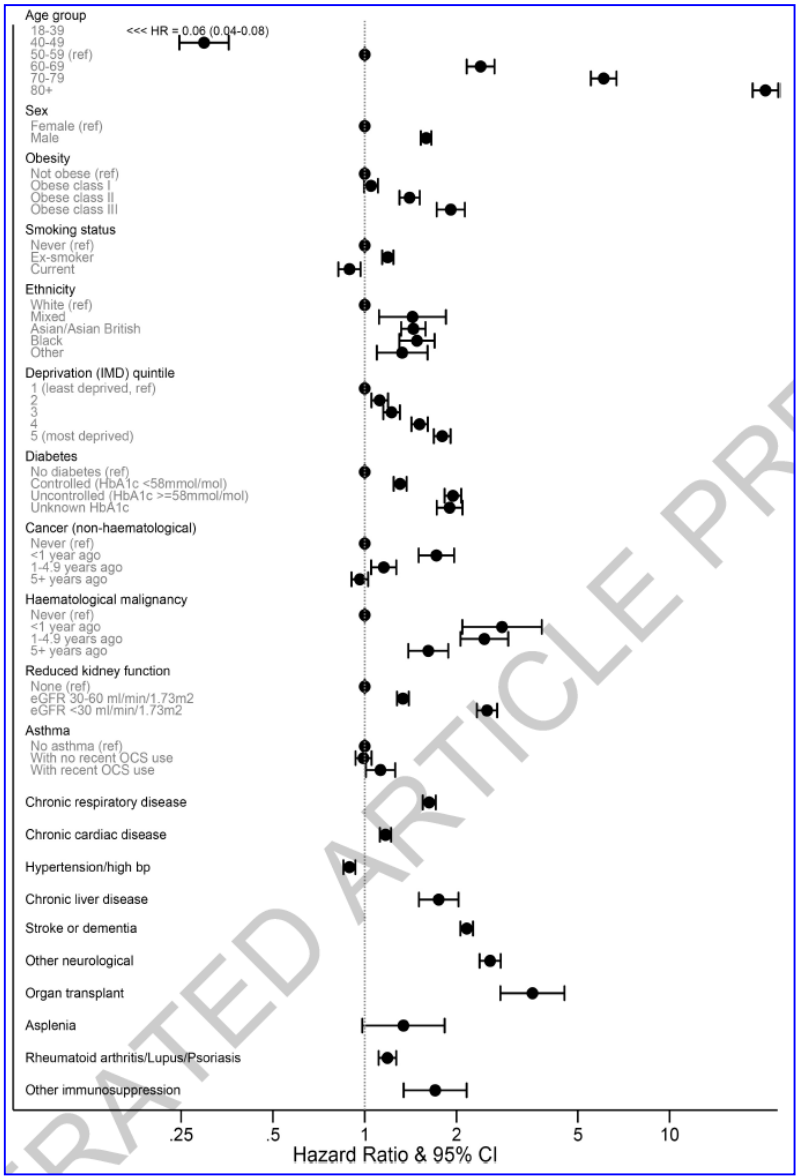
4. Immunocompromised as a result of cancer treatment, bone marrow or organ transplantation, immune deficiencies, poorly controlled HIV or AIDS, prolonged use of corticosteroids and other immune weakening medications

5. >28 weeks pregnant (and especially with any of co-morbidities listed above)

Vulnerability & Co-morbidity (4)

nature
https://doi.org/10.1038/s41586-020-2521-4
Accelerated Article Preview
Accelerated Article Preview Published online 8 July 2020

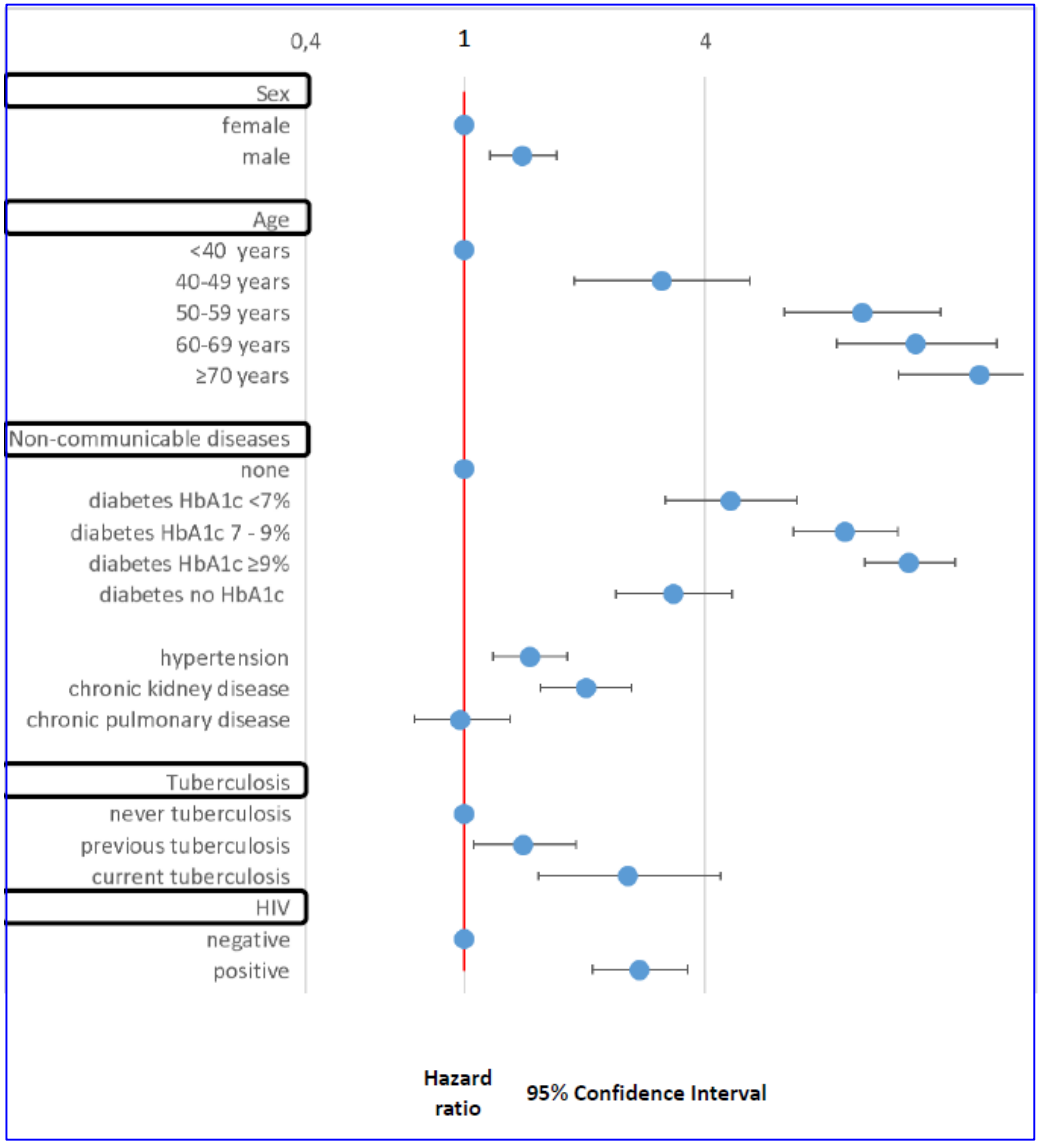
OpenSAFELY: factors associated with COVID-19 death in 17 million patients



