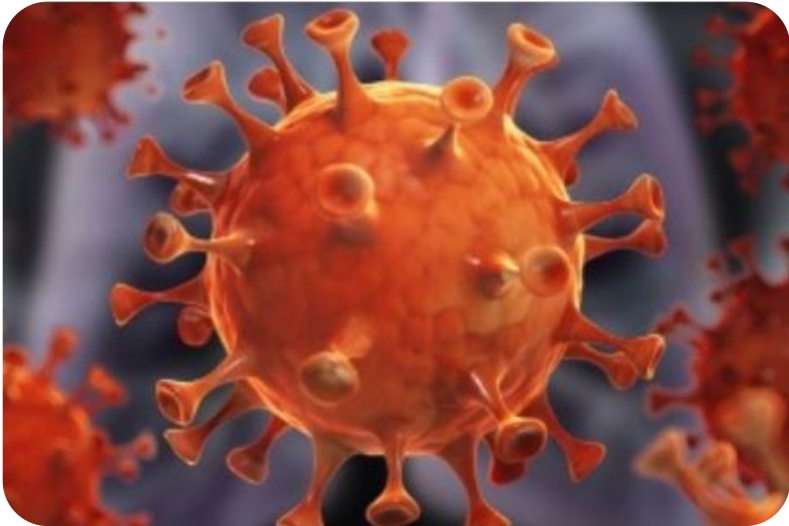


COVID-19

BioRisk Assessment Tool



Dikeledi Onnicah Matuka

National Health Laboratory Services
National Institute for Occupational Health
PO Box 4788, Johannesburg, 2000, RSA
Practice No.: 5200296
Switchboard: + 27 (0) 11 712 6400
Website: <http://www.nhls.ac.za>
<http://www.nioh.ac.za>

TRANSMISSION PATHWAY

Entry portal

Direct Exposure

RESP. DROPLET, CONTACT, AIRBORNE

HEALTH EFFECTS

Infection

COVID-19

AGENT

SARS CoV2
SOURCES

Human, body fluids,
paper, waste,
furniture

Indirect Exposure

Equipment or objects

ENVIRONMENT

Identify high risk areas
Registration desks,
High touch surfaces
Doorknobs, waiting
areas, bathrooms, stair
rails, elevator buttons,
taps

Semi-direct Exposure

Contaminated hands

HOST

Risk occupation
High risk group
(>60yrs),
comorbidities)
Exposure duration

DECIDE

ANTICIPATE

IDENTIFY

RECORDS

IMPLEMENT

REVIEW

UPDATE

Multidisciplinary

Co-morbidities examples:

Hypertension
Chronic lung disease
Chronic liver disease
Chronic kidney disease
Diabetes
Cancer

HIERACHY OF CONTROLS: EXAMPLES

Elimination/ Substitution

- **Impractical to eliminate**
- Exposure unknown & unavoidable
- **Job rotation** or **shift work**
- **Limit numbers** of workers
- **Remote work**
- **Masks:** Public, PUI & patients
- Facilitate **testing** PUI
- **Virtual meetings**
- **One way systems** (separate entrance and exit)

Administration

- **Risk Assessment**
- **IPC Policies (COVID-19)**
- **Early case ID (screening)**
- **Vulnerable workers ID**
- **Isolation areas**
- **1.5-2m distance**
- **Staff training**
- **Sanitizers**
- **Minimize visitors** movements
- **stay home when sick** or **have sick person at home**
- **Communicate risks** and **inform** (updates)
- **Awareness** campaigns
- **Monitor compliance**
- Introduce **authorisation process** for some activities
- Contact tracing and alert

Engineering & Environmental

- **Handwash basins**
- Surface **cleaning & disinfection**
- Adequate & effective **ventilation**
- **Signage, posters**
- Access control
- **Perspex screen/physical barriers**
- Proper and **safe waste disposal**
- **Rearrange workstations** (distance) and **activities** (one person)
- Use **stairs** instead of lifts
- **Isolation rooms** for symptomatic
- **Hands free** or foot controlled devices

