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FACING COVID-19: MANAGEMENT SUGGESTIONS
HUMANITAS RESEARCH HOSPITAL

- Follow experts guidelines
- Communicate to all employees
- Create check points, reduce flows and interactions
- Separate patient flows…
- …Find dedicated areas in the hospital for positive patients
- Close low priority activities to release critical resources
- Manage PPE centrally and evaluate technology
- Look ahead at least 1 week…
- …but adapt solutions daily

Released on 16/03/2020 – edited by Riccardo Bui (COO Humanitas Research Hospital) and Elena Azzolini (Medical Officer deputy, Humanitas Research Hospital)
## FACING COVID-19: MANAGEMENT SUGGESTIONS
### HUMANITAS RESEARCH HOSPITAL

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*Released on 16/03/2020 – edited by Riccardo Bui (COO) and Elena Azzolini (Medical Officer deputy) – Humanitas Research Hospital*
Increase of positive patients is exponential (not linear), look ahead and plan your escalation plan (how many more ICU beds in the next week?)

Situations change quickly! Use the crisis team to test the escalation plan, share information and adapt solutions.

Set up “check points” at the entrance to evaluate the condition of visitors and incoming patients. If symptoms are present, decide if they need to go home or to the ER. Minimize “social” contact inside the hospital: no visitors inside wards and outpatient areas, close shops and restaurants.

Set up an official internal communication service for all employees to share news, decisions and changes regarding the hospital. A few internal releases per day could help to reinforce guidelines, awareness and sense of community.

Follow official guidelines to protect your staff and your patients. Link below:

1. CLINICIANS, NURSES, MANAGERS: WORK TOGETHER!

Set up a Crisis Team with very clear responsibilities. Involve ER, ICU, Internal Medicine, Procurement and Operations, led by the Medical Director. Organize at least one meeting per day.

- **Establish a core team**
  It should include members of the hospital management, chief operating officer, human resources, facility management, communication, supply chain, medical and nurse representatives.

- **Establish key contact points**
  
  **Internal Contact Points**: It should include member of Administration, Public Relations, Human Resources, Nurse and Physicians, Security, Pharmacy, Biosafety officer, Infection Control, ICU, Emergency Room, Infectious Diseases and Pneumology, Building Management, Laboratory, Cleaning and waste management and Hospital Morgue.

  **External Contact Points**: It should include local, regional, national and international contacts, for suppliers, case notification, management of cases, other hospitals, local authorities and so on.
2. SEPARATE PATIENT FLOWS…

Create two ERs, one for respiratory patients (potentially positive patients) and one for other patients. Set up a pre-triage outside. Treat potentially positive patients in dedicated areas (i.e. green code could be treated in a special tent outside the ER), use different CT and XR and minimize crossed pathways.

3. …AND FIND DEDICATED AREAS IN THE HOSPITAL FOR POSITIVE PATIENTS

Try to define dedicated wards and ICU for positive patients, better if in negative pressure. It will optimize the workload of skilled people and personal protection equipment (PPE) consumption.

Hospital reengineering
Symptomatic patient flow start from the ER, so ER is the first area that need a re-design.
Separate suspected/confirmed cases from the other patients.
Define isolated patients route in the hospital (eg from ER to wards, from wards to radiology, from ward to operating rooms, etc).

Dedicated areas
Allocate areas for spatially separating patients with respiratory symptoms both in emergency rooms and in hospital ward. Ideally patients would be 2 mt apart each other.
Before of any choices, keep in mind next areas you would assigned to positive patients: escalation plan must be considered in terms of pathways.
Try to change air flows inside the dedicated areas, putting on negative pressure.
4. CLOSE LOW PRIORITY ACTIVITIES TO RELEASE CRITICAL RESOURCES

Critical services will have to be expanded soon: ICU, ER and dedicated wards need skilled people. Dismiss non-critical activities and reallocate staff.

✓ Human capacity
Surge capacity for healthcare workers, mainly: ER, ICU, medical wards, laboratory and cleaning personnel.
Advise employees to check for any signs of illness before reporting to work each day.
Mechanism to monitor staff absences, in particular due to sick leave (create a HR policy) or caring relatives at home (schools could be closed).
Prepare and train staff to be re-allocated. Smart working when feasible should be considered.
To avoid burnout a maximum number of working hours will be ensured (6 hours instead of 8 hours) and a minimum rest times between shifts should be determined.
A psychological support to be addressed if there are problems should be considered.