Western Cape: COVID-19 and HIV / Tuberculosis

Mary-Ann Davies on behalf of the Western Cape Department of Health

9 June 2020



Where to from here?

Does determining an employee's **vulnerability** to SARS-CoV-2 provide enough information decide on Fitness to Work?

GENERALLY NO!

(there may be occasional exceptions)

The decision regarding Fitness to Work requires an understanding of the COVID-related **RISKS** of being at work.

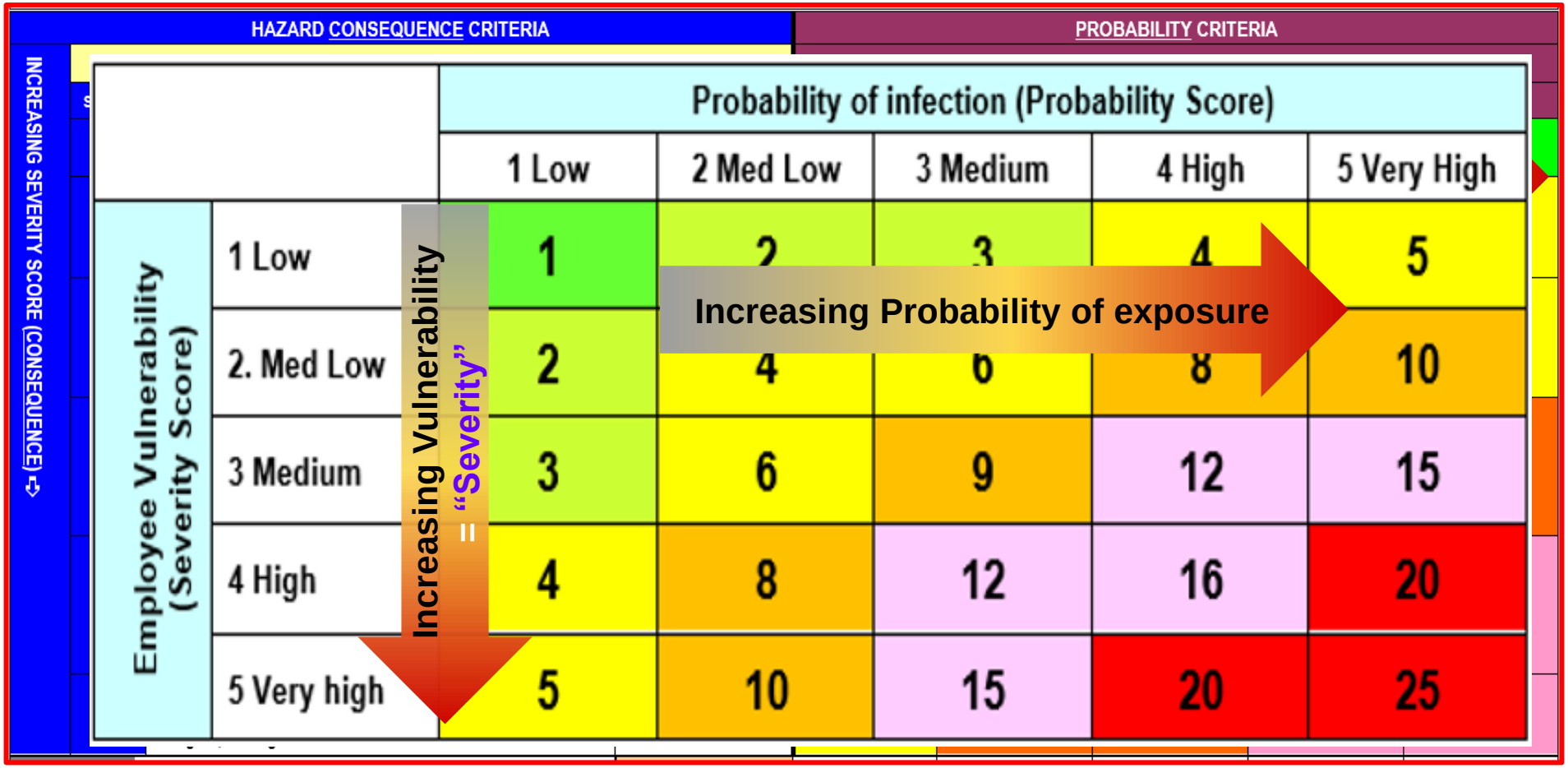
(A universal rule that applies to all FTW decisions)