Behaviour

- **Induction** to inform
- **Cooperation** with employer and authorities
- **No touching** of nose, mouth, eyes
- Good **respiratory etiquette**
- **Good hand hygiene** practices
- **Non-contact greetings**
- Proper **donning** and **doffing** of PPE
- **Compliance** with self isolation
- **Prompt reporting** of symptoms and travelling
- Daily **self monitoring**
- **Encourage** and seek **feedback** for improvement

PPE

- **Masks** (compulsory)
 - **Respirators** (job)
 - **Face shield**
 - **Gloves**
 - **First Aiders-aprons**
- Note:**
- PPE do not replace social distancing
 - Clean **reusable PPE**
 - **NO PPE sharing**

EXAMPLES: EXPOSURE RISK GROUPS

VERY HIGH



Aerosol generating procedures
COVID 19 **samples**
COVID 19 **suspects/PUI**
COVID 19 **cases**



Healthcare
Laboratories

HIGH



Porters
Ambulance staff (EMS)
Mortuaries
Staff in **wards**



Healthcare
and support personnel

MEDIUM



High volume settings
Close **contact within 2m**
COVID 19 **suspects**
Unknown status
Contact: **international travel**



Retail, schools, labour
centres, Waiting areas,
consulting rooms,
border gates, Police

LOW



No contact within 2m with
known COVID case or suspect



Minimal occupational contact
with co-workers or general
public

EXAMPLES

RISK ASSESSMENT & EVALUATION

EXAMPLE 1: SEMI QUANTITATIVE

Consequence (severe, moderate, negligible)	Frequency Hazard event occurs	Likelihood (unlikely, possible, likely)
<p>Risk score = Consequence x Frequency x Likelihood</p> <p style="text-align: center;">↓</p> <p>Actions taken based on the risk score</p>		

RISK MATRIX

PROBABILITY: High, Intermediate, Low, Negligible

SEVERITY: Negligible, Low, Medium, High

EXAMPLE 2: QUALITATIVE

		Likelihood of exposure/release				
		Unlikely	Possible	Likely		
Consequence of exposure/release	Severe	Medium	High	Very high		
	Moderate	Low	Medium	High		
	Negligible	Very low	Low	Medium		
Laboratory activity/procedure		Initial risk (very low, low, medium, high, very high)	Is the initial risk above the tolerance level? (yes/no)	Priority (high/medium/low)		
Select the overall initial risk.		<input type="checkbox"/> Very low	<input type="checkbox"/> Low	<input type="checkbox"/> Medium	<input type="checkbox"/> High	<input type="checkbox"/> Very high
Should work proceed without additional risk control measures?		<input type="checkbox"/> Yes <input type="checkbox"/> No				

When **assigning priority**, other factors may need to be considered, for example, **urgency**, **feasibility/sustainability of risk control measures**, **delivery** and **installation time** and **training** availability, **technical complexity** of the workplace

Activity	Hazard	Who is affected	Route	Health effects	Baseline controls	Residual Controls	ACTION PLAN		Risk rating			
							By Who	Date	L	M	H	VH
Accessing worksite	SARS-CoV2 Droplet -workers -surfaces -Register -stationery	Construction workers Securities Visitors Customers	Contact	COVID19 Fever Cough SOB URT illness Headache	Policies Isolation guideline Sanitizer use Disinfection 1,5-2m distance PPE Fingerprint scanners?	RA (ID vulnerable workers) Screening staff Ventilation Staggered times Remote work	Managers Supervisor	02/05/21				X
Transporting workers	SARS-CoV2 Droplet -Co-workers -Surfaces -Material -Equipment	Drivers Construction Workers Security Delivery staff	Contact	COVID19 Fever Cough SOB URT illness Headache	Policy Sanitizer Less passengers Open windows Masks Screening Cleaning vehicle between use Gloves? Signature devices?	Training Same shift teams Hand wash? Appointments Cashless payment Drop off points	Foreman Supervisor	Immediate		X		

