



COVER SHEET / Notes to Versions

COMNAP COVID-19 Outbreak Prevention & Management Guidelines

Version 3 Released as COMNAP AGM Meeting Paper 5.3 (17 July 2020)

0.0 Noted areas awaiting advice from the Joint Expert Group of Human Biology & Medicine (JEGHBM)

CURRENT: Version 4, 14 August 2020

0.0 Incorporates the JEGHBM “Advice in regards to COVID-19: Prevention of Intercontinental Spread and Response in Suspected or Confirmed Cases” Guidance for Members, v. 5, Jul 2020 (received by COMNAP on 3 August 2020).

Changes from Version 3, as follows:

1. Added “Information screening” paragraphs to 5.2
2. Added new final sentence to 5.18
3. Added new final sentence to 5.24
4. Minor change to 5.29
5. Added new final sentence to 5.31
6. Added new 5.50
7. Minor change to 6.4
8. Added to final sentence in 6.5
9. Major changes to 8.4
10. Major changes to 8.5
11. Added new final sentence to 8.9
12. Added new 8.11, 8.12 and 8.13
13. Added new section 9.0 “Psychological considerations”
14. Added Appendix 1: Demographics of at-risk individuals
15. Moved (content unchanged) [former] section 9.0 to Appendix 2

COMNAP COVID-19 Outbreak Prevention & Management Guidelines



Version 4 (14 August 2020)

1.0 Overarching Goal: To provide guidance (non-mandatory) to the COMNAP Membership to collectively strengthen national efforts, including those efforts implemented at Antarctic gateways, to avoid introducing the SARS-CoV-2 virus into Antarctica through national Antarctic program actions and activities for Antarctic season 2020/21.

2.0 Background: Builds on the *COMNAP SARS-CoV-2 / COVID-19 Recommendations (non-mandatory) in the context of Antarctic Operations Working Paper – Version 7* (19 March 2020) published in the context of Antarctic operations at the close of Antarctic summer season 2019/2020. Takes into consideration the presentation, questions & answers and discussions during the “Supporting National responses through COMNAP guidance: COMNAP On-line ZOOM Meeting with a medical focus in preparation for Antarctic season 2020/21 in the context of COVID-19” (8 June 2020). COMNAP acknowledges the information shared, through the COMNAP COVID-19 *ad hoc* Subcommittee, by the Alfred Wegener Institute Helmholtz Center for Polar and Marine Research (AWI), in regards to the AWI *COVID-19 Outbreak Management Plan for MOSAiC*.¹ COMNAP also acknowledges the input and advice from the Joint Expert Group on Human Biology & Medicine (JEGHBM).

3.0 Introduction & Preliminary Remarks: At the time of writing, the coronavirus disease (COVID-19) pandemic, as declared on 11 March 2020 by the World Health Organization (WHO)² continues, with a record number of new cases for 24 hours periods being broken globally. In consideration of the start of the Antarctic summer season 2020/21, the question arises, how to proceed with the start of the Antarctic summer season in respect to Antarctic operations, keep expeditioners safe, and how to avoid introducing the SARS-CoV-2 virus into Antarctica through national Antarctic programs’ activity. While recognizing that Antarctic summer season operations includes opening winter-over stations and deploying expeditioners **from** the Antarctic Treaty area, these guidelines focus on deployments **to** Antarctica only.

3.1 We have, to date, no cases of COVID-19 in the Antarctic Treaty area.

3.2 Globally, confirmed cases of COVID-19 continue to rise and currently, nine of the top ten countries reporting the highest total percentage of all globally reported cases are all Antarctic Treaty Consultative Party countries.³

3.3 The situation continues to change.⁴ National Antarctic programs are urged to continually consult

¹ Multidisciplinary drifting Observatory for the Study of Arctic Climate expedition.

² See www.who.int and the technical guidance pages: <https://www.who.int/emergencies/diseases/novel-coronavirus-2019/technical-guidance>.

³ The current top ten are: USA 26.1%; Brazil 14.3%; India 6.7%; Russia 5.6%; Peru 2.5%; Chile 2.4%; Spain 2.3%; Mexico 2.3%; UK 2.2% and South Africa 2.1%. Source: <https://www.worldometers.info/coronavirus/worldwide-graphs/> as on 13 July 2020. Only Mexico is not an Antarctic Treaty Consultative State. These ten countries combined account for 66.5% of total reported global cases.

