Hopitaux Universitaire de Genève (HUG) –
A model hospital for COVID-19 patient management

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COVID-19 patient management at hospital level

- Epidemiology of COVID 19 (April 20)
- Mode of transmission and IPC measures
- Managing at hospital level
- Hospital numbers during the 1st Wave
- Transforming the hospital/life
- Recovery plan
- Recovering and preparing for the 2nd Wave
- Get ready for 5 May 2020
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Global Situation : PANDEMIA

2,245,872 cases
23% cured
210 countries
152,707 deaths

Exponential increase

0-750'000 cases : 106 days
(16.12.19-30.03.19)

750'000 -1'500'000 : 10 days
(30.03.19-09.04.2020)

19, April, 2020, WHO
Europe

19 April 2020:
- **Spain**: 191,726 cases, 20,043 deaths
- **Italy**: 175,925 cases, 23,227 deaths
- **France**: 110,721 cases, 19,294 décès
- **Germany**: 139,897 cases, 4,294 deaths
- **Switzerland**: 27,322 cases, 1,110 deaths

Spain: the epicentre in Europe

Confirmed cases

13 avril 2020, John Hopkins, SIMED (DF, DMA)
Switzerland

19 April 2020
27,322 cases,
1,110 deaths

12,700 cases cured
46% active cases

Geneva: 4371 cases, 160 deaths
Geneva: 4371 cases, 160 deaths

Number of COVID-19 patients hospitalized at HUG
Geneva: 4371 cases, 160 deaths

Cumulative deaths COVID-19 patients

- Deaths in hospital
- Deaths in Long Term Care / At home

10-12 days

Deaths in LTCFs or at home

13 avril 2020, DGS Genève
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Has the WHO changed it’s guidance on mode of transmission?

• No!

• We are still recommending **droplet/contact** precautions, alongside standard precautions

• Airborne precautions – for aerosol generating procedures (FFP2, but no “negative air pressure”)
Mode of transmission – what is known to date

Primary modes of transmission of COVID-19:

• **Droplet:** Respiratory droplets (particles >5-10 μm in diameter) are generated when an infected person coughs or sneezes. Any person who is in close contact (within 1 m) with someone who has respiratory symptoms (coughing, sneezing) is at risk of having his/her mucosae (mouth and nose) or conjunctiva (eyes) exposed to potentially infective respiratory droplets.

• **Contact:** direct contact with infected people and indirect contact with surfaces in the immediate environment of or with objects used on the infected person (e.g., stethoscope or thermometer) (droplets may land on surfaces where the virus could remain viable).

- Ran L, et al. CID 2020
- Moriarty LF, et al. MMWR 2020
- Jefferson T, et al. Medrix 2020
Mainly limited to circumstances and settings in which aerosol generating procedures (AGPs): tracheal intubation, non-invasive ventilation, tracheotomy, cardiopulmonary resuscitation, manual ventilation before intubation, bronchoscopy

Detection of COVID-19 RNA in air samples
• Contact and droplet precautions for all patients with suspected or confirmed COVID-19.

• Airborne precautions are recommended only in circumstances and settings in which AGPs and support treatment are performed (i.e. open suctioning of respiratory tract, intubation, bronchoscopy, cardiopulmonary resuscitation).

• All patients with respiratory illness should be in a single room, or minimum 1m away from other patients when waiting for a room

• Team of HCW dedicated to care exclusively for suspected patients

• HCW to wear PPE: medical mask, goggles/face shield, gown, gloves

• Hand hygiene should be done any time the WHO “5 Moments” apply, and before PPE and after removing PPE
Contact precautions

- Single room
- Hand hygiene
  - according to the “5 Moments”, in particular before and after contact with the patient and after removing PPE
  - Avoiding touching eyes, nose or mouth with contaminated gloved or ungloved hands.
- PPE: gown + gloves

Other measures:
- Equipment; cleaning, disinfection, and sterilization
- Environmental cleaning
  - Avoiding contaminating surfaces not involved with direct patient care (e.g., doorknobs, light switches, mobile phones)
Droplet precautions

Hand hygiene
- According to the “5 Moments”, in particular before and after contact with the patient and after removing PPE
- Avoiding touching eyes, nose or mouth with contaminated gloved or ungloved hands.

