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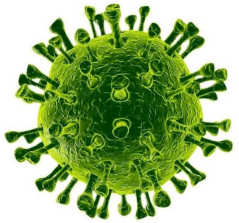
COVID-19

Conflict of Interest Disclosure

None



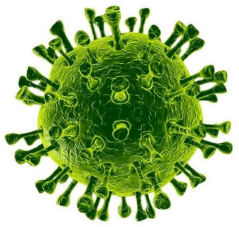
COVID-19

Resuming elective surgery at the CHU de Québec

Five color

Three days

One team



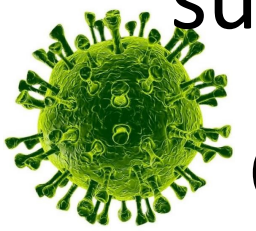
COVID-19

Resuming elective surgery at the CHU de Québec

2020-03-04 is not really a “day” but merely a date on the calendar at the CHU de Québec

Period 13 (out of 13) of the fiscal year has started

In its five old buildings, 46 065 out of the year 51026 surgeries goal (eyes excluded) have been carried out



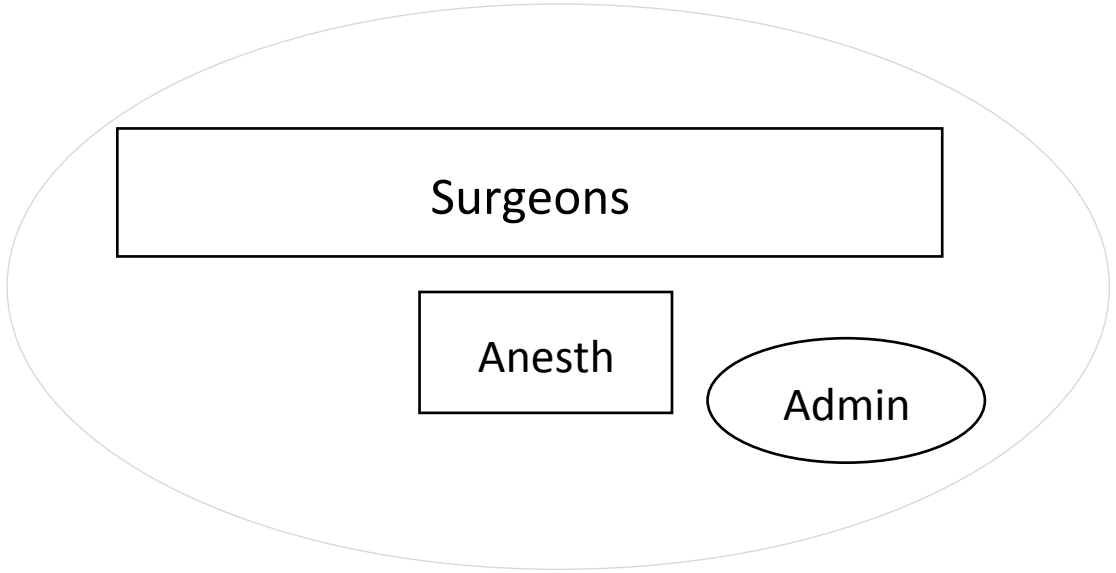
COVID-19

Resuming elective surgery at the CHU de Québec

Meanwhile, the OR team is minding its own business concerned with:

Emergent
Urgent
Elective

Surgical cases

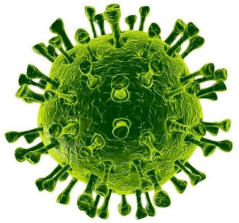


Human

Material

Financial

OR resources

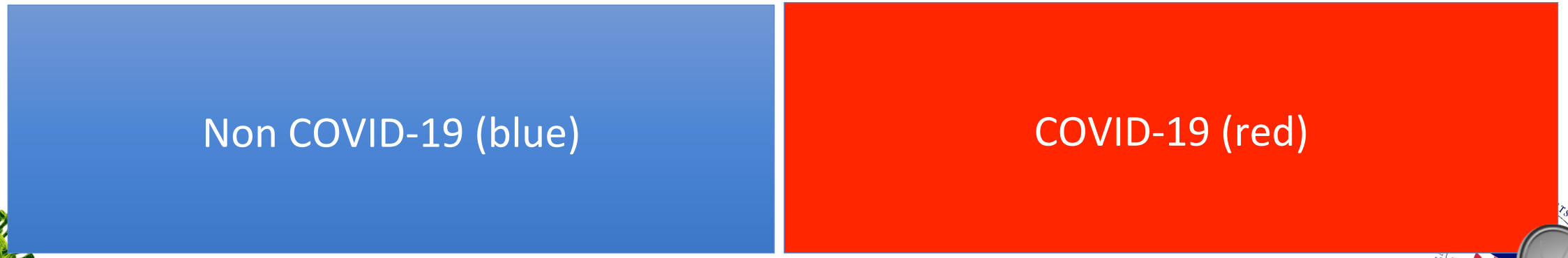


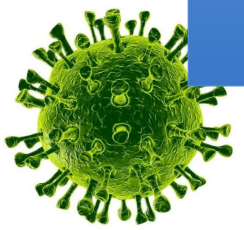
COVID-19

Resuming elective surgery at the CHU de Québec

2020-03-11 **OMG day**

When one realizes COVID-19 would indeed hit home, hard and that there is no way out





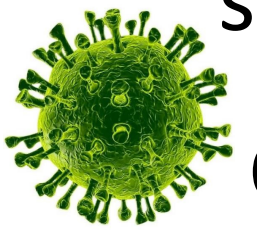
COVID-19

Resuming elective surgery at the CHU de Québec

Non COVID-19	COVID-19

- How could we tell them apart?

- That would be easy as we would screen them for symptoms



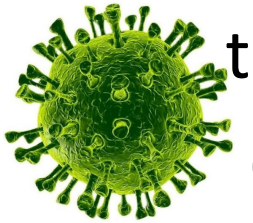
COVID-19

Resuming elective surgery at the CHU de Québec

Asymptomatics (green)	Symptomatics (orange)

- Symptomatic or orange patients would be tested to confirm the presence of SARS-CoV-2 and treated as having COVID-19 (red) pending results.

- Asymptomatic or green patients would be considered at low risk of harbouring SARS-CoV-2 and therefore way more likely to be devoid of the disease, hence blue, than having it (red).



COVID-19

Resuming elective surgery at the CHU de Québec

New concern for the OR team and other hospital teams:

Expected tsunami of COVID-19 patients

Emergent
Urgent
Elective

Surgical cases

Anesth

Admin

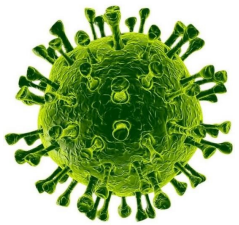
Surgeons

Human

Material

Financial

OR resources



COVID-19

Resuming elective surgery at the CHU de Québec

New concern for the OR team and other hospital teams:

Emergent
Urgent
Elective

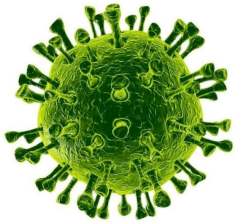
Surgical cases

Human

Material

Financial

OR resources



COVID-19

Resuming elective surgery at the CHU de Québec

New concern for the OR team and other hospital teams:

Emergent
Urgent

~~Elective~~

Surgical cases

Human

Material

Financial

OR resources

COVID-19

Resuming elective surgery at the CHU de Québec

New concern for the OR team and other hospital teams:

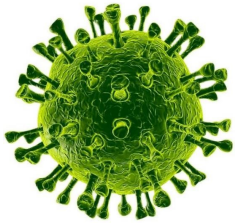
Emergent
Urgent

~~Elective~~

Surgical cases

Human
Material
Financial

OR resources

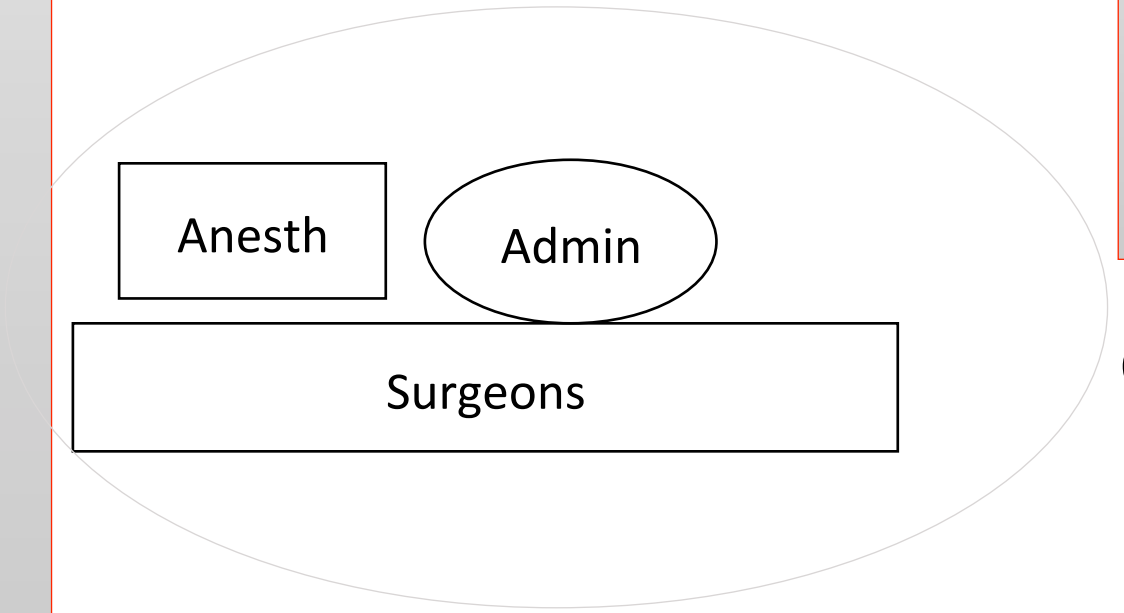


COVID-19

Resuming elective surgery at the CHU de Québec

Emergent
Urgent

Postponed
“not that elective anymore” cases



Human
Material
Financial

OR resources

Resuming elective surgery at the CHU de Québec

- April, permission to aim for increased activity is granted
  - 6th of April, target 30% of normal
  - 23rd of April, target 40% of normal
  - 11th of May, target 50 % of normal
- Yet, period 1 of year 2020-2021 (first 4 weeks of April) **yielded only 20% of normal caseload but required 25% of normal OR time**

COVID-19

Resuming elective surgery at the CHU de Québec

- Why do cases take more OR time than normal?

- Management of **worrisome droplets and aerosols** management is the answer

COVID-19

Resuming elective surgery at the CHU de Québec

- Worrisome **droplets** contamination avoidance requires careful and time consuming planning and execution

- Careful donning and doffing of PPE takes some time

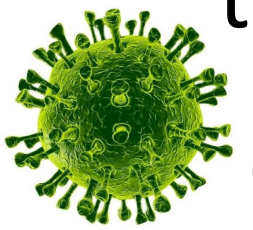
COVID-19

Resuming elective surgery at the CHU de Québec

- Worrisome **aerosols** contamination avoidance seriously compounds the already mentioned droplet problem

- "Aerosols" PPE complexifies donning and doffing

- Avoidance of aerosols contamination of the outside or the OR slows down transit in and out of the room



COVID-19

Resuming elective surgery at the CHU de Québec

- Yet, for ages, aerosols have been emitted in the OR environment by various procedures performed by anesthesiologists and surgeons but were deemed benign most of the time

- So why should aerosols be considered “worrisome” in the context of COVID-19?

COVID-19

Resuming elective surgery at the CHU de Québec

- Data suggest possible occasional inoculation of SARS-CoV-2 thru aerosols

- It is hard to ascertain that aerosols generated from both symptomatic and asymptomatic patients in the OR are not tainted with SARS-CoV-2

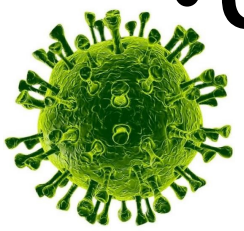
COVID-19

Resuming elective surgery at the CHU de Québec

- Size of virion inoculum required for the “successful” transmission of SARS-CoV-2 is unknown

- As with most environmental contaminants, the dose of the inoculum likely influences the risk of contamination

- **Concentration in air X duration of exposure** matters



COVID-19

Resuming elective surgery at the CHU de Québec

- **A**erosols **G**enerating **M**edical **P**rocedures (AGMP) are of various duration and presumably produce aerosols of diverse concentrations

- Thus all AGMPs do not entail the same degree of exposure to an aerosol. It cannot represent an all or none phenomenon

COVID-19

Resuming elective surgery at the CHU de Québec

- Degree of tainting of aerosols by infective viral particles should influence the level of danger associated with their inhalation