This means, to determine Fitness to Work, we must have an understanding of COVID-related RISK

Risk of Return to Work and determining FTW

Risk = Consequence (severity) x Probability of Exposure

COVID FTW Risk = Vulnerability x Probability of Exposure



Assessing Risk - Categories of **Vulnerability**

Individual vulnerability factors influencing disease severity:

- Age
- Functional state of certain target organs (lungs, heart, kidneys, liver)
- Immune system competence
- BMI
- Male / Female

5 **Very high vulnerability**

4 **High vulnerability**

3 **Medium vulnerability**

2 **Med-Low vulnerability**

1 **Low vulnerability**

5 Very high Vulnerability

- **>70 years, regardless of comorbidity** although *healthy >65's* can be handled on a case by case basis
- **Age >65 years** + well controlled chronic disease*
- **Age ≥**
- Seriou cereb
- Sever active
- Seriou immu
- Certai
- Bone
- Anaer
- Rare risk o
- Pregn

4 High Vulnerability

- **Age 66 – 70 years with no comorbidity**
- **Age 60**
- **Age 50**
- Chroni
- Previou spirom
- Modera autoim
- Severe
- Anaem
- Pregnant women > 2

3 Medium Vulnerability

- **Age 60 – 65 years with no comorbidity**
- **Age 40 –**
- **Age <50**
- Past Hx o
- Moderate
- Pregnanc

2 Medium Low Vulnerability

- **Age 50-59 years with no comorbidity**
- **Age <**
- Obesi

1 Low Vulnerability

- **Age <50**
- No specified risk factors.

* ***chronic disease*** = hypertension, diabetes, cardiovascular disease / renal failure / liver disease, etc, otherwise not specified in these categories

Assessing Potential for exposure to the virus ("**Probability**")

employment & labour

Department:
Employment and Labour
REPUBLIC OF SOUTH AFRICA

Workplace Preparedness:

COVID-19 (SARS-CoV-19 virus)

March 2020

Assessing Risk - Categories of **Probability**

Job characteristics that influence the probability of being infected:

- **Frequency & degree of human contact**: eg person density (<1.5m proximity) freq contact / high person traffic, freq work travel (bus, flights)
- **Nature of tasks** (aerosol generating proc's, proc's requiring forced exhalation, contact with infected secretions, contact with fomites).
- **Nature of the workplace** (confined space / poor ventilation)

5 **Very high probability**

4 **High probability**

3 **Medium probability**

2 **Med-Low probability**

1 **Low probability**

5 Very high exposure Probability

Jobs in which procedures are performed on known or suspected sources of SARS-CoV-2 with particularly high potential for exposure

- He
- He
- M

4

Jobs with hi

- Healthca suspecte in hospit

Note:
- No aero
- Lung Fu

- Medical t known o
- Mortuary have or preparin

3 Medium exposure Probability

Jobs with significant exposure characteristics (frequent and/or sustained and/or close (<1.5 CoV-

- Fre
  - pc
  - re
  - pe
  - tra
- Tas Th he
- Job
- De ca

2 Medium Low exposure Probability

Jobs with fewer of the exposure characteristics (frequency, duration, proximity or enclos

- Frec
  - HR personnel, supervisors, technical professions such as engineers
- Extensive contact with **fomites** (high human contact points), eg
  - surface cleaning & disinfecting work
  - maintenance work in areas of high human use, esp ablution areas
  - employees using re-usable respiratory protective equipment for non-COVID-19 purposes (welding, spray-painting, etc)

1 Low exposure Probability

Jobs with exposure similar to normal community life (frequency, duration, proximity or enclosure). Work tasks pose no additional risk than normal community living.

Vulnerability x Probability = Risk

1 Characterise Hazard → **2** Assess Severity → **3** Assess Probability → **4** Calculate Risk → **5** Mitigate Risk

5	Very high vulnerability
4	High vulnerability
3	Medium vulnerability
2	Med-Low vulnerability
1	Low vulnerability

5	Very high probability
4	High probability
3	Medium probability
2	Med-Low probability
1	Low probability

Employee Vulnerability (Severity Score)	Probability of infection (Probability Score)				
	1 Low	2 Med Low	3 Medium	4 High	5 Very High
1 Low	1	2	3	4	5
2. Med Low	2	4	6	8	10
3 Medium	3	6	9	12	15
4 High	4	8	12	16	20
5 Very high	5	10	15	20	25

Risk Score	Actions
≥20	Work tasks resulting in such high scores should not be allowed. Employee should be redeployed, or if possible, further actions taken to reduce exposure risk.
12-16	Work only allowed if deemed essential and with additional precautions, PPE and support from Occupational Health
8-10	Work allowed pending expert advice from Occupational Health (may require conditional certification or specified task restrictions)
4-6	Work is permitted provided employee is adequately trained and wears appropriate PPE for risky tasks.
2-3	No routine PPE required, universal controls (regular hand-hygiene and social distancing). PPE may be considered for specific work tasks.
1	No PPE required, just universal controls, which include the use of fabric masks ("source isolation")

RISK = VULNERABILITY X PROBABILITY

Overview of the individualised HRA process flow

5 Very high Vulnerability

- **>70 years, regardless of comorbidity** although healthy >65's can be handled on a case by case basis
- **Age >65 years** + well controlled chronic disease*
- **Age ≥60 years** + poorly controlled chronic disease*
- Serious heart conditions (eg heart failure, arrhythmia, ischaemia) or cerebrovascular disease
- Severe lung cond's (eg cystic fibrosis, severe/unstable asthma, severe COPD, active lung TB)
- Seriously impaired immunity (AIDS defining disease, CD4<50, high dose immunosuppressive Rx)
- Certain cancers or receiving immunosuppressive Rx for their cancer
- Bone marrow or stem cell transplants in the last 6 months.
- Anaemia (HB males < 9g/dL; females <7g/dL)
- Rare diseases and inborn errors of metabolism that significantly increase the risk of infections
- Pregnant women with significant heart disease, congenital or acquired.

