



RIGHT TO CARE
COVID-19 DATA ANALYSIS AND ADVICE GROUP

TECHNICAL ADVICE DOCUMENT DISASTER MEDICINE:

HOSPITAL PREPARATION ACTION PLAN 2

(THESE ACTION PLANS WILL BE RELEASED AS SEQUENTIAL NUMBERED ACTION PLANS TO BE USED BY HOSPITAL TO PREPARE FOR THE COVID-19)

The Actions Plans are presented as a free service to hospitals by the panel and by Right to Care

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DISASTER MEDICINE CONSULTANCY PANEL

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2 ACTION PLAN 2

Based on the Disaster Medicine literature and personal experience the following action plan is recommended for hospitals AT THIS STAGE by the Consultancy Panel while preparing for the Pandemic.

This technical advice document must be read in conjunction with the Plan to Manage COVID-19: Spatial Response Strategy for the Epidemic (Republic of South Africa, 2020).

2.1 PHASED APPROACH

It is recommended that each hospital follow a phased response determined by:

- Epidemiological analysis and surveillance
- Bed occupancy monitoring

It is however essential for the hospital to do a comprehensive planning for the massive impact the pandemic may have. The **activation** of the plans are, however, phased as required. It must be emphasised that each step has a lead time and the next step must therefore be activated timeously to ensure readiness when required.

The activation of facilities is then done in line with guidance/instructions received from higher authorities (Head Office or similar authority):

- **Current hospital beds** available, as soon as these beds reach an occupation rate necessitating action or as instructed, decanting of patients is activated.
- **Decanting patients** by discharging patients suitable for discharge and transferring patients to lower level of care or temporary facilities. If this action does not free adequate beds, the surge capacity is activated.
- Activating the **surge capacity** means that space **WITHIN THE COMPLEX** not currently in use for patient accommodation is opened up and put to use. These facilities are often not as well equipped as standard hospital wards and can therefore be best utilised for the low dependency patient care. Often patients are decanted from the wards into the surge facilities. As soon as surge capacity is not providing adequate number of beds the need arises to deploy temporary additional facilities
- **Temporary facilities.** If possible, temporary facilities should be deployed on the site of the current hospital to provide additional beds. It is recommended that these facilities are placed on the hospital grounds or direct vicinity, to ensure that the hospital support structures such as kitchen, radiology, laboratory etc can be utilised.