- Hence, the concentration of viral particles in liquids to be aerosolized is probably of importance

COVID-19

Resuming elective surgery at the CHU de Québec

- Thus for an AGMP producing a given concentration of aerosols for a given duration, the risk it carries is function of the concentration of viral particles in liquids likely present on mucous membranes and in alveoli

- **Risk = contamination of liquids X duration of AGMP X concentration of aerosols produced**

COVID-19

Resuming elective surgery at the CHU de Québec

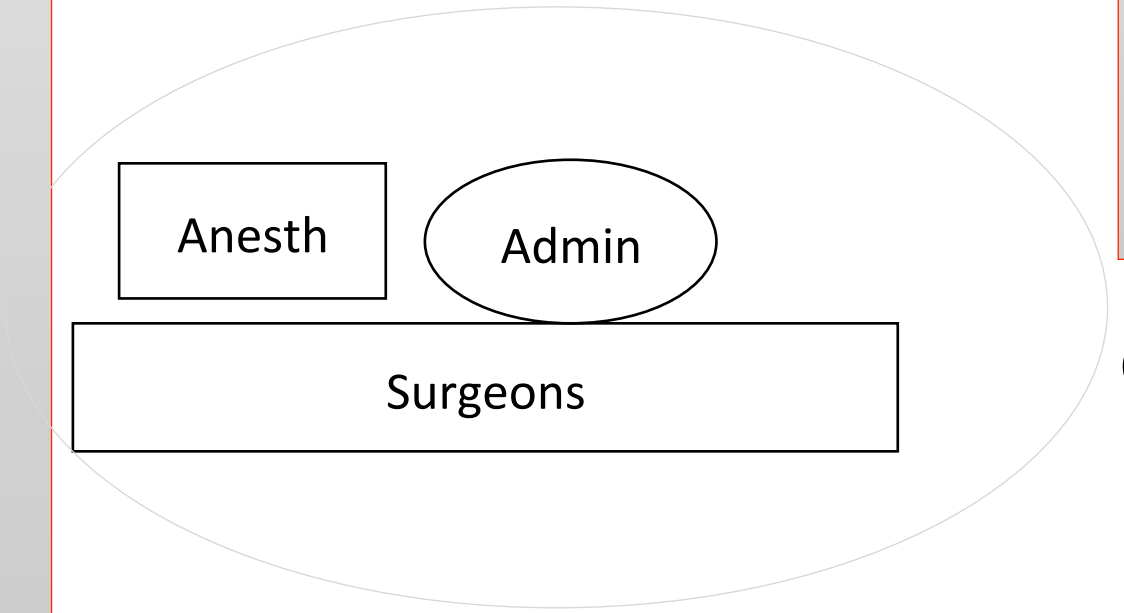
- In order to evaluate whether a surgery or a procedure required to permit it entails a degree of danger exceeding their risk tolerance, clinicians must appraise two elements:
  - Characteristics of AGMPs (duration and concentration of aerosols produced)
  - Likely concentration of SARS-CoV-2 infectious viral particles in liquids on mucous membranes and in alveoli

