

Impala mine approach to Covid-19

Screening and Tracing Work Flowsheet



Version 1.2

IMPALA PLATINUM EMPLOYEE COVID-19 SCREENING AND TRACING



PROCEDURES GOVERNING THE PROCESS



Employee assessment flow sheet





On-shaft Screening



IMS Testing Process



COVID -19 RT-PCR TEST





Diagram: How to collect a nasopharyngeal swab (left) and oropharyngeal swab (right)





- 1. Fitness Medical Examinations : identify Vulnerable Employees.
- 2. **Restrictions** : fitness category and restricted duration.
- **3.** Education : targeted Covid-19 education for all vulnerable employees.
- **4. Immune boosting** : Vit C tablets and Influenza vaccination. (every vulnerable employee personally offered vaccination, 10 000 administered)
- 5. **Monitoring** : Chronic medication script tracking and blocking.
- 6. Controlled conditions : six monthly scripts issued to well controlled patients.
- 7. **Tracking** : Vulnerable and High risk employee data mining.
- 8. Personal Responsibility: Daily medical declaration and temperature screening.



- AGE >60
- Death rate increases with age :
- <50 yrs =22.4%
- 16-49 yrs =24.3%
- 50-69 yrs = 40.3%
- > 70 yrs 73.2%
- Comorbidity (DM and hypertension)
- Hypoxaemia requiring Mechanical ventilation
- Organ dysfunction Myocardial ischaemia and Heart failure
- Men vs woman :70.5% vs 54.3.%
- BMI 30+=60.9%
- BMI 25 to <30 =41.7%</p>

http://dx.doi.org/10.18772/26180197.2020.v2nSla2:COVID-19 and the Rationale for Pharmacotherapy: A South African Perspective

- 1. 1st vulnerable employee review: All co morbidities checked by OMP's.
- 2. 2nd vulnerable employee review: +60 years with co-morbidities re-checked by OMP's.
- 3. New Covid-19 PCR Testing Protocols
 - Symptomatic
 - Over 50 years with any co-morbidity
 - All ages with poor controlled co-morbidity
- 4. Vulnerable Employees : first access to in-house quarantine, isolation and hospitalization.
- 5. 3rd vulnerable employees review : over 60 years with multiple co-morbidities controlled or not controlled. New control criteria.
- 6. Additional Immune boosting : Add Zinc and Vit D for vulnerable employees.

Flattening the Curve



Member of the Implats



Application to Impala	Scenario 1	Scenario 2
Number of employees	40,000	40,000
% of Pop Infected at peak	0.9922%	3.8868%
Peak Number of Infections (symptomatic)	397	1,555
% of Pop Require Hospital	0.1343%	0.2100%
Hospital Bed Peak	54	84
% of Pop Require ICU	0.0206%	0.0324%
ICU Bed Peak	8	13
% deaths of Population	0.0815%	0.1484%
Cumulative Deaths	33	59

Impala Modeling (New Infections & Hospitalisation/week) and Cumulative Deaths







COVID 19 Status Update: Total Positive cases as at 15 July 2020





COVID 19 Tests Conducted as at 14 July 2020





Active Isolation & Quarantine per Shaft as at 14 July 2020





Total in Service per Age group





COVID 19 Status Update: Total Positive cases per age group



Member of the Implats

Total In Service vs Total Number of Employees Infected



Member of the Implats Group

COVID 19 Status Update: Recoveries per Age group





Chest X-rays Covid-19 positive Patients







INCUBATION PERIOD 5-7,4 DAYS

FIRST PHASE- 80% cases

Viral response –Mild constitutional symptoms –FLU
Laboratory Features ;Lymphopenia ,Increase Prothrombin time ,Increases D-dimer and Mildly Increased LDH

SECOND PHASE – Moderate Symptoms 15%

 Pulmonary symptoms –dyspnoea ,mild hypoxaemia SATS ranging 90-95% Laboratory Markers –Increasing CRP ,low Procalcitonin

THIRD PHASE – Severe symptoms 5%

- Acute respiratory distress syndrome
- Hyperinflamatory phase –Cytokine storm
- Laboratory markers :Increase IL-2,IL-7 ,TNF(tumour necrosis factor),IL-6
- Increase in IL-6 results in organ dysfunction ,ARDS,renal dysfunction ,hypotension and Cardiac failure



- Neutrophilia
- Increase LDH
- Increase D-DIMER
- Hyperferritinaemia
- Increase IL-6-organ dysfunction hyperinflation markers of virally induces Haemophagocytic lympho-histocytosis

Mortality

- Cardiac disease and thrombotic episodes contribute to death .Use LMWH for thrombosis
- Analysis of D-dimer ,Prothrombin Time and age were positively low platelet count negatively correlated with 28 day mortality
- Heparin benefit –extensive thrombosis evidenced by sepsis induced coagulopathy



► LMWH

- Reduced hypercoagulability
- Inhibited IL-6 release by counteracting IL-6 biological activilty blocking the cytokine storm
- Hypercoagulability predispose to PE

Cardiac Disease

- Troponin levels ProBNP (prior cardiac disease) -outcome
- Risk 35.5% with cardiovascular disease & HPT , Cardiomyopathy with increase Troponin levels -52% mortality



CARDIO-VASCULAR DISEASE	TROPONIN -T	% PERCENTAGE
NO CVD	Normal TNT levels	7.62%
CVD	Normal TNT	13.33%
NO CVD	Increase TNT	37.50%
CVD	Increase TNT	69.44%

Patient with CVD –Myocardial injury –increase TNT ,high CRP ,Increase TNT,Increase mortality rates with /without use of ACE inhibitors 36.8% and 25.6%

Awareness & Education





Multiple training modules have been developed to ensure that employees understand how to adapt to new working environment

Medical Facilities Screening Procedures















Medical Care Readiness









Impala Covid -19 Examination Rooms : Current





Triage area Stage 4 C





Male High Care Isolation





Layout of Medical Facility







DMR Visit









Questions