



COMNAP On-line ZOOM Meeting with a
medical focus in preparation for Antarctic
season 2020/21 in the context of COVID-19

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SARS-CoV-2 / COVID-19 Recommendations in the context of Antarctic Operations



SARS-CoV-2 / COVID-19 Recommendations (non-mandatory) in the context of Antarctic Operations

Working Paper – Version 6 (16 March 2020)

1.0 Objective: To provide guidance to the COMNAP Membership to collectively strengthen national efforts to avoid introducing the SARS-CoV-2 virus into Antarctica through national Antarctic program actions and activities.

2.0 Background: This guidance was prepared under the leadership of Dr. Tim Hickland, Medical Officer of the Alfred Wegener Institute Helmholtz Center for Polar and Marine Research with contributions and community engagement through the Joint COMNAP/ SCAR Expert Group Human Biology and Medicine (JEGHBM).

3.0 Introduction & Preliminary Remarks: Facing the current pandemic of the virus SARS-CoV-2 that causes the COVID-19 disease, the question arises, how to proceed in respect to Antarctic operations. Those operations, in some cases, may also include activity in the Southern Ocean and the sub-Antarctic islands.

- 3.1 The situation is constantly changing.
- 3.2 It will be necessary to continuously adjust whatever actions might be taken.
- 3.3 The following recommendations are based on currently available information by the World Health Organization (WHO)¹, various national health authorities and medical publications.
- 3.4 The commonly known facts and general suggestions have deliberately not been incorporated in this guidance, as they're ubiquitous.
- 3.5 Importantly the ability to respond to a highly infectious novel virus with significant mortality and morbidity in the extreme and austere environments of Antarctica with limited sophistication of medical care and public health responses is **High Risk** with potential catastrophic consequences including death.
- 3.6 COVID-19 medical case management and response is rapidly changing and will be communicated in national and international clinical fora and remains out of scope of this document.

4.0 Objectives identified are:

- 4.1 Objective 1: Prevent the intercontinental spread of SARS-CoV-2
- 4.2 Objective 2: Prevent the intracontinental spread of SARS-CoV-2
- 4.3 Objective 3: Prevent the spread of SARS-CoV-2 within a station
- 4.4 Objective 4: Dealing with COVID-19 in Antarctica

¹ Refer to the WHO technical guidance web-site: <https://www.who.int/emergencies/diseases/novel-coronavirus-2019/technical-guidance>

| occurring in Antarctica without urgent control | |
|--|------------|
| 2 (Possible) | 3 (Likely) |
| 1 | 2 |
| 3 | 4 |
| 4 | 5 |

all spread of SARS-CoV-2 containment and prevention must be the priority to Antarctica.

can only be reached through a small number of air routes; the virus from reaching the continent should be

of Antarctic air and ship gateways in "open" mode, all already closed their seasonal facilities or who have not since mode, should urgently reconsider any scheduled Antarctic given the potential risks of the pandemic and climate.

currently impacted by national and regional measures isolation requirements and response capabilities. Cease in widespread COVID-19 risks at all the Antarctic.

likely be affected by airlines struggling to provide services.

probability of a severe case of COVID-19 in an Antarctic based on the assertion that assumes a younger age population is medically screened for deployment and the usually off set by the potential for immune changes; in fact, the majority of healthy individuals will still be generally on operational capability.

prior to symptoms) and prolonged viral shedding (days to weeks) is risk of spread.

survive most probably up to 9 days on surfaces. Cold/dry may viable longer.

risks of reinfection and reseeded of isolated

5.0 A remotely operating ship, with no feasible way of timely evacuation in case of a SARS-CoV-2

- JEGHBM
- March 16 2020

Objectives



Objective 1: Prevent the intercontinental spread of SARS-CoV-2

Objective 2: Prevent the intracontinental spread of SARS-CoV-2

Objective 3: Prevent the spread of SARS-CoV-2 within a station

Objective 4: Dealing with COVID-19 in Antarctica

Objective 1



Prevent the intercontinental spread of SARS-CoV-2

-> How to facilitate summer campaigns?

Conditions for participation on MOSAIC Leg 4

The MOSAIC expedition is unique in its aim to investigate the coupled Arctic climate system for an entire year. Despite logistical challenges due to a changed world-wide situation, the expedition continues.

With regard to the preceding quarantine, we minimize the danger to persons on their way to the expedition. The precise schedule is to be published in the exact schedule.