Activity	Hazard	Who is affected	Route	Health effects	Baseline controls	Residual Controls	ACTION By Who	PLAN Date	Risk rating			
									L	M	H	VH
Site meetings	SARS-CoV2 Droplet -co-workers -environment	Construction workers Management	Contact Droplet Airborne	<u>COVID19</u> Fever Cough SOB URT illness Headache	Policies Screening 1,5-2m distance Sanitizer use Masks Ventilation	Virtual meetings Outdoor/open gathering Disinfection Essential personnel	Managers Supervisor SHE advisor	07/05/21			X	
Training of staff	SARS-CoV2 Droplet -Co-workers -Surfaces	Staff Facilitators	Contact Droplet Airborne	<u>COVID19</u> Fever Cough SOB URT illness Headache	Sanitizers Disinfection Online training Masks Limit numbers Open doors and windows	Aircons and fans	Manager, H&S, OH	14/05/21	X			

Activity	Hazard	Who is affected	Route	Health effects	Baseline controls	Residual Controls	ACTION PLAN By Who	PLAN Date	Risk rating			
									L	M	H	VH
Handling materials	SARS-CoV2 Droplet -co-workers -environment -tools/machinery	Construction workers	Contact Droplet Airborne	<u>COVID19</u> Fever Cough SOB URT illness Headache	RA policies Screening 1,5-2m distance Sanitizer use Masks Ventilation Gloves Safety glasses	Disinfection Proper waste disposal	Managers Supervisor	31/05/21		X		
Lifting operations	SARS-CoV2 Droplet -Co-workers -Surfaces -Machinery	Plant workers	Contact Droplet Airborne	<u>COVID19</u> Fever Cough SOB URT illness Headache	RA policies Screening Sanitizer use Masks Ventilation Mechanical methods Floor markings	Site radio	Manager, supervisor	30/04/21	X			

RISK ASSESSMENT: GENERAL

Activity	Hazard	Who is affected	Route	Health effects	Baseline controls	Residual Controls	ACTION By Who	PLAN Date	Risk rating			
									L	M	H	VH
Administrative	SARS-CoV2 Droplet -co-workers -surfaces -equipment	Office workers	Contact	COVID19 URT illness Cough Headache Sore throat	RA Policies and SOPs Temp. scan Sanitizer Screening tool Training 1,5- 2m distance	Wash basin? Gloves ? teleworking	Director	Immediate		X		
Lunch break duty	Equipment Utensils Co-workers		Possible Airborne		Compulsory Wearing masks Ventilation Cleaning and disinfection Waste disposal Screens Limit food sharing Cafeteria onsite -disposable utensils -wrapped food only Stagger breaks	Own food & utensils Stay on-site Gloves for caterers	Manager, shop owner	31/04/21			X	
Accommodation	Co-workers Dormitories	Migrant workers			Adequate rooms Showers, basins	Ventilation, awareness campaigns, screening	Management					
Site inspections	Interviews environment	Inspectors Workers visitors				Signage				X		

CLEANING



Risk factors

- Infectious employees/visitors/public
- Contaminated equipment
- Contaminated surface

Controlling Exposure

- Increase frequency of cleaning
- Hand wash
- Correct Gloves
- Respirator?
- Use correct disinfectant and read SDS
- Policy
- Mask & prompt isolation of symptomatic workers

SECURITY CHECKS



Risk factors

- Items, material, registers
- Infected **visitors** and **delivery** staff
- Contact with Colleagues
- Identification card exchange