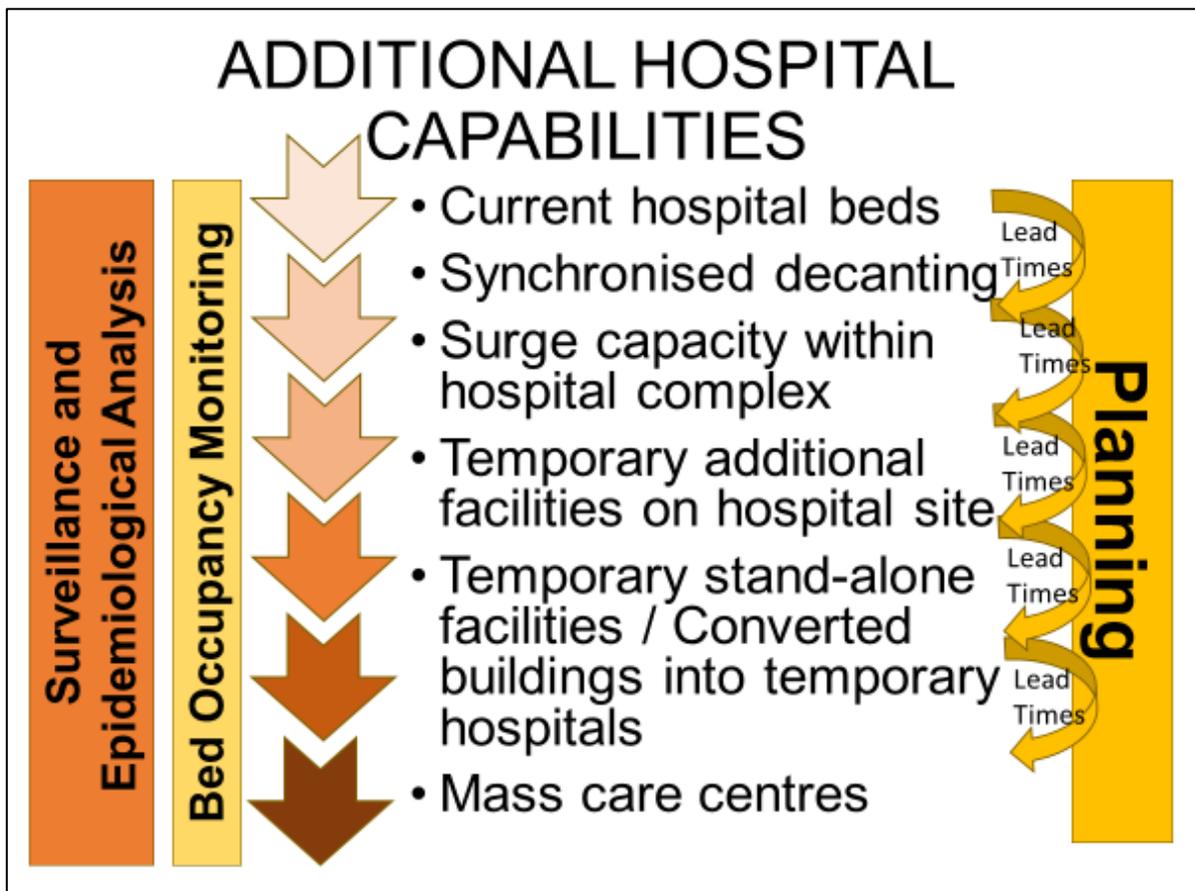


Figure 1: Phased Response

2.2 ISOLATION AREA CURRENT BEDS

This information must be read in collaboration with the NICD Facility Readiness Checklist (NICD, 2020)

Plan which wards/areas will be used for COVID-19 patients. Ensure that the identified areas can be reached from the screening and triage area without contaminating the rest of the facilities.

These Zones must be clearly defined, demarcated and marked.

	Green Area	Yellow Area	Red Area
Function	Negative patients and support to Red Area	Transit Area	Positive COVID- 19
Staffing	Normal staffing	Dedicated Staff	Dedicated staff
PPE	Surgical Masks when indicated	Apron and N-95 mask	Full PPE as below

2.2.1 RED ISOLATION AREA

- All the Intensive Care Units, High Care Units and wards that are earmarked for the initial reception of COVID-19 patients are classified as the **RED ISOLATION AREA**. PPE must be worn in the total Red Area.
- This area must be clearly marked RED ISOLATION AREA.
- Access and egress must be strictly controlled. Security must be implemented to prevent unauthorised persons entering this area.
- As the situation escalates, the Red Area may need to be enlarged to accommodate the needs.
- Persons who move between units such as doctors etc are to be managed as high-risk contacts
- No utensils leave the Red Area except if it is fully decontaminated.

2.2.2 YELLOW TRANSIT AREA

- The Red Area is separated from the rest of the complex by a **YELLOW TRANSIT AREA**. All staff and items going into the Red Area are in transit through the yellow area and PPE checked. All items and staff coming out of the Red Area are decontaminated in the Yellow Area. If all the areas cannot be reached from a single yellow area, more than one Yellow Area may be established for decontamination.