4 High Vulnerability

- **Age 66 – 70 years with no comorbidity**
- **Age 60 – 65 years** + well controlled chronic disease*
- **Age 50 – 59 years** + poorly controlled chronic disease*
- Chronic lung disease (eg mod to severe asthma / COPD)
- Previous complicated lung TB (significant structural damage or impairment on spirometry)
- Moderately or intermittently immunocompromised (eg HIV with CD4<200; autoimmune diseases)
- Severe obesity (body mass index [BMI] >40)
- Anaemia (HB males < 11g/dL; females <9g/dL)
- Pregnant women > 28 weeks gestation & otherwise healthy

3 Medium Vulnerability

- **Age 60 – 65 years with no comorbidity**
- **Age 40 – 59 years** + well controlled chronic disease*
- **Age <50 years** + poorly controlled chronic disease*
- Past Hx of lung TB, now recovered, no or minimal residual impairment
- Moderate obesity (BMI >35)
- Pregnancy <28 weeks gestation & otherwise healthy

2 Medium Low Vulnerability

- **Age 50-59 years with no comorbidity**
- **Age <40 years** + well controlled chronic disease*
- Obesity (BMI >32)

1 Low Vulnerability

- **Age <50**
- No specified risk factors.

* ***chronic disease*** = hypertension, diabetes, cardiovascular disease / renal failure / liver disease, etc, otherwise not specified in these categories

RISK = SEVERITY X PROBABILITY

Employee Vulnerability (Severity Score)	Probability of infection (Probability Score)				
	1 Low	2 Med Low	3 Medium	4 High	5 Very High
1 Low	1	2	3	4	5
2. Med Low	2	4	6	8	10
3 Medium	3	6	9	12	15
4 High	4	8	12	16	20
5 Very high	5	10	15	20	25

5 Very high exposure Probability

Jobs in which procedures are performed on known or suspected sources of SARS-CoV-2 with particularly high potential for exposure

- Healthcare workers performing aerosol-generating procedures (intubation, cough induction, brochoscopy, dental proc's). SPIROMETRY
- Healthcare or laboratory personnel collecting or handling specimens from known or suspected COVID-19 patients.
- Mortuary workers performing autopsies, involving aerosol-generating procedures, on known or suspected COVID-19 cases

4 High exposure Probability

Jobs with high potential for exposure to known or suspected sources of COVID-19.

- Healthcare frontline staff whose work brings them into contact with known or suspected COVID-19 patients. (e.g. doctors, nurses, & other frontline staff in hospitals, clinics, etc. (consulting rooms & treatment facilities)

Note:
- No aerosol-generating procedures in this category
- Lung Function Tests or similar procedures requiring forced exhalation?

- Medical transport workers (e.g. ambulance personnel and porters) moving known or suspected COVID-19 patients in enclosed vehicles
- Mortuary workers that work with the bodies of people who are known to have or suspected of having COVID-19 at the time of their death. (e.g. preparing the bodies for burial or cremation)

3 Medium exposure Probability

Jobs with significant exposure characteristics (frequent and/or sustained and/or close (<1.5m) contact, typically in an enclosed environment) with people of unknown SARS-CoV-2 status

- Frequent contact with high volumes of general public or co-workers, eg:
  - point of entry personnel (security, visitor induction)
  - retail personnel (cashiers, supervisors)
  - petrol forecourt attendants
  - training & education, labour centres
- Tasks in close proximity to others, where social distancing is not possible. The risk is aggravated if the work involves heavy manual activities causing heavy breathing) (eg maintenance staff, especially during shut down)
- Job requires employee to travel in public transport (eg. frequent flyers)
- Decontamination of workplaces where a known or suspected COVID-19 case worked

2 Medium Low exposure Probability

Jobs with fewer of the exposure characteristics (frequency, duration, proximity or enclosure) than for category 3. Contact may include frequent contact with fomites.

- Frequent interaction with **people**, but social distancing is maintained, eg
  - sales personnel
  - Bulk Truck Drivers
  - HR personnel, supervisors, technical professions such as engineers
- Extensive contact with **fomites** (high human contact points), eg
  - surface cleaning & disinfecting work
  - maintenance work in areas of high human use, esp ablution areas
  - employees using re-usable respiratory protective equipment for non-COVID-19 purposes (welding, spray-painting, etc)

1 Low exposure Probability

Jobs with exposure similar to normal community life (frequency, duration, proximity or enclosure). Work tasks pose no additional risk than normal community living.

Risk Score	Actions
320	Work tasks resulting in such high scores should not be allowed. Employee should be redeployed, or if possible, further actions taken to reduce exposure risk.
12-16	Work only allowed if deemed essential and with additional precautions. PPE and support from Occupational Health
8-10	Work allowed pending expert advice from Occupational Health (may require conditional certification or specified task restrictions)
4-6	Work is permitted provided employee is adequately trained and wears appropriate PPE for risky tasks.
2-3	No routine PPE required, universal controls (regular hand-hygiene and social distancing). PPE may be considered for specific work tasks.
1	No PPE required, just universal controls, which include the use of fabric masks ("source isolation")

Who does what & who can certify?