⁴ See WHO Situation Reports here: <https://www.who.int/emergencies/diseases/novel-coronavirus-2019/situation-reports>

and review WHO published information⁵ and its applicability to Antarctic deployment and operations.

3.4 It will be necessary to continuously evaluate and adjust whatever actions might be taken and this COMNAP guidance document should be considered a “living document”.

3.5 The following guidelines are based on currently available information from the WHO, from various national health authorities and other national ministries, best available information and advice from national Antarctic programs and the JEGHBM especially through the COMNAP COVID-19 *ad hoc* Subcommittee.

3.6 Globally, we have a good understanding of how social distancing, managed isolation, quarantine, testing and good hygiene have been used as outbreak management tools.

3.7 It remains important to understand that the ability to respond to, and manage an outbreak of, a highly infectious novel virus with significant mortality and morbidity in the extreme and austere environment of Antarctica with limited sophistication of medical care and public health responses is **High Risk** with potential catastrophic consequences including death should an outbreak occur in Antarctica. Therefore, preventing an outbreak in any Antarctic population remains the principle goal and national Antarctic programs are urged to address and reduce that risk.

3.8 This guidance document should not be read as medical advice for the treatment of patients. The guidance is prepared for COMNAP Member and Observer national Antarctic programs to assist them in the planning for the Antarctic season 2020/21 and in the preparation of their operation and logistics plans within the context of their countries’ national policies and processes.

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: Response in case of COVID-19 outbreak in Antarctica⁶

4.5 It is recommended that national Antarctic programs prepare a detailed plan in advance of Antarctic season 2020/21, which is continually reviewed and updated as the season progresses, that takes into consideration the management of risks in the context of COVID-19 including, but not limited to, those related to:

4.5.1 Deployment of their personnel to [and from] Antarctica.

4.5.2 Management, care and return to home of deploying personnel positioned at gateways in the event the expeditioner returns a positive test result for COVID-19 at the gateway point of departure to Antarctica.

4.5.3 Contingency planning in the event that an expeditioner is unable to deploy and take up their position in Antarctica, including, when possible, back-up/redundancy built into teams’ skill-sets.

4.5.4 Contingency planning in the event that supplies, cargo and contracted or employed expeditioners are unable to reach Antarctic facilities at the planned time or at all.

4.5.5 Review and update of medevac or medical emergency plan to strengthen self-sufficiency and overall capabilities for caring, transporting and managing a patient in the event of a COVID-19 case in the Antarctic.

4.5.6 Review and update lines of communication and points of contact particularly with the relevant authorities or national Antarctic programs in the particular and relevant gateway.

⁵ www.who.it.

⁶ COVID-19 medical case management and response is rapidly changing and will be communicated in national and international clinical fora and remains largely out of scope of this document.

Contents

5.0 Objective 1: Prevent the intercontinental spread of SARS-CoV-2	5
5.1 Preventive steps to be considered in advance of the departure from “home” location	5
Medical examination & information screening	5
Education	5
Basic hygiene practices	6
5.15 Preventive steps to be considered at “gateway” point of departure to Antarctica	7
Pre-deployment management procedures	7
Managed isolation	8
Testing	8
Pre-boarding management procedures	9
5.34 Preventive steps to be considered during deployment onboard vessels	9
5.39 Preventive steps to be considered during deployment onboard aircraft	10
5.41 Preventive steps to be considered upon arrival to Antarctica	10
6.0 Objective 2: Prevent the intracontinental spread of SARS-CoV-2	11
Block intracontinental paths	11
7.0 Objective 3: Prevent the spread of SARS-CoV-2 within a station/facility	12
8.0 Objective 4: Dealing with COVID-19 in Antarctic operations	14
9.0 Psychological Considerations	16
Understanding risk of deployment & non-deployment	16
Understanding risk of increased mortality	16
Explaining effective preventative behaviours	17
Resources to support psychological well-being	17
Planning in case of an outbreak on station	18
APPENDICES	19
Appendix 1: Demographics of at-risk individuals	19
Appendix 2: COVID-19 Therapy in Antarctica	20

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

Key message – Act strongly as prevention must be the priority in order to keep expeditioners safe.

