

Carlo Castoro, MD

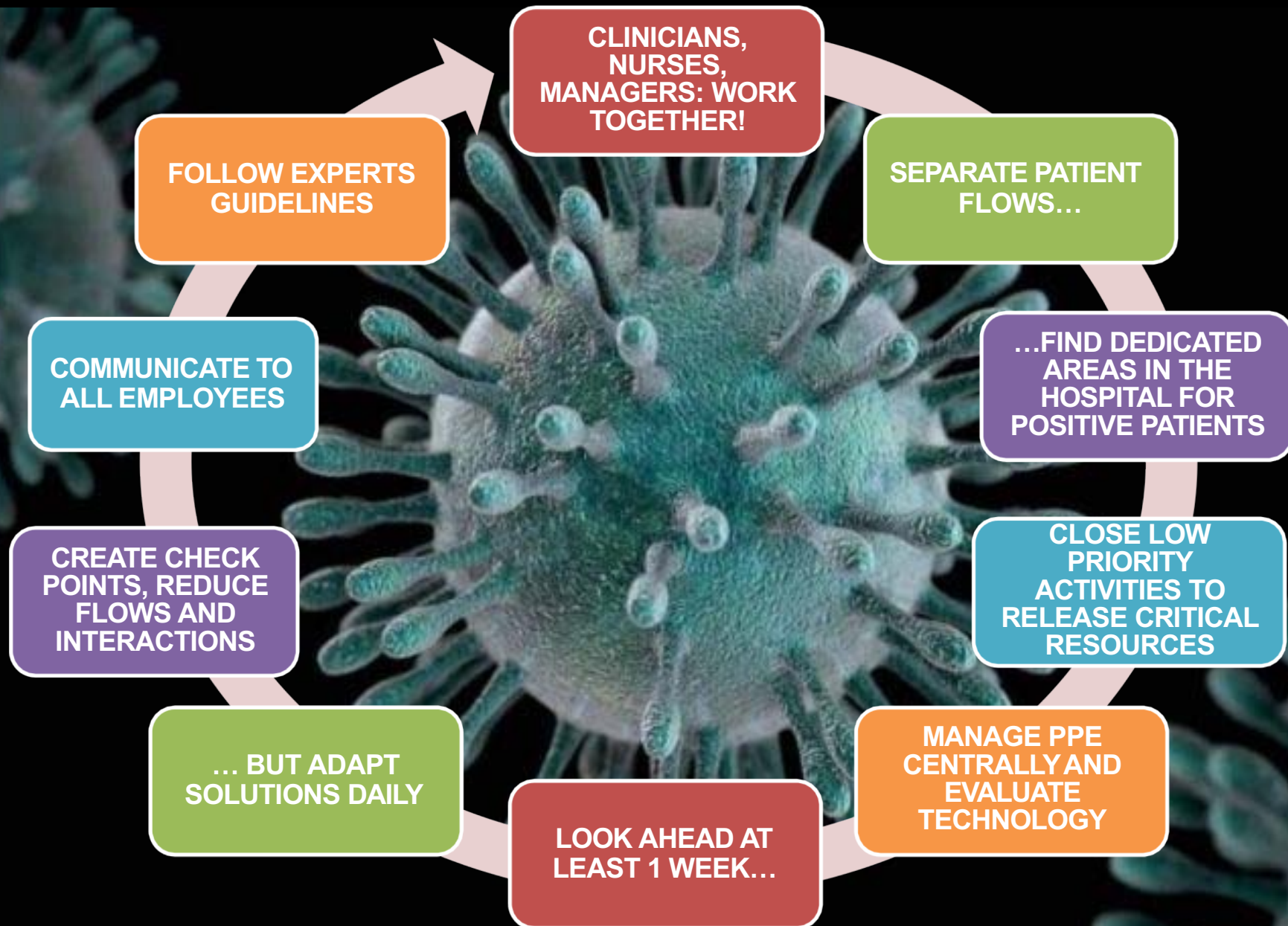
*Professor of Surgery
Head Upper GI Surgery Division
Humanitas University
Rozzano - Milano, Italy*

Antonino Spinelli, MD PhD

*Professor of Surgery
Head Colon and Rectal Surgery Division
Humanitas University
Rozzano - Milano, Italy*

FACING COVID-19: MANAGEMENT SUGGESTIONS

HUMANITAS RESEARCH HOSPITAL



FACING COVID-19: MANAGEMENT SUGGESTIONS

HUMANITAS RESEARCH HOSPITAL

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.

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.

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.

5

**MANAGE PPE
CENTRALLY AND
EVALUATE TECHNOLOGY**

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.

FACING COVID-19: MANAGEMENT SUGGESTIONS

HUMANITAS RESEARCH HOSPITAL

6

LOOK AHEAD AT LEAST 1 WEEK...

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

7

... BUT ADAPT SOLUTIONS DAILY

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

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.

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.

10

FOLLOW EXPERTS GUIDELINES

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

<https://www.uptodate.com/contents/society-guideline-links-coronavirus-disease-2019-covid-19>

1. CLINICIANS, NURSES, MANAGERS: WORK TOGETHER!

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.

2-3. SEPARATE PATIENT FLOWS.....AND FIND DEDICATED AREAS IN THE HOSPITAL FOR POSITIVE PATIENTS

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.

✓ 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).

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.

✓ 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

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.

5. MANAGE PPE CENTRALLY AND EVALUATE TECHNOLOGY

5

MANAGE PPE CENTRALLY AND EVALUATE TECHNOLOGY

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

6

LOOK AHEAD AT LEAST 1 WEEK...

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.

7

... BUT ADAPT SOLUTIONS DAILY

Situations 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

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

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 (eg. 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 (eg. 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

10

FOLLOW EXPERTS GUIDELINES

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

<https://www.uptodate.com/contents/society-guideline-links-coronavirus-disease-2019-covid-19>

https://apps.who.int/iris/bitstream/handle/10665/331215/WHO-2019-nCov-IPCPPE_use-2020.1-eng.pdf

✓ Training

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