STEP 3: TASK ASSIGNMENT

Step 3: Who can do FTW assessments

(Not an exhaustive list – for illustration only)

Medical performed by **any Medical Practitioner**, without special registration	PrDP (NRTA) Radiation Workers (HSA) Hot & Cold* (Env Regs, OHSA)
Medical performed by an **Occupational Medical Practitioner**	Lead work (Lead regs, OHSA) Asbestos work (Asbestos regs, OHSA) Mines & quarries (MHSA)
Medical performed by an **Occupational Health Practitioner**	Chemical work (HCS regs, OHSA) Work with HBA's (HBA regs, OHSA) Construction (Constr regs, OHSA)
Medical performed by a Medical Practitioner, with **other special qualifications**	Divers (Diving regs, OHSA) Pilots (Civil aviation regs, OHSA) (*Seafarers; SAMSA regs*)

** Can be done by a Reg Nurse, if following a protocol issued by the doctor*

Who does what – Vulnerability Risk Assessment

- The COVID-19 Vulnerability Assessment is not prescribed by the Regulations for HBA's

therefore

- The assessment can be done by any suitably qualified health professional (ie if no occupational health practitioner available, it can be done by the treating doctor)

Do and decide …

STEP 4: CONDUCT THE EXAM & ADJUDICATE

Overview of the **Vulnerability FTW** Process

QUESTIONNAIRE
(Self disclosure of vulnerability risk factors)

Completed by all employees

OHNP
Reviews all questionnaires

Vulnerability Cat 1 → **CLEARED TO WORK**

Vulnerability Categories >1
Referred to OMP

OMP & OHNP
Review vulnerability categories of remaining employees

1.	Respiratory conditions (eg. chronic lung conditions including asthma, chronic bronchitis, cystic fibrosis, previous TB, or active TB right now)	YES / NO
2.	Cardiovascular conditions (eg. high blood pressure, heart rhythm problems, heart failure, angina, previous heart attack, previous stroke)	YES / NO
3.	Diabetes, reduced kidney function, liver disease	YES / NO
4.	Reduced immunity (eg. immunosuppressant treatment, chemotherapy, bone marrow transplant, HIV or AIDS)	YES / NO
5.	Cancer If "Yes", what is the name of the cancer?	YES / NO
6.	Any other chronic illness not mentioned above. If "Yes", please record them here.	YES / NO
7.	Pregnant. If "Yes", how far is your pregnancy? _____ weeks. Have there been any complications, such as gestational diabetes, hypertension, kidney problems? **YES / NO** Explain:	YES / NO
8.	Height: _____ m; Weight: _____ kg. BMI (weight ÷ height²): _____	
9.	Do you travel to work on public transport?	YES / NO
10.	Is any person living in your household working in the health professions or professionally at risk of COVID-19 infection?	YES / NO

Review questionnaires
Plus OH records (if available)
Interview (Phone / Face to Face)
↔ **Additional clinical tests if necessary** ↔ **Refer to own doctor if necessary**

5 4 3 2 1

Assign Vulnerability Category

5 4 3 2 1

Consider Job's Probability of Infection (1-5)
Address employee's fears & concerns

Issue RTW Certificate stating vulnerability category & special measures, if necessary

Employee Vulnerability (Severity Score)	Probability of infection (Probability Score)				
	1 Low	2 Med Low	3 Medium	4 High	5 Very High
1 Low	1	2	3	4	5
2. Med Low	2	4	6	8	10
3 Medium	3	6	9	12	15
4 High	4	8	12	16	20
5 Very high	5	10	15	20	25

Risk Score	Actions
≥20	Work tasks resulting in such high scores should not be allowed. Employee should be redeployed, or if possible, further actions taken to reduce exposure risk.
12-16	Work only allowed if deemed essential and with additional precautions, PPE and support from Occupational Health
8-10	Work allowed pending expert advice from Occupational Health (may require conditional certification or specified task restrictions)
4-6	Work is permitted provided employee is adequately trained and wears appropriate PPE for risky tasks.
2-3	No routine PPE required, universal controls (regular hand-hygiene and social distancing). PPE may be considered for specific work tasks.
1	No PPE required, just universal controls, which include the use of fabric masks ("source isolation")

PROCEED

PROCEED WITH CONDITIONS

PROCEED WITH RESTRICTIONS

STAY HOME

SPECIAL MEASURES

Examples include:
- Safe Work Practices
- Specified PPE
- Tight monitoring, Rx compliance & control

Examples include:
- Task adjustments (less contact time, exclude from certain tasks)
- Redeployment to less risky job

WORKPLACE ACCOMMODATION NOT REQ'D

WORKPLACE ACCOMMODATION IS REQ'D

Play fair …

STEP 5: MANAGE THE OUTCOMES

Guidance from the Department of Health

health
Department:
Health
REPUBLIC OF SOUTH AFRICA

Guidance on vulnerable employees and workplace accommodation in relation to COVID-19 (V4: 25 May 2020)

Can the vulnerable employee return to work with appropriate special measures in place?

No

Can the vulnerable employee work from home?