COVID-19

Resuming elective surgery at the CHU de Québec

Emergent
Urgent

Postponed
“not that elective anymore” cases



Human
Material
Financial

OR resources

Resuming elective surgery at the CHU de Québec

Emergent
Urgent

Postponed
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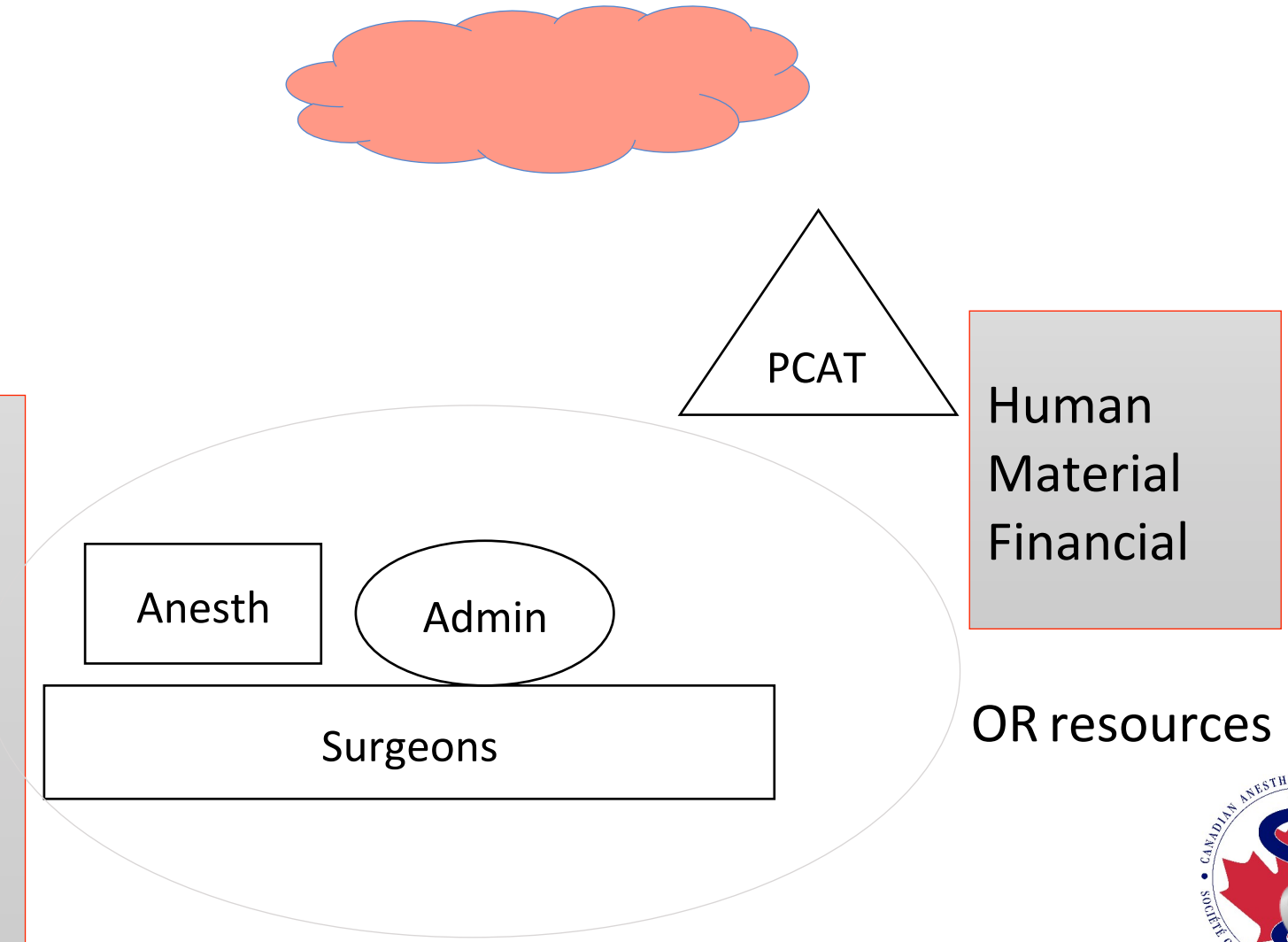

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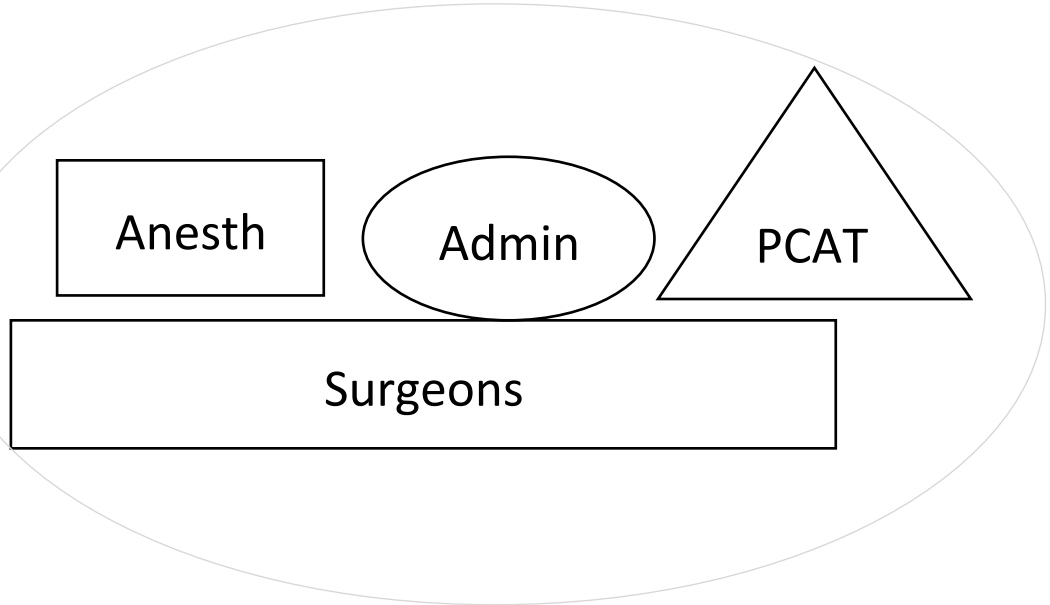