Single room
- If single rooms are not available, separating patients from others by at least 1m

PPE
- Medical mask
- Eye protection (goggles or face shield)

Limit movement: Patient to stay in the room
- If transport/movement is required, require the patient using a medical mask and use predetermined transport routes to minimize exposure for staff, other patients and visitors.
COVID-19 Precautions

Contact/Droplet with option for Airborne (N95) for AGP
HOW TO GUIDE - PUTTING ON PPE FOR CONTACT/DRIPLET PRECAUTIONS

1. Perform hand hygiene
   - Alcohol based handrub: Rub hands for 20–30 seconds.
   - Water and soap: Wash hands for 40–60 seconds.

2. Put on the gown
   - Medical mask.

3. Put on the mask
   - Ensure glove is placed over the cuff of the gown.

4. Put on eye protection
   - Put on goggles or face shield.

5. Full PPE

HOW TO GUIDE - TAKING OFF PPE FOR CONTACT/DRIPLET PRECAUTIONS

1. Remove gloves
2. Ensure gown is taken off in a manner in which it does not spread anything off of the gown.

3. Perform hand hygiene
   - Alcohol based handrub: Rub hands for 20–30 seconds.
   - Water and soap: Wash hands for 40–60 seconds.

4. Remove eye protection
   - Remove goggles or face shield.

5. Remove the mask
6. Perform hand hygiene
How to use a medical mask

• Ensure **hand hygiene** is performed before putting on the mask
• Place the mask carefully, ensuring it **covers the mouth and nose**, and tie it securely to minimize any gaps between the face and the mask.

• **Avoid touching** the mask while wearing it. Replace masks as soon as they become damp with a new clean, dry mask.

• **Remove the mask** using the appropriate technique: do not touch the front of the mask but untie it from behind or from the straps
• After removal or whenever a used mask is inadvertently touched, **clean hands** using an alcohol-based hand rub or soap and water if hands are visibly dirty.

• **Do not re-use** single-use masks, unless indicated
• **Discard single-use masks** after each use and dispose of them immediately upon removal
Airborne: N95 Mask Fitting
Do a seal check before you enter the room!

5A Positive seal check
- Exhale sharply. A positive pressure inside the respirator = no leakage. If leakage, adjust position and/or tension straps. Retest the seal.
- Repeat the steps until respirator is sealed properly.

5B Negative seal check
- Inhale deeply. If no leakage, negative pressure will make respirator cling to your face.
- Leakage will result in loss of negative pressure in the respirator due to air entering through gaps in the seal.
This is a guide for healthcare workers involved in patient care activities in a healthcare setting. It aims to show the type of personal protective equipment (PPE) needed to correctly protect oneself. Based on the current available evidence, the WHO recommended PPE for the care of COVID patients are CONTACT and DROPLET precautions, with the exception of aerosol producing procedures, which require CONTACT and AIRBORNE (hence, a respirator mask such as N95, FFP2, FFP3). Keeping in mind, PPE is part of a larger infection prevention and control bundle of measures and should be implemented as part of a multimodal strategy of management of COVID-19 patients. Only clinical staff who are trained and competent in the use of PPE should be allowed to enter the patient's room.

• COVID How to put on and remove PPE for COVID-19 Droplet/contact precautions
  https://openwho.org/courses/IPC-PPE-EN
• COVID AGP: How to put on and remove PPE for COVID-19 Airborne/contact precautions for aerosol generating procedures
  https://openwho.org/courses/IPC-PPE-EN/items/6o69URMlg5sManZMkdaMQD
• How to guide: poster version
  https://openwho.org/courses/IPC-PPE-EN/items/3aIpyT8H8qa0pj1IdPtzKX
COVID-19 patient management at hospital level

• Epidemiology of COVID 19 (April 20)
• Mode of transmission and IPC measures
• Managing at hospital level
• Hospital numbers during the 1\textsuperscript{st} Wave
• Transforming the hospital/life
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• Recovering and preparing for the 2\textsuperscript{nd} Wave
• Get ready for 5 May 2020
1/ How to manage COVID at hospital level
2/ Update and redeployment of HUG activities
Bienvenue à HUG ! / Welcome to HUG
(>2000 beds)
What has changed at HUG since 27.2.2020 (1\textsuperscript{st} patient COVID)