- On May 1, strict quarantine for all persons on board.
- For those who are not on board, access to the ships is only possible directly at the port of departure.
- Access to the ships is only possible for those who are on board.
- After arrival, the quarantine procedure is coordinated and implemented by the Alfred Wegener Institute, Helmholtz Centre for Polar and Marine Research (AWI) in Bremerhaven along with the local health authorities.
- On the 20th of May, the quarantine procedure is completed.
- On the 20th of May, the quarantine procedure is completed.
- In case of a suspected infection, the quarantine procedure is completed.
- In case of a suspected infection, the quarantine procedure is completed.

Any break of the quarantine leads to an immediate termination of the participation.

I hereby sign that

I confirm that my participation.

I am aware of the meteorological or

Name

COVID-19 Outbreak Management Plan

1. Preventive measures in advance of the departure

Basics information before departure

Generally speaking, persons with respiratory disease symptoms and/or a fever may not depart. To reduce the risk of SARS-CoV-2 arriving on board one of the two feeder vessels and thus the occurrence of a COVID-19 case as much as possible, access to the ships is subject to strict restrictions. Strict quarantine measures must also be applied to the passengers and crews of the feeder vessels and RV Polarstern before the start of the voyage. Both infection prevention measures are described in the following sections.

Access restrictions for external persons to the ships

No access of external persons to the vessels.

Quarantine measure for passengers and crews of the vessels

All passengers, as well as the crews of the vessels must undergo a strict quarantine in specially rented hotels. The quarantine procedure is coordinated and implemented by the Alfred Wegener Institute, Helmholtz Centre for Polar and Marine Research (AWI) in Bremerhaven along with the local health authorities.

AWI has also initiated the purchase of PCR tests (Beacoh ~~Micro~~ device) to ensure that tests can be administered on board the feeder vessels and RV Polarstern. If despite all the strict regulations, any contact and symptoms indicate COVID-19 or a previously undetected infection during the quarantine period, the tests will be performed ~~regularly~~.

Boarding of passengers and crew change in Bremerhaven

The passengers and crews are transported from the hotels to the feeder vessels in Bremerhaven using rented buses. The cabin of the buses are shielded, all the passengers should wear a mouth/nose protection and comply with the generally valid hygiene measures during the transport. Contact with the outside world continues to be prohibited.

When boarding the feeder vessels, everyone must disinfect their hands. The handover of the vessels between the departing and the relief crews must take place without any contact and in compliance with the hygiene regulations.

Before the change of the crew, the ships are thoroughly cleaned and disinfected.

2. Prevention measures on board

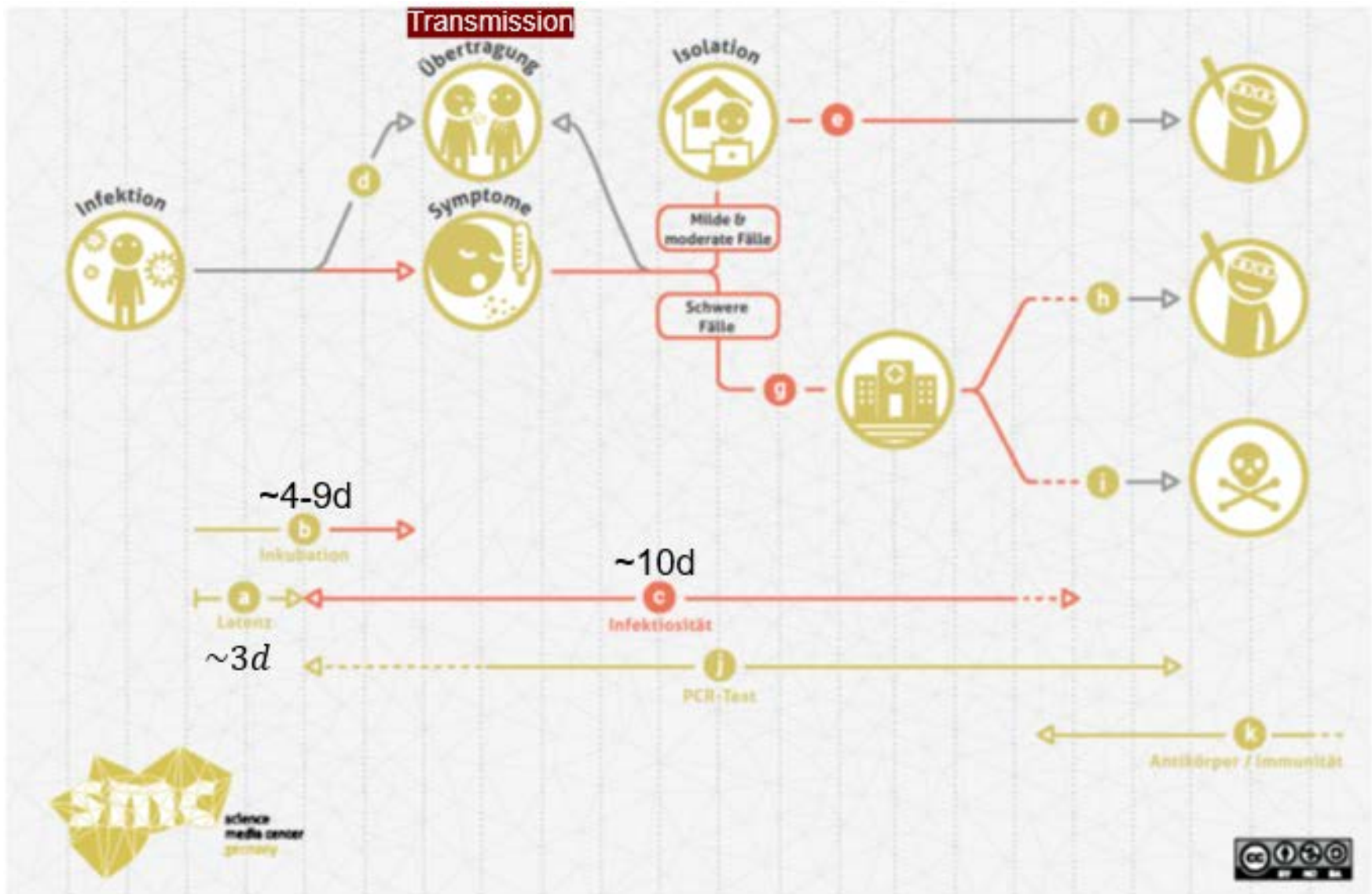
Since all persons on board are subjected to an extensive quarantine in advance and tested several times for coronavirus, the defined measures for contact avoidance can be dispensed with for the most part. Nevertheless, compliance with the general hygiene measures must continue to be ensured.