Human
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Financial

OR resources

Resuming elective surgery at the CHU de Québec

AGMP subgroup of the OR team composition:

- Anesthesiology: four, incl. depart. head
- Gen surgery: two, service chief and surg depart. head
- ENT surgery: one, service chief
- Maxillo-facial surgery: one, service chief
- Admin: one, deputy-director of periop.
- PCAT: two senior infectious disease physicians

COVID-19

Resuming elective surgery at the CHU de Québec

AGMP subgroup of the OR team acknowledges that:

- Given the very small number of symptomatic (orange) patients operated on in Quebec City, recommendations aimed at their management now have very little bearing on OR workflow
- **AGMP management in asymptomatic patients (green) has way more impact on OR workflow**

COVID-19

Resuming elective surgery at the CHU de Québec

AGMP subgroup of the OR team:

- Mandate is limited to COVID-19 matters
- Meets often: once or twice a week
- Seeks strong internal consensus of members
- Seeks coherence in conducts of different sites where similar procedures or surgeries are performed
- Reports directly to the CHU strategic committee

COVID-19

Resuming elective surgery at the CHU de Québec

AGMP subgroup of the OR team:

- After one stumble, makes sure to crosscheck its suggestions with the CHU department of anesthesiology COVID subgroup of “trajectorists” composed of seven physicians working across the 5 sites
- Concentrates on determining what AGMP procedures in what patients could result in risk exceeding the tolerance of OR HCW considering PPE use and processes

COVID-19

Resuming elective surgery at the CHU de Québec

AGMP subgroup of the OR team:

- Works from the principle that the appraisal of the risk by the "most exposed" HCW in the OR is fundamental as a basis for making recommendations
- This exercise of "appraisal of the risk by the most exposed" is done in consultation with all physicians performing similar procedures across all sites

COVID-19

Resuming elective surgery at the CHU de Québec

AGMP subgroup of the OR team:

- When consensus is reached amongst all of the “most exposed” appraising the risk associated with a specific procedure, it is carried across all hospital sites
- Recommendations derived from the above will then apply to everybody, in every OR of the CHU de Québec

COVID-19

Resuming elective surgery at the CHU de Québec

AGMP subgroup of the OR team seeks coherence:

- **For a given estimated risk, all HCW present while aerosols are within the OR will wear similar PPE**
- **Attempts at wearing any PPE of higher level than the one recommended after a cross-sites consensus of the "most exposed" for a given procedure is reached will be strongly, strongly discouraged**

COVID-19

Resuming elective surgery at the CHU de Québec

AGMP management in asymptomatic patients

Mastoidectomy
Lacrimal duct surgery
Effraction of paranasal sinus
Base of skull drilling
Nasopharyngeal surgery
Nasopharyngeal aspiration
Oropharyngeal surgery
Oxygenation with Ventimask

BiPAP, CPAP
Manual ventilation
Laryngoscopy
Tracheal intubation
Tracheal extubation
Tracheotomy
Tracheal secretions suction
Bronchoscopy

Productive cough induction
Opening of bronchus
Chest drain insertion
Digestive endoscopy
TEE
Laparoscopy
Short digestive mucosa cautery
TEM

COVID-19

Resuming elective surgery at the CHU de Québec

AGMP management in asymptomatic patients

- For the sake of clarity, AGMPs will now be listed in orange letters to carry some sense of risk if ever the aerosols produced contained infective viral particles

COVID-19

Resuming elective surgery at the CHU de Québec

AGMP management in asymptomatic patients

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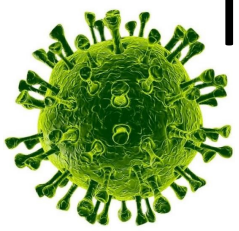
COVID-19