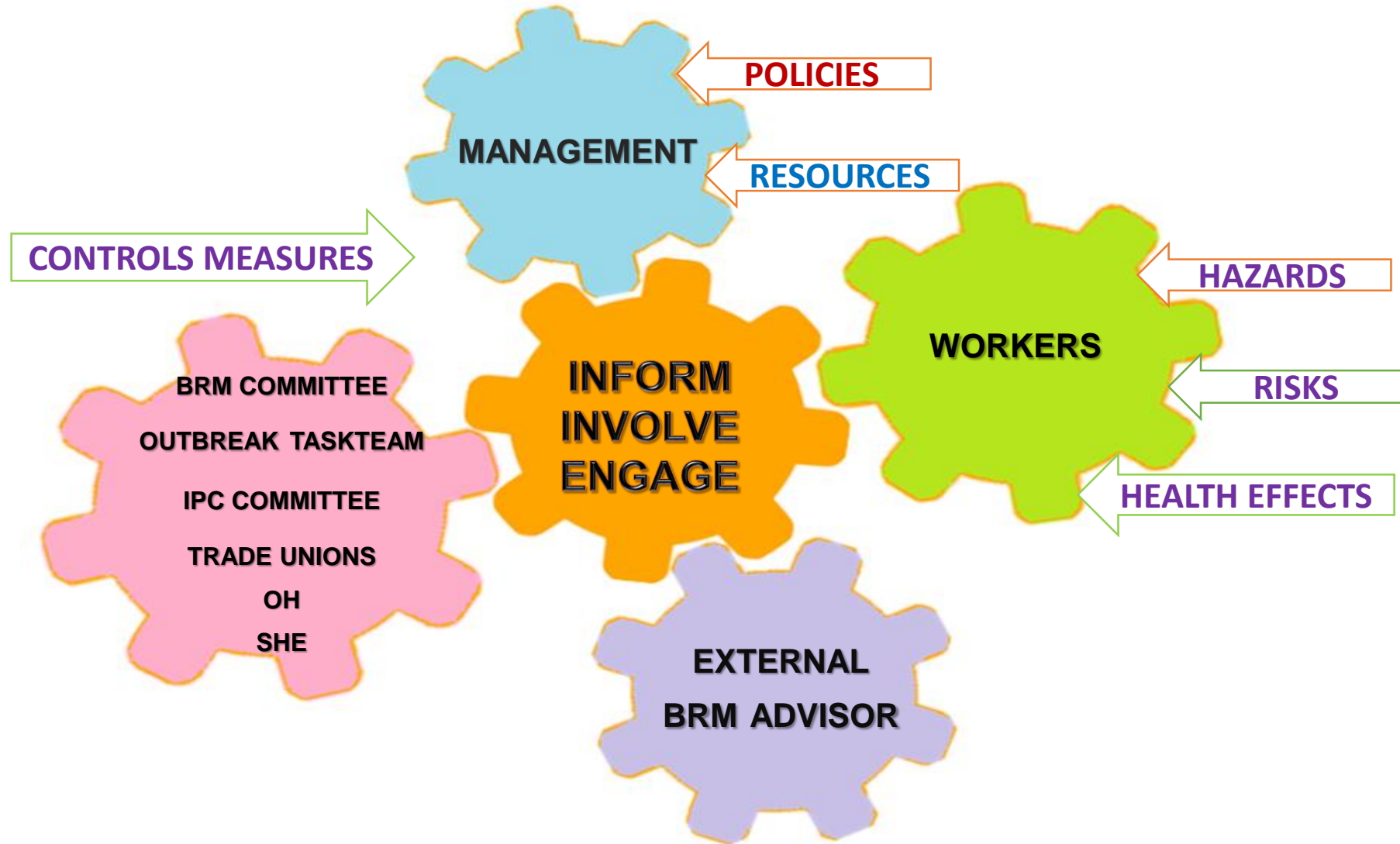
Controlling Exposure

- **Security must complete register**
- Screening questionnaire/temp. checks
- **No Mask, No entry** (staff and clients)
- Hand sanitizing (before and after)
- Policy /SOP/Posters/signage
- High tough surface disinfection
- Shifts (staff rotation – **same group**)
- **Training:** hazards, risks, controls, sops, symptoms, reporting, self isolation
- View ID without touching
- **NO contact** or “hands off” searches

COMMON ERRORS OF HRA

- RA is not a **once-off** process nor a **paper** exercise
- **Workers** are not engaged – encourage **reporting**
- RA is **outdated** or **not recorded**
- HBA risks are **not** comprehensive:
 - limited **knowledge**
 - lack of **competency** and **experience**
- **Preventive hierarchy** not taken into account

RISK COMMUNICATION



SUMMARY

- **Anticipate** and **identify** the **risks** for workers, **record** and **review**
- Conduct **individual risk assessment** and include worker's **vulnerability**
- Implement **practical mitigation strategies** by following the **hierarchy of controls**
- Be **vigilant** and **informed** (communicate policies effectively to both workers and public)
 - **screening, isolation, quarantine, social distance**
- **Update** the risk assessment with changes and **communicate** risks
- Consider **indirect** exposures (Ergonomics, chemicals, legionella, mental health)
- **ENFORCE** and **MONITOR**

CONTACT US FOR MORE INFORMATION



dikeledim@nioh.ac.za or tanushas@nioh.ac.za