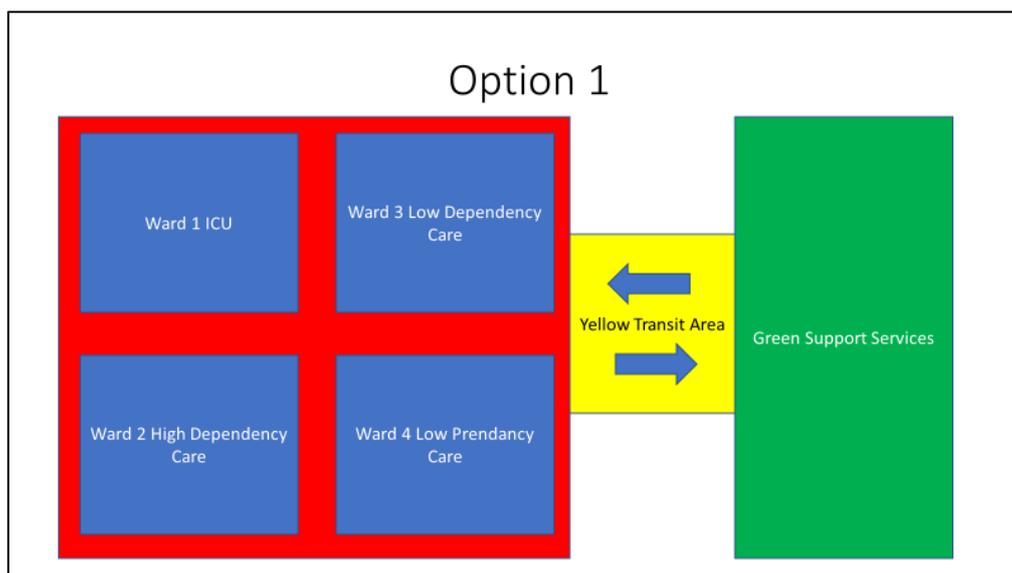


Figure 2: Layout Option 1

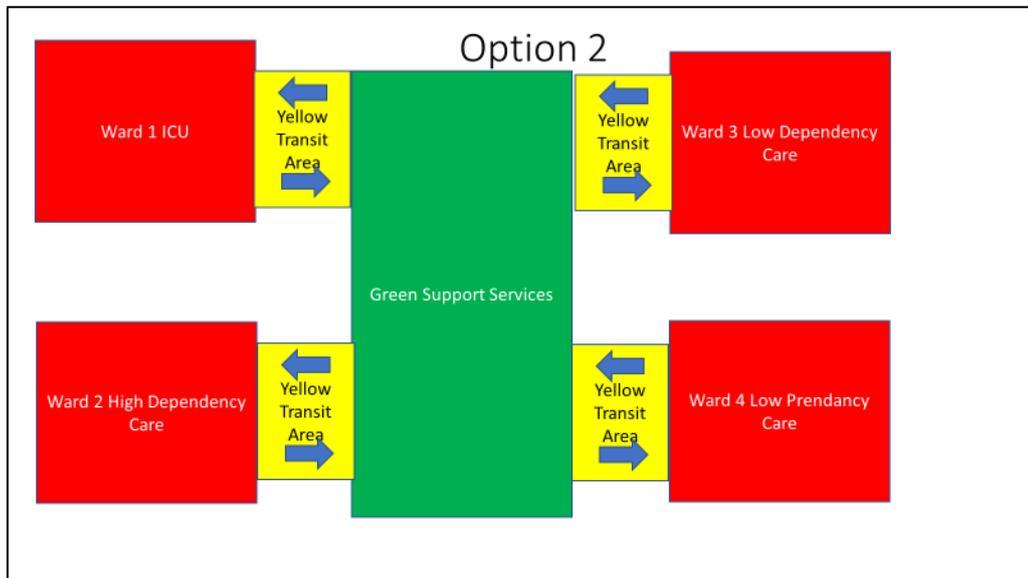


Figure 3: Layout Option 2

- No direct contact between the Red Isolation Area(s) and the Green Support Areas (rest of hospital).
- All equipment/meals/medicine flow from green to staff member(s) in Yellow Transit Area and from them to staff in Red Isolation Area.
- All items leaving Red Isolation Area is washed down/sprayed with Hypochlorite in Red Isolation area and then AGAIN washed down/sprayed with Hypochlorite in yellow area.
- All staff wash hands in Red area and then decontaminate in Yellow area and move to Green area (see detail below).

2.2.3 GREEN SAFE SUPPORT AREA

- The support services to the Red Area are a **GREEN SAFE SUPPORT AREA**. This includes kitchens, pharmacy and staff rest areas (Ligthelm, 2014).

The detail of this area layout system and flow in and out can be found in the manual: High Security Bio-Safety Isolation that can be downloaded from the website www.crisismedicine.co.za . Although this manual was primarily written for the Viral Haemorrhagic Fevers, the concept of the area layout and flow is identical.

Movement of staff across areas must be prohibited

2.3 TREATMENT REQUIREMENTS

This information must be read in conjunction with the Clinical Management Guidelines (NICD, 2020)

Based on the experience from the countries in the Northern Hemisphere it can deduced that:

- **5%** of the patient will be **CRITICAL**, requiring ICU-level care. $\pm 80\%$ of these patients will require ventilation.