Resuming elective surgery at the CHU de Québec

AGMP management in asymptomatic patients

- Science tells us that some AGMP associated aerosols are very unlikely to be tainted by infectious viral particles, even in symptomatic patients, let alone in asymptomatic ones

- Therefore, those AGMP can be readily written off the list of worrisome ones in asymptomatic patients



COVID-19

Resuming elective surgery at the CHU de Québec

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Resuming elective surgery at the CHU de Québec

AGMP management in asymptomatic patients

- Literature was reviewed and the AGMP subgroup sought consensual opinions of the “most exposed” and then, recommendations were drafted to be adopted by the CHU de Québec
- Hence more AGMPs could be “blackened” in asymptomatic patients

COVID-19

Resuming elective surgery at the CHU de Québec

AGMP management in asymptomatic patients

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COVID-19

Resuming elective surgery at the CHU de Québec

AGMP management in asymptomatic patients

2020-04-11 The LTC home drama in unfolding

2020-04-11 **R**ealization that **A**symptomatic **T**ransmission of **C**OVID is a **R**eality day

2020-04-11 is RATCR day

COVID-19

Resuming elective surgery at the CHU de Québec

AGMP management in asymptomatic patients

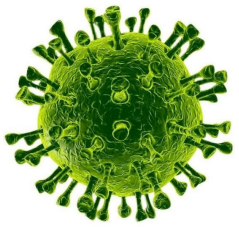
- The accepted possibility that asymptomatic patients could transmit the disease, really threw us off
- The risk that some asymptomatics could not be trusted as “true” greens anymore, and that along with the opening up of society their number was likely to go up, forced us to create a subcategory for them

COVID-19

Resuming elective surgery at the CHU de Québec

AGMP management in asymptomatic patients

- New yellows threatened to wreak havoc in our AGMP management strategy
- With them, our list of “black” AGMPs would likely shorten dramatically as follows



COVID-19

Resuming elective surgery at the CHU de Québec

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COVID-19

Resuming elective surgery at the CHU de Québec

AGMP management in asymptomatic patients

- To go back to the “status quo ante”, we needed some way to compensate for the NPV of our now deceiving questionnaire based screening tool
- We then thought about twisting the “logic” of the PCR test Dr Bestman-Smith has entertained you about

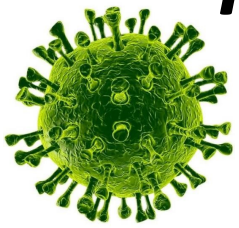
COVID-19

Resuming elective surgery at the CHU de Québec

AGMP management in asymptomatic patients

- Rather than asking the "classical" question: *"Will that patient develop COVID-19 symptoms in the next few days and eventually obtain a positive PCR results at some point in time?"*

- We would ask instead: ***"Does this patient has a viral load compatible with inoculation within the next 24h?"***



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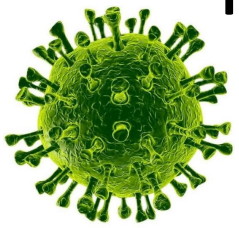
Resuming elective surgery at the CHU de Québec

AGMP management in asymptomatic patients

- You have seen the estimated low probability of **ever obtaining** a positive PCR results for SARS-CoV-2 after a negative result in an **asymptomatic patient**

- The probability of inoculation of a HCW **within 24 h** after perfect sampling and analysis yielding a negative result will be even lower that the above



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Resuming elective surgery at the CHU de Québec

AGMP management in asymptomatic patients

2020-05-20 Confirmation that late preop PCR testing will be readily available in Quebec

2020-05-20 Lets dub this one **Preop PCR day**

COVID-19

Resuming elective surgery at the CHU de Québec

AGMP management in asymptomatic patients

- A negative result of such PCR analysis performed on a sample perfectly harvested less than 24 h before surgery along with a still negative screening just before entry in the OR, will instil confidence.
- With the above, our AGMP management strategy should recover its status pre 11th April when we realized the reality of transmission by asymptomatics

COVID-19

Resuming elective surgery at the CHU de Québec

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Resuming elective surgery at the CHU de Québec

AGMP management in asymptomatic patients

- **After the successful implementation of late preop PCR testing, the "most exposed" to "still orange" AGMPs, will appreciate for themselves its practical aspects**
- **It will then be up to them to decide, consensually, if the extra level of safety, afforded by a negative result, changes their appraisal of the risk associated with those AGMPs, hence the level of required PPE**

COVID-19