- Redeployment of activities
- Changes of schedules
- Resource sharing (doctors, nurses and caregivers)
- Mix of specialties and professional cultures
- Accelerated training
- Rapid development of care guidelines and protocols
- Collaboration with outside networks
- Telemedicine consults
- Research projects
What has changed at HUG since 27.2.2020

Dep of Medicine and Primary/Ambulatory care
• Setting up the tent and a new dedicated sector (E) (COVID test sector and quick sorting / consultation)
• Development of telemedicine consults
• Covicare
• Patient Monitoring Program
Our COVID screening tent – Entrance
Testing zone: triage
COVID screening tent – Triage
(Circuits for ambulatory / patients / HCWs)
Testing zone staffed by nurses and specifically trained medical students
What has changed at HUG since 27.2.2020

Department of Internal Medicine

- Deployment of COVID beds
  (all Gustave-Julliard, from 130 beds to 324 beds)
- Staffing and corresponding planning
- Increase in the number of protected zones
- Training and integration of doctors from other specialties,
  change of activity of caregivers
- Development of step-down units in collaboration with
  anesthesia
Recommandations institutionnelles HUG COVID-19

Le groupe guidelines COVID est mandaté par la Direction Médicale et Cellule Institutionnelle COVID

Objectif
Emettre et coordonner des recommandations internes HUG pour la prise en charge des patients dans le cadre de l'épidémie COVID-19

Groupe guidelines COVID

Contact
Thomas Agoritsas, Angèle Gayet-Ageron, Marie-Céline Zanella Terrier, Franck Schneider

1. Vue d'ensemble et identification des cas COVID-19
2. Stratégie d'orientation des patients
3. Prise en charge et Département de Médecine Aiguë (Services des Urgences, d'Anesthésiologie et des Soins Intensifs Adultes)
4. Prise en charge intra-hospitalière
5. Considérations liées aux médicaments
6. Prise en charge ambulatoire des patients suspects ou confirmés COVID-19
7. Documents relatifs au décès des patients COVID-19
8. Applications

1. Vue d'ensemble et identification des cas COVID-19
Step-down unit/wards (Soins intermédiaires)

Co-Management: Depts of Internal Medicine and Anesthesia
Step-down unit/wards (Soins intermédiaires)

- Creation of 40 additional beds – intermediate care
- 8x5 in « STERN building »
- Opening 6FL Monday 30/3, 6EL et 6DL on 3/04/2020, 6CL on 8/04
- Capacity: 52 beds; COVID and 8 non-COVID + 8 beds neuro
What has changed at HUG since 27.2.2020

**Dep of Internal Medicine Specialists:**
- Cessation of elective consultations
- Reduction in intervention activity outside specialized emergency sectors (STEMI and NSTEMI) and transfer of non-COVID patients to private clinics in Canton Geneva
- Drastic reduction in hospitalizations, limited to the most complex situations
Step-down unit/wards
(Soins intermédiaires)

Co-Management: Depts of Internal Medicine and Anesthesia
Turning one of the hospital building (600 beds) into a COVID hospital
Turning one of the hospital building (600 beds) into a COVID hospital
What has changed at HUG since 27.2.2020

Department of Acute Medicine/Emergency

• Emergency wards:
  Creation of 2 sectors (COVID et non-COVID)
  Management of the most severe emergencies (diversion of the flow of emergencies to clinics)

• Step-down units:
  Cf. supra, collaboration active avec le DMED

• Availability of the recovery room and SINPI

• Provision of doctors and nurses / anesthetists for ICU

• Intensive care: from 30 beds to 110 beds

• Available OPERA zone rehabilitation + SINPI use and recovery room + Julliard block + OPERA block reservation
Intensive care (ICU) before the COVID-19 epidemic
10 March 2020

30 dedicated beds but 40 spaces

18 lits

12 lits
Getting prepared: specific entrance for direct admission to ICU
OPEN – BAY

COVID-ICU
What has changed at HUG since 27.2.2020

Intensive Care

![Bar chart showing the number of patients in Intensive Care from 28.03.2020 to 08.04.2020. The chart indicates the number of COVID+ patients who are extubated, non-intubated, and intubated.](image)
COVID patient Step-downs and ICU rooms
Open zone getting prepared for ICU patients
(usually part of the PACU - will be used later on as ICU)
What has changed at HUG since 27.2.2020