No

3. Leave procedures:

- temporary incapacity, for the period of the COVID-19 epidemic, may be motivated by the treating doctor /occupational medical practitioner on the grounds that workplace accommodation is not possible
- should this not be possible the employee should be able to utilise his/her sick leave if appropriate, as advised by the treating doctor/occupational medical practitioner
- should sick leave be exhausted, the employee should be able to utilise his/her annual leave if an employee's working time is reduced or temporarily stopped due to operational reasons (workplace functioning at 50% of capacity), an application can be made to the Department of Employment and Labour for the TERS benefit (COVID-19 temporary relief scheme)
- where applicable the eligibility of the employee to receive additional company benefits and/or UIF (may be topped up by TERS benefit) should be considered
- unpaid leave is not recommended and if contemplated, should be the last resort

In closing…

BRINGING IT ALL TOGETHER

Concluding Comments

- The principles of determining Fitness to Work in the context of COVID are similar to standard FTW programmes
- In the context of the COVID-19 pandemic, the key determinants of Fitness to Work are related to **risk**:

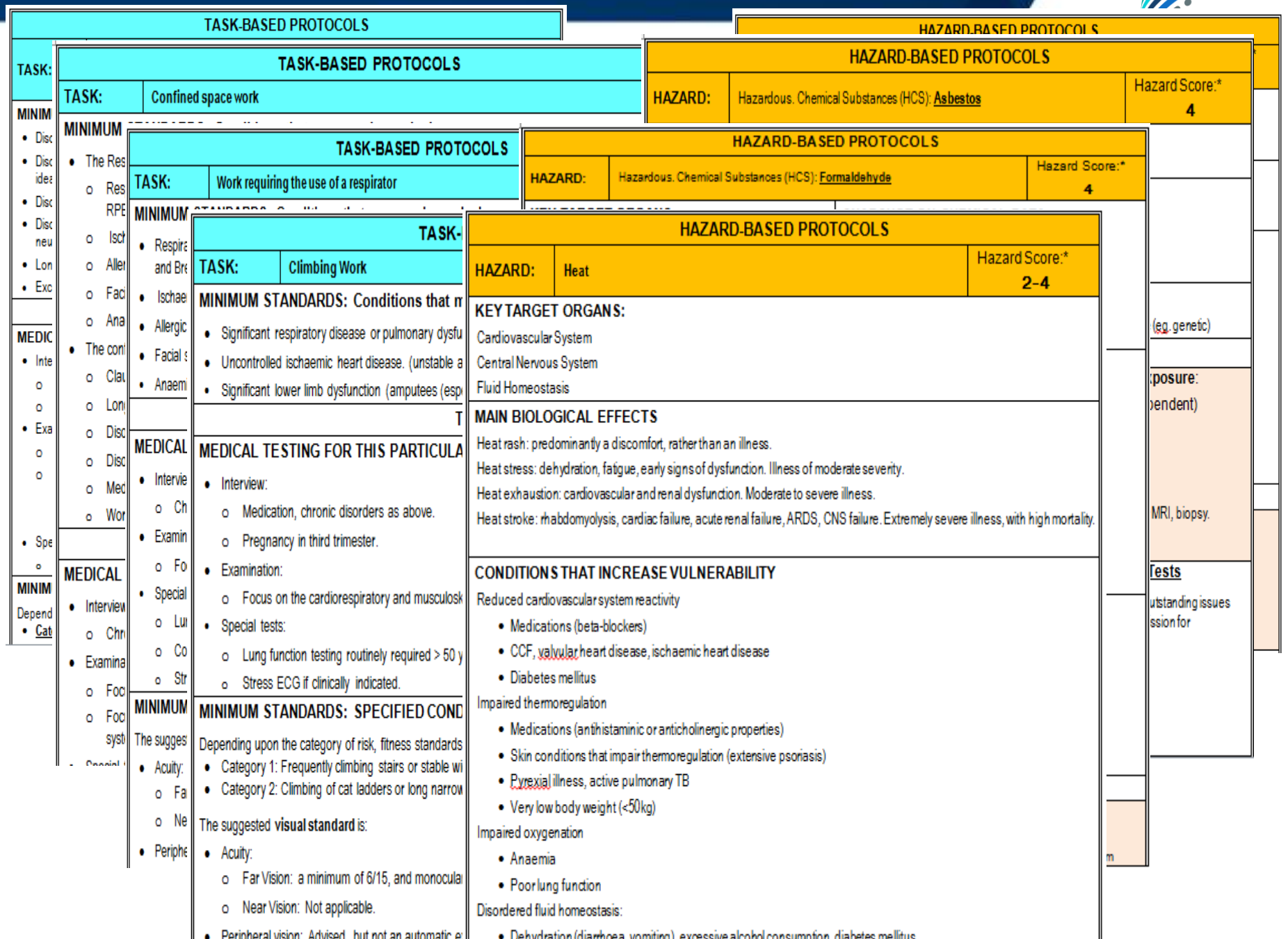
  Risk = **consequence** & **probability** of exposure to SARS-CoV-2

  - The degree of an employee's **vulnerability** to the virus is a useful proxy for the harmfulness / consequence.
  - The **probability** of exposure to the virus is determined by various task / environmental factors
- In the context of the COVID-19 pandemic and pro-active return to work assessment, vulnerability dominates the picture
- High levels of vulnerability do not automatically exclude employees from work; they just require appropriate "special measures".

THANK YOU

EXTRA SLIDES

Step 2: Test selection & standard setting (Protocols)



TASK-BASED PROTOCOLS

TASK: Confined space work

MINIMUM

TASK-BASED PROTOCOLS

TASK: Work requiring the use of a respirator

TASK-BASED PROTOCOLS

TASK: Climbing Work

MINIMUM STANDARDS: Conditions that m

- Significant respiratory disease or pulmonary dysfu
- Uncontrolled ischaemic heart disease. (unstable a
- Significant lower limb dysfunction (amputees (esp

MEDICAL TESTING FOR THIS PARTICULA

- Interview:
  - Medication, chronic disorders as above.
  - Pregnancy in third trimester.
- Examination:
  - Focus on the cardiorespiratory and musculosk
- Special tests:
  - Lung function testing routinely required > 50 y
  - Stress ECG if clinically indicated.