5.1 Preventive steps to be considered in advance of the departure from “home” location

“An ‘expeditioner’ should be defined to include any person travelling to Antarctica including crew of vessels and aircraft, non-governmental and governmental persons alike.”

Medical examination & information screening

5.2 In advance of deployment to Antarctica, medical examination of all expeditioners is standard practice within national Antarctic programs. Ensure medical doctors carry out a notes screening and physical screening for Antarctic deploying personnel that gives consideration to, the risk factors⁷ for COVID-19. Screening questionnaires can be used to:

- 5.2.1 Understand if individuals have previously tested positive for COVID-19.
- 5.2.2 Understand if individuals had to isolate due to symptoms and if yes then when.
- 5.2.3 Identify confirmed exposure to a contact that is known to have tested positive for COVID-19 and in what timeframe.
- 5.2.4 Identify whether the individual had a requirement to shield or self-isolate due to symptoms and in what timeframe.
- 5.2.5 Identify any period of hospitalization due to COVID-19 and to what extent.

5.3 All expeditioners should be fully vaccinated including current seasonal influenza and pneumococcus vaccinations.

Education

5.4 Educate all expeditioners on the importance of preventing the intercontinental spread of COVID-19 to Antarctica. Ensure they understand that their own safety may depend on prevention measures to which they adhere.

5.5 Educate all expeditioners on the importance of adopting and sustaining basic hygiene practices.

5.6 Educate all expeditioners on the importance of avoiding situations where they might find themselves in close proximity to large groups of people or crowds in the time period immediately before deployment begins. The less people (beyond the expeditioners’ immediate family) that the expeditioner is in contact with before deployment reduces risk of exposure to the virus immediately before deployment.

5.7 Educate all expeditioners on the importance of adhering to all instructions related to their behavior if requested to undergo screening, social distancing, managed isolation and testing. Explain to them the critical nature of the cause for all of us to join together to kept Antarctica COVID-19 free and people safe and healthy.

5.8 It is recommended that expeditioners should be asked to sign a consent form to confirm they acknowledge and understand the heightened risk travelling during a pandemic presents, the

⁷ See Appendix 1; See also <https://www.cdc.gov/coronavirus/2019-ncov/need-extra-precautions/people-with-medical-conditions.html>.

circumstances of their deployment, including making themselves available and amiable for screening, managed isolation and testing as required through-out their deployment to Antarctica.

5.9 It is recommended that national Antarctic programs explain to their expeditioners that any Polymerase Chain Reaction (PCR) test results will be treated as confidential and may be conveyed to the national Antarctic program medical point of contact and the person(s) in charge of the oversight of the deployment process in order to ensure safety of other members of the expedition.

5.10 Educate expedition leaders to be aware of the mental stress expeditioners may experience in regards to deployment during a pandemic and for the duration of any managed isolation period.

5.11 Acknowledge that it is very difficult to comfort someone in managed isolation. In particular, it will be very difficult to comfort and reassure an expeditioner who tests positive for COVID-19 at one of the stages of deployment, before reaching Antarctica. This person may be feeling unwell and will be facing an uncertain future in regards to their deployment and work in Antarctica. Establish procedures, in advance of the situation and explain those procedures to all deploying expeditioners before their travel begins.

5.12 A person testing positive in one of the Antarctic gateways is likely being treated in a country that is not their home. They may face language differences and their level of personal comfort with the situation will be challenged. If admitted to hospital, the patient will require support during a time when they are in isolation or quarantine and the hospital may not allow visitations. Ensure your point of contact at the gateway is made aware of any expeditioners in this situation and explore any local offers of assistance or support for the well-being of the patient.

Basic hygiene practices

5.13 All expeditioners clothing, including footwear, should be thoroughly cleaned before packing.

5.14 All expeditioners travelling to their particular gateway departure points should employ basic hygiene practices while on-route to “gateway” point of departure on commercial and chartered transportation. Basic hygiene practices include:

- Hand hygiene – frequently wash your hands for a minimum of 20 seconds, then dry them for 20 seconds. If you are unable to access soap and water, use an alcohol-based hand sanitiser containing at least 60% alcohol. If using sanitiser, ensure that you use enough to cover your hands and rub hands together until dry.
- Cough and sneeze etiquette – sneezing or coughing into the crook of your elbow or covering coughs and sneezes with a tissue, then putting the tissue in a bin and cleaning your hands (as above).
- Avoid touching your face – hard surfaces can be contaminated with infectious droplets. Hands can be contaminated after contact with these surfaces. If you need to touch your face, clean your hands first.
- Clean surfaces and frequently touched items – clean high-touch surfaces and items (for example your dropdown tray on the aircraft and your mobile phone) frequently with an appropriate cleaning solution to reduce transmission of germs in general.