Dep of Geriatrics

• 3-Chêne » (300 beds):
  Gradual opening of 166 COVID beds for elderly patients without planned intensification of the level of care
  163 patients from 13.03.2020 to 03.04.2020
  Returned home 14%
  Rehabilitation (Loëx-Jolimont) 11%
  Deaths 24% (39)

• Loëx » (110 beds): Received COVID patients in 4 units (106 beds)
  Palliative care: intensification of support by mobile palliative care units on “CR” and “3-Chêne”
What has changed at HUG since 27.2.2020

Dep of Diagnostics Facilities/Laboratories

Intense increase in activity from the virology laboratory
Over 5000 COVID RT-PCR tests performed to date

Introduction of serodiagnosis and start of the seroprevalence study

Support by all DDIAG services, in particular imaging (COVID patients on the imaging platform)
What has changed at HUG since 27.2.2020

Dep of Oncology services

Adaptations made to all activities

Continuation of treatments, including adaptation of protocols

Teleconsultations

Patient protection (7th floor, oncology and haemetoncology)
What has changed at HUG since 27.2.2020

Depts of Neurology and Neurosurgery

Redeployment of care units (2AL and 3AL)
Provision of 8 intermediate care beds at 2EL +

Stopping elective surgery and redeploying elective-urgent surgery (<3 months) in clinics

Continuation of the stroke and interventional neuro (DDIAG) sector, but unexplained decrease
What has changed at HUG since 27.2.2020

Department of Surgery

Elective surgery stopped

All wards availability for Internal Medicine

Activity reduced to 25% (approx. 100 interventions per week, 50% at HUG in the 4 rooms of BOCHA still open, 50% in clinics)

HUG activity and clinics regulated by a multi-stakeholder committee
What has changed at HUG since 27.2.2020

DFEA

Reduced activity according to the rules (electives, consultations)

Decrease in emergency room attendance

Loan of resources to other services
Dept of Internal Medicine:
Doctors on loan from other departments, n total = 91

MERCI!
What has changed at HUG since 27.2.2020

**Dep of Psychiatry**

*Creation of the CoviPSY program:*
- detection of employees with psychological overload and prevention of PTSD

*Psychologists available to care units at various sites*

*Hotline Permanence (psychiatrists) with meetings by appointment*
Massive support

*Infection Prevention and Control (IPC) dep*
On all fronts….

*All modes of support for all sectors*
Dep of Exploitation (oxygen), stretcher
Operative management support: flow and data
…
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HUG activities
and HUG in numbers during COVID19 first wave
HUG - TABLEAU DE BORD DIRECTION DES OPERATIONS
lundi 20 avril 2020 7h

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<th>COVID+</th>
<th>Scénarios</th>
<th>Autres patients</th>
<th>Total patients</th>
<th>Lits libres</th>
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Nombre de patients COVID+ / COVID? en lien avec la capacité hospitalière

Cumul des patients COVID déclarés [COVID+ / COVID?]
### HUG - TABLEAU DE BORD DIRECTION DES OPERATIONS

<table>
<thead>
<tr>
<th>SOINS (Unités bleu inactive)</th>
<th>Capacité COVID</th>
<th>Patients</th>
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**HUG**

3x daily dashboard

- Regular wards
  - Int Med
  - Geriatrics
  - Psychiatry
  - LTC beds
## Step-down wards

<table>
<thead>
<tr>
<th>Capacité COVID</th>
<th>Patients</th>
<th>Lits bloqués</th>
<th>Taux occupation</th>
<th>Taux occupation (y.c. Lits bloqués)</th>
<th>Places disponibles</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>COVID+</td>
<td>Suspicion</td>
<td>Autres patients</td>
<td>Total patients</td>
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## ICU wards

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<th>Patients</th>
<th>Lits bloqués</th>
<th>Taux occupation</th>
<th>Taux occupation (y.c. Lits bloqués)</th>
<th>Places disponibles</th>
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<td>Suspicion</td>
<td>Autres patients</td>
<td>Total patients</td>
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## Non-COVID wards