- Plan for ventilation of patients. Plan for Ventilation Triage in line with NDOH Guidelines¹.
- If the hospital does not have ventilation capabilities, plan for emergency bag-valve-masks or emergency ventilators for the transport of patients to higher level facilities. Keep in mind that ambulance services may be overburdened forcing hospitals to make ad hoc arrangements with non-ideal ambulance transport.
- Support in establishing temporary ICU facilities will be addressed in a later Action Plan document.
- **15%** of the patients will be **SERIOUS** and require hospital-ward level of care (**high dependency care**) mostly:
 - All requiring oxygen administration at polymask level.
 - Require care including being nursed in the Fowlers position. It is therefore essential to plan to place the patients in Fowlers position utilising different options for support.
 - Estimated 15% of these patients will deteriorate and will then require ICU care.
 - Plan for pneumonia-level care. Beware of under-treatment.
 - High percentage-mask oxygen administration.
 - Infusion needs.
 - Fowlers bed positions.
 - Saturation monitoring is critical.
- **80%** of the patients will have **MILD** symptoms. 85% of these patients will be able to recover with home care **BUT 15% of this group** will deteriorate and require hospitalisation. This may be **low dependency care** but can deteriorate to higher levels of care.
 - Planning should be done for low dependency care, ideally in surge facilities.
 - Planning for providing oxygen in these low dependency areas must be done. This may require cylinder supply necessitating logistical lines for cylinders and regulators.
 - Plan for moving cylinders into areas and to secure cylinders in upright safe positions.
 - Plan to collect empty cylinders and a logistical process to refill.
 - Use of oxygen concentrators to provide low-flow oxygen is recommended to relieve the pressure on cylinders.
- Patients will require radiological investigations, so planning for x-ray examination of patients needs to be done. This may include mobile x-ray units within the Red Area or the coordinated movement of patients to a designated area within the x-ray department. Block times within the x-ray department followed by deep cleaning was used with success in other hospitals.
- Areas/facilities for palliative care may be required. Planning for this level of care should be done- possibly utilising facilities outside the hospital itself.

3 PERSONAL PROTECTION EQUIPMENT

As the mode of transmission is aerosol transmission, personal protective equipment (PPE) must therefore be focussed on this mode of transmission. The risk of airborne transmission is not yet confirmed.

This information must be read in conjunction with the Guidelines for Infection Control and Prevention for COVID-19 patients.

Utilise the WHO Essential Supplies Forecasting Tool to determine needs.

¹ These Guidelines and Algorithm have been approved and will be released in the next days. It provides guidelines for Ventilator Triage.

The COVID-19 Infection Prevention and Control Guidelines for South Africa from the National Department of Health provides clear guidelines on the doffing and donning of PPE for COVID-19 patient care (National Dept of Health, 2020):

TYPE OF PPE	CLINICAL STAFF (nurses, doctors, EMS) Providing direct care to COVID-19 patients or patients with respiratory symptoms	NON-CLINICAL STAFF (admin staff, catering staff) coming into distant contact with COVID-19 patients and contaminated surfaces	NON-CLINICAL STAFF (cleaners) coming into distant contact with COVID-19 patients and contaminated surfaces	PATIENTS with RESPIRATORY symptoms	PATIENTS without RESPIRATORY symptoms
Gloves	Non-sterile gloves. Change between patients	Non-sterile gloves. Change when leaving COVID-19 area	Reusable long rubber utility cleaning gloves (ideally up to elbow) Change after completed cleaning contaminated area	None	None
Face cover	Surgical Mask for general care of COVID-19 patients N95 respirator for aerosol generating procedures on COVID-19 suspects/cases	Surgical mask when within <1m of a patient with respiratory symptoms (one per shift, if integrity maintained)	Surgical mask when within <1m of a patient with respiratory symptoms	Surgical mask worn when in contact with others	None
Aprons	Change when visibly contaminated. Discard after aerosol-generating procedure	Change when leaving COVID-19 area	After each work session (in absence of clinical contact)	None	None
Face shields, or visors, or goggles, or any other eye covers	Wash clean, disinfect and reuse	None	Wash clean, disinfect and reuse	None	None

Figure 4: Appropriate PPE use (National Dept of Health, 2020)