If during the voyage, a suspected case of coronavirus occurs on board the feeder vessels, the emergency measures must be implemented immediately.

Quarantine and Testing

Analogous to the procedure implemented for MOSAIC crew change

COVID-19 key facts



COVID-19 key facts



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Weitere Recherchequellen

Das gesammelte SMC-Material zum Coronavirus SARS-CoV-2 und der Erkrankung COVID-19 finden Sie unter <https://www.sciencemediacenter.de/alle-angebote/coronavirus/>.

Test-Quality

- **Sensitivity** (also called the **true positive rate**, the **epidemiological/clinical sensitivity**, the **recall**, or **probability of detection** in some fields)
- **Specificity** (also called the **true negative rate**)

- **PCR Tests can be false negative!**

| | | Person has Coronavirus | |
|--------------|----------|--|---|
| | | Yes | No |
| Test Results | Positive | True Positive (TP): Person with coronavirus tested positive | False Positive (FP): Person without coronavirus tested positive |
| | Negative | False Negative (FN): Person with coronavirus tested negative | True Negative (TN): Person without coronavirus tested negative |

- Depends on
 - When you perform the swab
 - Where you perform the swab (nose/throat)
 - How you perform the swab

Thus-> Multiple testing and quarantine

How to quarantine



- On a given date and time, all passengers and crew members have to go into a **strict quarantine** in a hotel at the gateway to Antarctica which is **exclusively reserved for this group** of persons only. The aim is to create a total cut-off from the outside world.
- Accommodation is organized in single rooms, and **participants strictly have to stay in this room for the first six days**. Meals will be delivered to the rooms and have to be consumed there.
- After arrival a **1. swab** for SARS-CoV-2 testing will be taken from every person.
- Result of the first swabs will be available on the third day. In case of a positive test result the person has to leave the hotel immediately and will be excluded from the expedition.

Prevent the intercontinental spread of SARS-CoV-2



- On the 6th day a **2. swab** is taken, results are expected one day later.
- On the **7th day quarantine is released** so that meals can be taken together in the dining room, but without contact to hotel personnel or any person who is not a member of the expedition team. The use of the hotel gym will likely be possible under conditions from this day on.
- On the 14th day **3. swab** is taken.
- In case of all results being negative embarkation.

Prevent the intercontinental spread of SARS-CoV-2



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- **In case of symptoms** of COVID-19 or another infection during quarantine, an additional PCR test is performed.
 - **In case of a positive test** result of a member of the expedition team, two more weeks of isolation for all participants in the hotel might be decreed by the responsible health authority.
 - Any **break of the quarantine** rules puts the overall operation at risk and should therefore lead to an immediate exclusion from the expedition.