MINIMUM STANDARDS: SPECIFIED COND

Depending upon the category of risk, fitness standards

- Category 1: Frequently climbing stairs or stable wi
- Category 2: Climbing of cat ladders or long narrow

The suggested **visual standard** is:

- Acuity:
  - Far Vision: a minimum of 6/15, and monocula
  - Near Vision: Not applicable.
- Peripheral vision: Advised, but not an automatic e

HAZARD-BASED PROTOCOLS

HAZARD: Hazardous. Chemical Substances (HCS): Asbestos — Hazard Score:* 4

HAZARD-BASED PROTOCOLS

HAZARD: Hazardous. Chemical Substances (HCS): Formaldehyde — Hazard Score:* 4

HAZARD-BASED PROTOCOLS

HAZARD: Heat — Hazard Score:* 2-4

KEY TARGET ORGANS:

Cardiovascular System
Central Nervous System
Fluid Homeostasis

MAIN BIOLOGICAL EFFECTS

Heat rash: predominantly a discomfort, rather than an illness.
Heat stress: dehydration, fatigue, early signs of dysfunction. Illness of moderate severity.
Heat exhaustion: cardiovascular and renal dysfunction. Moderate to severe illness.
Heat stroke: rhabdomyolysis, cardiac failure, acute renal failure, ARDS, CNS failure. Extremely severe illness, with high mortality.

CONDITIONS THAT INCREASE VULNERABILITY

Reduced cardiovascular system reactivity

- Medications (beta-blockers)
- CCF, valvular heart disease, ischaemic heart disease
- Diabetes mellitus

Impaired thermoregulation

- Medications (antihistaminic or anticholinergic properties)
- Skin conditions that impair thermoregulation (extensive psoriasis)
- Pyrexial illness, active pulmonary TB
- Very low body weight (<50kg)

Impaired oxygenation

- Anaemia
- Poor lung function

Disordered fluid homeostasis:

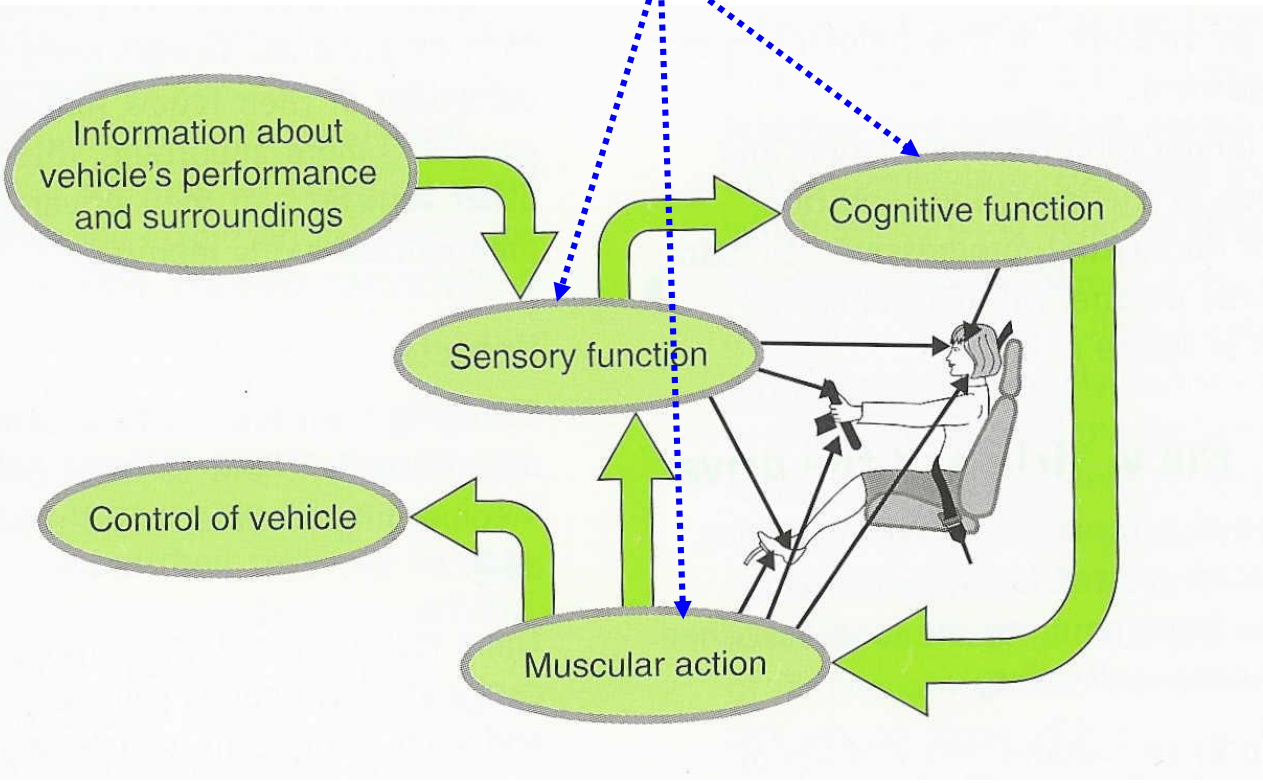
- Dehydration (diarrhoea, vomiting), excessive alcohol consumption, diabetes mellitus

Medical Fitness to Work – General Approach (ability)

Aim: systematic assessment for functional impairment that may effect task execution (safety / effectiveness)

Do the impairments impact ability to do the job (using driving as an example)