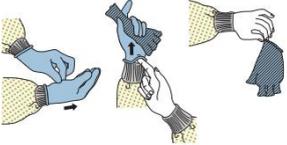
SEQUENCE FOR PUTTING ON PERSONAL PROTECTIVE EQUIPMENT (DONNING)	SEQUENCE FOR TAKING OFF PERSONAL PROTECTIVE EQUIPMENT (DOFFING)
<p>Wash your hands before putting on the PPE. PPE should be put on in an order that minimises contamination. The apron, mask, goggles and gloves must be put on in that order. See guidance on each below.</p>	<p>Wash your hands before taking off the PPE. PPE should be removed in an order that minimises contamination. The gloves, apron, goggles/visor, and mask must be removed in that order.* Wash your hands after taking off the PPE. Discard PPE in infectious waste container. See guidance below.</p>
<p>Apron</p> <ul style="list-style-type: none"> • Wash hands • Slip it over the head and tie the stings behind the back 	<p>Gloves</p> <ul style="list-style-type: none"> • Securely grasp the outside of glove with the opposite gloved hand; peel off; discard as infectious waste • Slide the fingers of the un-gloved hand under the remaining glove at the wrist; peel off; discard as infectious waste 
<p>Mask or N95 Respirator</p> <ul style="list-style-type: none"> • Secure each tie or elastic at the middle of head and neck • Fit flexible band to nose bridge • Fit snug to face and below chin • Fit-check respirator by blowing into it (air should not leak out) 	<p>Apron or Gown* (See Note)</p> <ul style="list-style-type: none"> • Wash hands • Unfasten or break apron/gown ties • Pull the apron away from the neck and shoulders, touching the inside of the apron only and bring it forward and over the head • Turn the apron inside out, fold or roll into a bundle and discard as infectious waste 
<p>Goggles or Visor</p> <ul style="list-style-type: none"> • Place over face and eyes • Adjust band to fit comfortably 	<p>Goggles or Visor* (See Note)</p> <ul style="list-style-type: none"> • Remove goggles/visor from the back by lifting head band or earpieces • Place in designated receptacle for disinfection. 
<p>Gloves</p> <ul style="list-style-type: none"> • Hold the edge of the glove as you pull it over your hand • Extend to cover wrist • Once gloved, do not touch other surfaces 	<p>Mask or N95 Respirator</p> <ul style="list-style-type: none"> • Untie or break bottom ties, followed by top ties or elastic. • Remove by handling the ties only and discard as infectious waste. • Wash hands 
<p>*Note. When it is practically difficult to remove the apron/gown before the visor/goggles, then the visor/goggles may be removed before the apron/gown.</p>	

Figure 5: Doffing and Donning of PPE (National Dept of Health, 2020)

- Plan for the PPE requirements based on the Guideline recommendations.
- Plan for the washing and disinfecting of facial shields and eye protection if non-disposable items are used.
- Experience indicates that staff need to be rotated out of isolation areas (depending on workload) every 4 hours, requiring decontamination and then new sets of PPE.

This action plan will be followed by a sequentially numbered Action Plan continuing the preparation

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5 LINKS

The following links are available for use:

<p>NICD: Clinical Management Guidelines</p>		<p>https://www.nicd.ac.za/wp-content/uploads/2020/03/Clinical-management-of-suspected-or-acute-COVID-19-Version-3.pdf</p>
<p>WHO: Clinical Management Guidelines</p>		<p>WHO/2019-nCoV/clinical/2020.4</p>
<p>WHO Covid-19 Essential Supplies Forecasting Tool</p>		<p>https://www.who.int/emergencies/diseases/novel-coronavirus-2019/technical-guidance/patient-management</p>

COVID-19 HOSPITAL PREPARATION CHECK-LIST FOR PREPARATION THIS FAR

Ser No	Action	Date Completed
1.	Training completed in triage Sieve and Sort and posters are printed and available for use.	
2.	Triage tags are available and support the Triage process	
3.	Posters for doffing and donning PPE from the NDOH Guidelines are printed and available	
4.	Screening, testing and triage facility was planned, and equipment is available	
5.	Surge capacity of the facility is calculated and recorded indicating: <ul style="list-style-type: none"> • Additional space for ICU/ventilation capabilities • Additional patient care space for high dependency care • Additional patient care space for low dependency care 	
6.	Bed repairs / additional sources to provide beds to surge capacity in place	
7.	All available ventilators were identified and process to service the unserviceable ventilators is in place	
8.	Oxygen cylinders and regulators are checked and serviced	
9.	Supply line for oxygen cylinders refills were reviewed and checked, supplier can shorten turn-around time if required	