Quarantine must-haves



- Quarantine at the gateway
- PCR testing
- Exclusive hotel
- Compliant hotel-staff
- Compliant expeditioners
- For shared flights it`s all or nothing
- Flight crew in quarantine OR total isolation from flight crew

Prevent the intracontinental spread of SARS-CoV-2

- If all Expeditioners have been quarantined and tested no further precautions than **strict hygiene rules**.
- Feeder flight crews must also be quarantined and tested (at South-American gateway).
- Strictly no contact to non quarantined/non tested expeditioners/tourists.

Prevent the spread of SARS-CoV-2 within a station



- Apply strict hygiene rules
- Any signs of infection -> Isolation
- See also ->



SARS-CoV-2 / COVID-19

Recommendations (non-mandatory) in the context of Antarctic Operations

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3.0 Introduction & Preliminary Remarks: Facing the current pandemic of the virus SARS-CoV-2 that causes the COVID-19 disease, the question arises, how to proceed in respect to Antarctic operations.

- Outbreak after testing and quarantine at the gateway is very unlikely
- Enforce hygiene rules:
 - wash hands
 - sneeze etiquette
 - if sick do not interact with others (self-isolate if possible)
 - inform your doctor/medical point of contact
- If symptoms appear -> **Isolate patient immediately** -> take swab -> send swab to regional laboratory (Neumayer-Station-III) -> get PCR test result 2,5h after swab arrives