- **Fixed impairment (lung fibrosis)**
- **Progressive impairment (neuromuscular disorders)**
- **Episodic Impairment (Risk of sudden incapacity) (epilepsy, diabetes)**
- **Fluctuating impairment (substance abuse, HIV)**
- **Short-term impairment (post surgery)**



This approach could apply to a post-COVID return to work assessment

4 possible adjudication outcomes

1. Can do the job
2. Can do the job if certain **conditions** are met (**no workplace accommodation required**)

(“special measures”)

No incapacity

3. Can do the job with certain **restrictions** (task/place) (**workplace accommodation required**) (temporary / permanent)

(“special measures”)

3. Cannot do any job (for COVID, this is temporary)

Incapacity

“**Golden Rule**”

Decision must be specific to the facts of the case – no generalisations

Outcomes Management – Incapacity Mx

Incapacity is generally only a problem when the duration of the incapacity becomes an issue for the employer

"Unfit" or "Fit with Restrictions" = unable to fulfil inherent job requirements = **Incapacity**

The Worker

Can the impairment (comorbidity) be treated and how close will maximum medical improvement ("MMI") bring the employee to the required capability? (can the employer be reasonably expected to wait?)

- How long to return to some sort of work?
- How long to maximum medical improvement?
- Will there be residual impairment?

The Workplace

- Can the exposure to SARS-CoV-2 be reduced (controlled)?
- Can the problematic tasks be made more manageable?
  - Alteration of conditions of employment
  - Alternative work (even if re-training is required)

"Procedural fairness"
Did you follow all the steps?

Lots of research into “vulnerability”

- **People Who Are at Higher Risk for Severe Illness | Coronavirus | COVID-19 | CDC [Internet]. [cited 2020 Apr 18]. Available from: https://www.cdc.gov/coronavirus/2019-ncov/need-extra-precautions/groups-at-higher-risk.html**
- **People Who Are at Higher Risk for Severe Illness (WHO)** https://www.who.int/westernpacific/emergencies/covid-19/information/high-risk-groups
- The Epidemiological Characteristics of an Outbreak of 2019 Novel Coronavirus Diseases (COVID-19) - China CCDC, February 17 2020
- Report of the WHO-China Joint Mission on Coronavirus Disease 2019 (COVID-19) [Pdf] - World Health Organization, Feb. 28, 2020
- **Kjetil B. COVID-19: The relationship between age, comorbidity and disease severity – a rapid review, 1st update.**
- Hu L, Chen S, Fu Y, Gao Z, Long H, Ren H-w, et al. Risk Factors Associated with Clinical Outcomes in 323 COVID-19 Patients in Wuhan, China. medRxiv. 2020:2020.03.25.20037721.
- Huang H, Cai S, Li Y, Li Y, Fan Y, Li L, et al. Prognostic factors for COVID-19 pneumonia progression to severe symptom based on the earlier clinical features: a retrospective analysis. medRxiv. 2020:2020.03.28.20045989.
- Ji D, Zhang D, Xu J, Chen Z, Yang T, Zhao P, et al. Prediction for Progression Risk in Patients with COVID-19 Pneumonia: the CALL Score. Clinical Infectious Diseases. 2020;09:09.
- Liu W, Tao ZW, Lei W, Ming-Li Y, Kui L, Ling Z, et al. Analysis of factors associated with disease outcomes in hospitalized patients with 2019 novel coronavirus disease. Chinese Medical Journal. 2020;28:28.
- **Petrilli CM, Jones SA, Yang J, Rajagopalan H, Donnell LF, Chernyak Y, et al. Factors associated with hospitalization and critical illness among 4,103 patients with COVID-19 disease in New York City. medRxiv. 2020:2020.04.08.20057794.**
- Chen J, Qi T, Liu L, Ling Y, Qian Z, Li T, et al. Clinical progression of patients with COVID-19 in Shanghai, China. Journal of Infection. 2020;11:11.

Types of impairment post COVID

Fixed impairment	Cardiorespiratory function, renal impairment, liver impairments, neurological impairment
Progressive impairment	• Dementia, arthritis, motor neurone disease, etc • COVID- ??
Episodic Impairment (Risk of sudden incapacity)	• Epilepsy (& related), hypertension, hypoglycaemia, arrhythmias • COVID - ??
Fluctuating impairment	• Substance abuse, multiple sclerosis, HIV and conditions in which fatigue is a factor • COVID-??
Short-term impairment	The impairments experienced during the course of the acute illness (shortness of breath, etc.)

SARS-CoV-2 and Biological Effects

Key Target Organs	Main Biological Effects (including associated symptoms)
Nose / Upper Airways	Loss of sense of smell and sore throat
Lower Respiratory Tact	Pneumonitis / respiratory failure (shortness of breath, painful chest). An uncommon residual complication of the inflammation is scarring of the lungs.
Heart (myocardium)	Myocarditis, abnormal heart rhythm, heart failure (tiredness, reduced effort tolerance)
Eyes (cornea)	Red eyes (conjunctivitis)
Liver	Hepatitis, jaundice
Kidneys	Inflammation, impaired function -> kidney failure
Brain	Headache, confusion, impaired thinking. (loss of sense of smell can also be attributable to early effects on the central nervous system)
Gastro-Intestinal Tract	Diarrhoea
Immune System	Responses by the immune system can be over-stimulated by the presence of the SARS-CoV-2 virus, especially the lymphocytes responsible for producing inflammatory mediators (cytokines, interleukins), resulting in damage to the person's own body ("cytokine storm", wide-spread intravascular micro clots). The micro clots are filtered by the lungs, impacting their ability to oxygenate the blood. This is why shortness of breath is such an important symptom, and is sometimes regarded as an important early marker of incipient (developing) serious disease. Also, this is a reason why artificial ventilation does not help patients who experience this complication.