✓ Prioritisation
Postpone not urgent elective hospitalizations
Shift elective urgent inpatient diagnostic and surgical procedures to outpatient settings, if feasible
Reschedule non-urgent outpatient visits (maintain less than 30%)

✓ Facility capacity
A system to monitor bed occupancy, in particular rooms for isolation, should be in place. Consider the possibility for cohorting patient of the same disease.
Consider the treatment of an increased amount of infectious waste
Consider an increasing number of deceased patients that means increase on materials, fridges and dedicated areas.
Pay close attention to personal protection equipment (PPE) stock and consumption. Manage distribution centrally, fear could lead to inappropriate use of scarce resources. Verify/order new ICU technology (i.e. anesthesia ventilator), due to increasing ICU beds.

✓ **Material capacity**
Procurement is one of the most important criticalities. It is important to strengthen a team to acquire the necessary materials and supplies and to monitor and regularly update, on a daily basis, the inventory.

**Optimize key supplies.** According to our experience event of shortage which could be commonly noticed:
- Personal protective equipment
- Ventilators
- Flow-meter for ventilation therapy
- Nasopharyngeal swab
- Sample processing kit (to test Sars-CoV-2 positivity)
- Alcohol solution for hand hygiene
- Pharmacy (eg. Lopinavir/ritonavir, hydroxychloroquine sulfate tablets, tocilizumab)

Uninterrupted supplies should be ensure also for material for ICU supplies, isolation units, infusion pumps, cleaning and disinfection material, bins for infectious waste

✓ **Laboratory capacity**
An In-house laboratory is preferable. Make available an appropriate amount of reagents and supplies for diagnostic testing. If the hospital has no laboratory capacity, consider that reporting times can last a long time (we have experienced up to 72 hours).
6-7. LOOK AHEAD AT LEAST 1 WEEK... BUT ADAPT SOLUTIONS DAILY

Increase of positive patients is exponential (not linear), look ahead and plan your escalation plan (how many more ICU beds in the next week?)

✓ Facility capacity
Consider a sizable increase of the number of ICU beds, mechanical ventilators (2x), and beds in traditional wards. Consider from 30% to 50% of capacity dedicated to positive patients.

Situation change quickly! Use the crisis team to test the escalation plan, share information and adapt solutions.

✓ Daily monitoring
Monitor and share information about:
• PPE stock and consumption
• Nurses and clinicians training status and health status
• Asset occupancy (ICU, ward, ER, medical equipment)
8. CREATE CHECK POINTS, REDUCE FLOWS AND INTERACTIONS

Set up “check points” at the entrance to evaluate the condition of visitors and incoming patients. If symptoms are present, decide if they need to go home or to the ER. Minimize “social” contact inside the hospital: no visitors inside wards and outpatient areas, close shops and restaurants.

✓ Reduce flows
Explore alternatives to face-to-face visits
Tele-triage system to triage patients before they arrive at the hospital (eg. Text message or phone call)
Quick checks at entry points to the hospital, in particular to the emergency room, triaging of suspected cases.
Second check point provided also by physicians before starting any examination.

✓ Visitors Regulations
All visitors will be required to pass through a screening process before entering facilities.
Non-essential visitors will not be granted access to any facility.
Compassionate exceptions for critical situations can be granted.
Set up video call for positive patients that cannot meet relatives.
Set up a service to deliver personal effects between relatives and patients.
PPE available for visitors at the entrance.
9. COMMUNICATE TO ALL EMPLOYEES

Set up an official internal communication service for all employees to share news, decisions and changes regarding the hospital. A few internal releases per day could help to reinforce guidelines, awareness and sense of community.

✓ Internal communication
Clear communication lines to allow rapid communication to all staff and patients/visitors (e.g. Institutional video on intranet or website)
Set up a daily bulletin by appoint spokesperson/s (e.g. Chief Medical Officer): communicate transparently to hospital staff, healthcare and non-healthcare workers (e.g. data about the outbreak, situation in the hospital, procedures and relative changes, rules for using PPE, preventive and protection measures and any other relevant information)
Personalized messages for different groups: healthcare workers, other staff, patients, visitors, etc.
Increase awareness through key communication people (e.g. Head of Anesthesia, Expert on Lung CT ecc.)

✓ External communication
Communication with the media and the public are checked for consistency and approved before released
Create a network with other hospital to understand outbreak evolution and to share practice.
10. FOLLOW EXPERTS GUIDELINES

Follow official guidelines to protect your staff and your patients. Link below:


Trainung

General and specific training of personnel would be necessary, in particular for:

- Use PPE: which PPE, when and how
- Cleaning procedures for dedicated areas
- Case definitions and notification
- Hand and respiratory hygiene
- Placement and movement of positive patients
- How to use Continuous positive airway pressure machine (nurses training)
- Triage procedures and education
- Treatment education about COVID-19 for physicians and set up multidisciplinary teams