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<th>Capacité COVID</th>
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<th>Lits bloqués</th>
<th>Taux occupation</th>
<th>Taux occupation (y.c. Lits bloqués)</th>
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<td>Suspicion</td>
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<td>Total patients</td>
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<th>TOTAL COVID (aujourd'hui)</th>
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<td>Total COVID+ bed occupied</td>
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<tr>
<td>COVID bed capacity</td>
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<tr>
<td>COVID bed occupancy rates</td>
<td>49</td>
<td>43</td>
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<tr>
<td>COVID beds available</td>
<td>48</td>
<td>628</td>
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**OPERATIONS**

**lundi 20 avril 2020**  
*7h*

### Nombre de patients COVID+ / COVID? en lien avec la capacité hospitalière

<table>
<thead>
<tr>
<th>Date</th>
<th>COVID+</th>
<th>COVID?</th>
<th>Capacité COVID+</th>
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<td>19.04.2020</td>
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### Cumul des patients COVID décédés (COVID+ / COVID?)

*Cumulative death rates*
Nombre de patients COVID+ par secteur, valeurs à 12h

Distribution des patients COVID+ par secteur, valeurs à 12h

- COVID+ soins intensifs
- COVID+ soins intermédiaires
- COVID+ soins

- COVID+ ICUs
- COVID+ Step-down units
- COVID+ Internal Medicine
Surveillance HUG (available data from 13.04.2020)

Cases of COVID-19 patients hospitalized (HUG up to April 13)

804 patients hospitalized for COVID
- 320 (39%) still hospitalized
- 403 (50%) left the hospital
- 81 (10.1%) deaths

Median age 66.0 years (from 1-100 years)
Gender 430 (54.2%) males
Hospitalized cases HUG (13.04.2020 7h)

362 cases COVID19+, 110 deaths, 490 returned home

Distribution by age groups and gender

Median age 66.0 years
(from 1-100 years)
Gender 430 (54,2%) males

Distribution by age groups of covid + cases

13 avril 2020, SIMED (DF, DMA)
### HUG - TABLEAU DE BORD DIRECTION DES OPERATIONS

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<th>Description</th>
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**Net bed balance**

- **COVID+ Admissions**
- **COVID+ Discharged**
- **COVID+ Deaths**
COVID-19 patient management at hospital level

- Epidemiology of COVID-19 (April 20)
- Mode of transmission and IPC measures
- Managing at hospital level
- Hospital numbers during the 1st Wave
- Transforming the hospital/life
- Recovery plan
- Recovering and preparing for the 2nd Wave
- Get ready for 5 May 2020
Transformation / Transforming the hospital during COVID

Recovery Plan
Recycling of hand hygiene bottles & masks for reuse following reprocessing
Re-organizing daily life: Cafeteria
Respect #SocialDistancing and #HandHygiene
Hospital environment – closure of locations
Lock down of some areas/sectors
Meeting in corridors and resting areas, respectful of #SocialDistancing and #HandHygiene
Meeting in resting areas, respectful of #SocialDistancing
(Sunday morning coffee break for some ICU doctors)
Meeting of the Crisis Cell in one of the main auditoriums
Respect #SocialDistancing and #HandHygiene
Border crossing to/from France – A serious issue for our HCWs
Support of military services
Shortage of PPE - Special Delivery
PPE Delivery
Our staff
M of Health, Alain Berset

visited HUG on 24 March 2020
« Le mammouth a fait un saut périlleux arrière »

"The mammoth did a back flip"
COVID-19 patient management at hospital level

- Epidemiology of COVID 19 (April 20)
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- Managing at hospital level
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- Transforming the hospital/life
- Recovery plan
- Recovering and preparing for the 2nd Wave
- Get ready for 5 May 2020
And now what?

Recovery Plan
Resumption of activity of HUG after the crisis: principles to follow

Patient needs
- Types of patients with the most urgent medical needs
- Medical and nursing skills
- Available skills (e.g. anesthesiologists and other specialist doctors)
- Need for rest for committed employees
- Vision at cantonal/regional level
- Coordination with private clinics in the region
- Preservation of a margin of hospital security capacity
- Predictable fluctuations
- Second wave risk - has not yet been ruled out
Evolution of the need for hospital beds