Dealing with COVID-19 in Antarctica

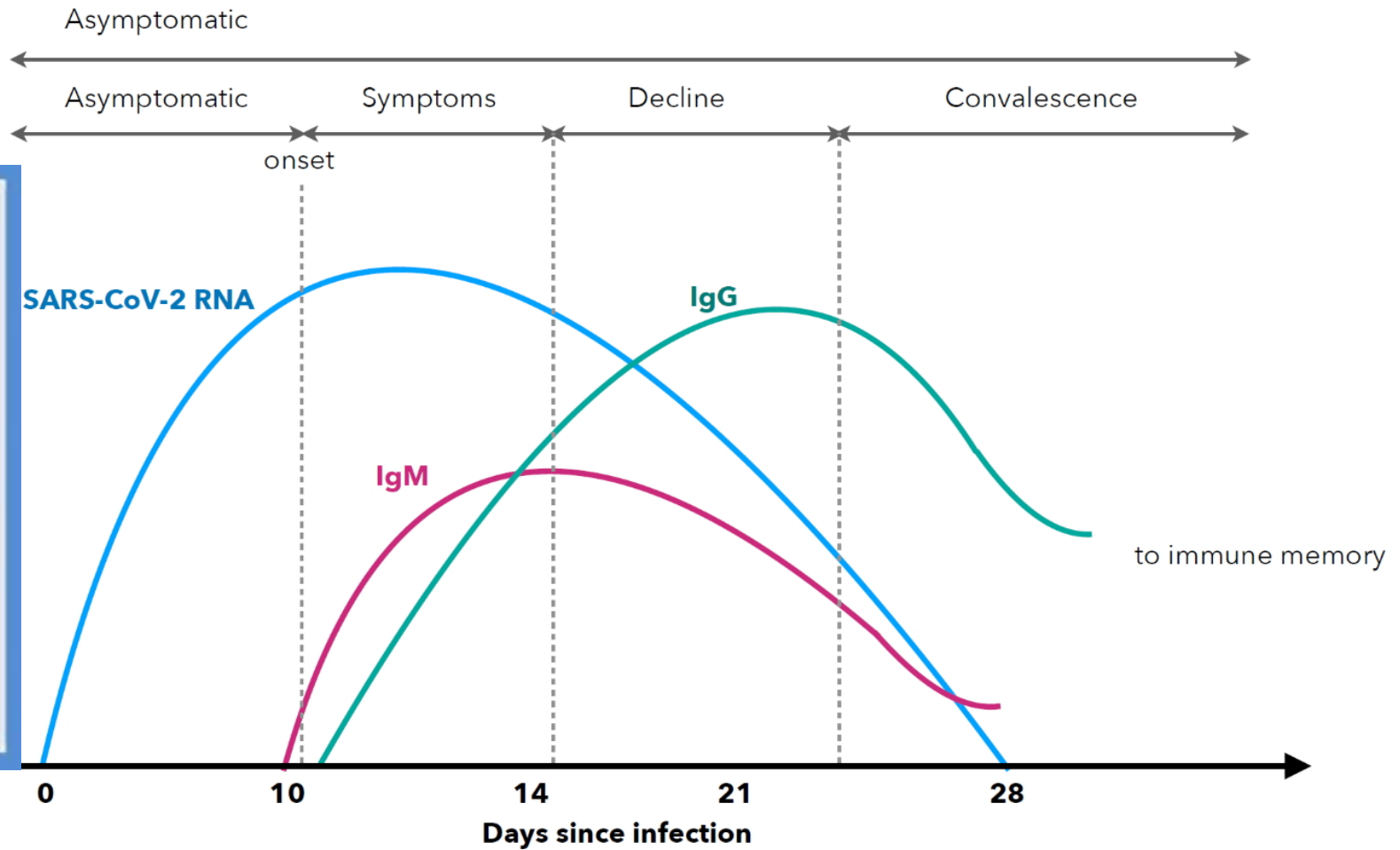


PCR Testing

Establish regional laboratories?



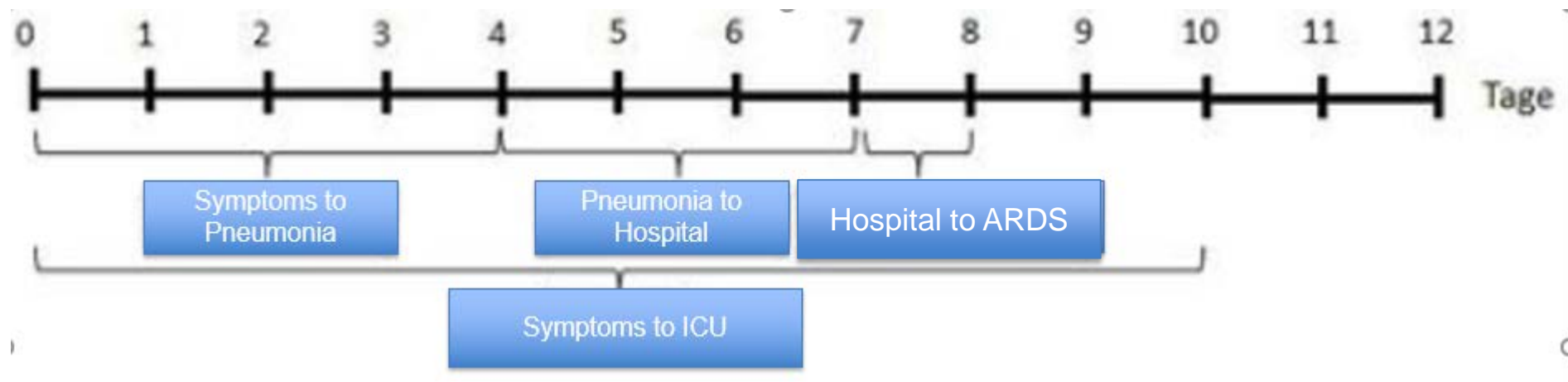
Antibody testing



Dealing with COVID-19 in Antarctica



- Negative test: Treat as normal patient
- Positive test: Plan MedEvac, treat symptoms, see also COMNAP SARS-CoV-2 / COVID-19 Recommendations (non-mandatory) in the context of Antarctic Operations



Source:
RKI

See also: **COMNAP SARS-CoV-2 / COVID-19**

Recommendations (non-mandatory) in the context of Antarctic Operations

The optimal minimal Personal Protective Equipment (PPE) could be:

- 1 mask (FFP 2 or 3)
- 5 pairs of gloves
- 5 disposable protective gowns **per person and day**
- 1 device of eye protection per person.

As an **example calculation**: In case of an expected time to Medevac of 10 days and 2 persons helping -> minimum stock on station of:

- 20 masks
- 100 pairs of gloves
- 100 disposable gowns
- 2 eye protection devices

Equipment



- As of now, the treatment of COVID- 19 is supportive. In case of an expected time to Medevac of 10 days, reasonable precautions ideally should include at least per patient:
- 300l of compressed medical oxygen/oxygen concentrator
- Possibility of intubation and mechanical ventilation
- I.V. fluids and possibility to administer
- Appropriate antipyretics, antibiotics, **thrombosis prophylaxis/anticoagulation** and general medication

To Dos



- Prepare Quarantine
- Find Testing Laboratory
- Secure availability of swabs in Antarctica
- Refine MedEvac plan
- Establish cooperation with first responding clinic at the gateway
- Get clearance from health authority at the gateways

To Dos



- Do a medical supply/medical equipment inventory at Antarctic stations
- Make plans/provision for sending south any needed medical-related supplies as early as first vessel/first aircraft/first opening of the winter-station
- Review/understand transit rules/procedures of the transit countries, including gateway countries. See also COMNAP Desktop Study