**Filling order:**
- COVID wards, then intensive care, then Step-down wards, with approximately 2 weeks lag
- The decline will be in reverse order
- Take into account the time before degradation (approx. 7 days upstairs), ICU time (average 10 days), time before discharge or rehabilitation (around 7 days)
- So the decline indicator will be the decrease in the number of COVID beds occupied on the floor
- Need to keep a reserve of approx. 20% when steady state is reached
Use of stationary beds by the COVID epidemic

Soins intensifs
Soins intermédiaires
Unités COVID
Next steps

Ask department heads
1. Which clinical activities should resume as a priority (patient needs)?
2. What resources are necessary for this reopening of activity?
3. What are the consequences for other services / departments, cantonal structures

What changes (process, collaboration, structures, culture, etc.) were positive during this crisis and should be kept?
What weaknesses were identified during this crisis and what are the avenues to explore to remedy them?
COVID-19 patient management at hospital level

- Epidemiology of COVID 19 (April 20)
- Mode of transmission and IPC measures
- Managing at hospital level
- Hospital numbers during the 1st Wave
- Transforming the hospital/life
- Recovery plan
- Recovering and preparing for the 2nd Wave
- Get ready for 5 May 2020
And the 2\textsuperscript{nd} Wave?

Recovery Plan and Preparing the 2\textsuperscript{nd} Wave
Epidemic/ Pandemic situations: effects of the interventions

- Delay the peak
- Reduce the peak
- Reduce the number of cases

PCI
University of Geneva Hospitals
- The higher the peak, the higher the number of recognized and unrecognized cases and the more severe the cases

- All elements that will contribute to reduce the size and to delay the peak are beneficial on the number of severe cases, the number of deaths, and the unforeseen impact on the healthcare system
Epidemic curve / Pattern according to interventions
Epidemic curve / Pattern according to interventions
The danger
of misinterpretation
... OR
... failure to communicate your message properly
Capacity building / get prepared for deconfinment

Preparation for containment « capacity building »

3 wks

Avril 6 13 20 27

PCI
University of Geneva Hospitals
1. A broad screening policy

2. Strict and exhaustive follow up of contacts

3. Data collection and interpretation

4. Reinforced prevention measures in public spaces

5. Early vaccination strategy at cantonal level (flu/others/COVID when available)
Deconfinement / Measures to put in place

6. A zero tolerance policy for at risk populations

7. A preparedness plan for the second wave of the epidemic

8. A communication strategy and campaign

9. A cantonal/regional TASK FORCE – bringing together key players and skills: public health, epidemiology, infectious disease experts, political decision makers, economic players … etc
Public and Private services at HUG, the health system and the population

Task Force for the Region

Communication

Alcohol hand based solution
Mask s
Lab efficiency
Medication
Clinical and epidemiological monitoring
Vaccinations
...

Strategic plan of confinement
Grippe dans la période COVID – winter 20-21

- Winter 2020-21: there will be co-habitation of influenza and coronavirus (COVID19)
- Both have similar symptoms, not clinically differentiable
- A person with flu (mild) misses work approx. 1 week
- If they catch coronavirus (mild): same as 2 weeks less work
- Flu = Lasts approx. 3 months + number of important consultations each year

There is an existing vaccine!!!
COVID-19 patient management at hospital level

- Epidemiology of COVID 19 (April 20)
- Mode of transmission and IPC measures
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- Hospital numbers during the 1st Wave
- Transforming the hospital/life
- Recovery plan
- Recovery and preparing for the 2nd Wave
- Get ready for 5 May 2020
The father of hand hygiene
WHO SAVE LIVES: Clean Your Hands

“NURSES AND MIDWIVES
Clean care
is in your hands!”
5 May 2020

Main Campaign poster

https://www.who.int/infection-prevention/campaigns/clean-hands/5may2020/en/
Join me in the # SAFE HANDS CHALLENGE

I invite all healthcare workers and leaders to join me and my friend Dr. Tedros – WHO DG

In washing your hands according to the WHO method and post a video or picture of yourself on social media tagging the #SafeHands challenge

https://www.who.int/news-room/campaigns/connecting-the-world-to-combat-coronavirus/safehands-challenge
I invite all healthcare workers and leaders to join me and my friend Dr. Tedros – WHO DG to rub or wash your hands according to the WHO method and post a video or picture of yourself on social media tagging the #SafeHands challenge

www.CleanHandsSaveLives.org