5.15 Preventive steps to be considered at “gateway” point of departure to Antarctica

“Managed isolation, taken seriously by all involved, and carried out in the appropriate manner, is the best defense we have against the spread of the coronavirus at the present time. Testing of those in managed isolation adds to the certainty we need when it is time to release people from managed isolation.”

Pre-deployment management procedures

5.16 The “gateway” point is the external boarding location of the expeditioner, that is, the inter-continental (to Antarctica) deployment point.

5.17 Oversight of the pre-deployment process for each cruise, flight, or for each intake of expeditioners should be designated to a trained contracted person who is the point of contact for the pre-deployment management procedures and is coordinating with local health authorities and local government ministries.

5.18 All expeditioners should be given instructions on the pre-deployment procedures and the importance of adherence to those procedures in order to keep themselves and their team members safe and well. National Antarctic programs should consider asking their expeditioners to sign a “pledge” or agreement that confirms they will endeavor at all times to act to uphold the common goal of keeping Antarctica COVID-19 free and all expeditioners safe and healthy. Expeditioners should also be asked to “self-declare” or complete a questionnaire before their travel begins as to whether they have any symptoms that would warrant self-isolation, trigger testing in home nation or lead them to suspect they are unwell.

5.19 It is important for expeditioners, upon arrival at the gateway point and until placed in managed isolation, to continue to practice social distancing even amongst their colleagues they are seeing at the gateway point. Recognise that it may be difficult for colleagues who know each other well to remember to do so and remind expeditioners of the importance of maintaining social distancing until told otherwise.

5.20 Good hygiene practices should be maintained as expeditioners arrive for pre-deployment process.

5.21 The oversight person should personally meet⁸ each expeditioner upon clearing customs/border control, should ask them if they are feeling well, should ask them about any contacts they may have had in past three days with people who were symptomatic or who tested positive for COVID-19 and should note any relevant information obtained from the expeditioner.

5.22 Any expeditioner that says they are unwell, should immediately be placed in managed isolation and a care-giver/medical doctor informed.

5.23 After initial meeting with the oversight point of contact, all expeditioners should be appropriately transferred from point of arrival to designated managed isolation accommodation. Specific managed isolation accommodation may be designated by the gateway government or may be contracted directly with the national Antarctic program.

⁸ Every such meeting should be undertaken with physical shield/barrier in place (such as glass or plastic) and should employ social distancing practices. Where screening facilities are not available, full PPE should be worn by the oversight point of contact for all meetings of arriving individuals.

Managed isolation

5.24 Managed isolation means expeditioners are in single rooms, in accommodation designated by national authorities as meeting quarantine or managed isolation requirements, which ideally should be contracted by the national Antarctic program to provide the required number of rooms and meal service or self-catering for all expeditioners for at least a minimum of 14 days⁹ as part of the pre-deployment process. A reporting structure for medical symptoms or psychological impacts of any managed isolation should be in place.

Testing

5.25 Optimally, managed isolation should be coupled with testing to reduce risk. There are many different approaches to testing regimes and, presently, multiple tests exist with variable sensitivity/specificity. The two approaches recommended for national Antarctic program consideration are 3-12 with release on day 14; and 1-6-14 with release on day 14.

5.25.1 Testing on days 3 and 12

- On day 3 of managed isolation all expeditioners to undergo a COVID-19 PCR test with results conveyed back to the expeditioner and recorded by oversight point of contact. Any positive results to be reported through the oversight person to the national Antarctic program and to the local authority as per local governmental regulations.
- On day 12 of managed isolation all expeditioners should undergo a second COVID-19 PCR test. Anyone that returns a positive test on day 12 should not be allowed to board vessel/aircraft and should remain in managed isolation according to local authority as per local governmental regulations. A care-giver/medical doctor should be informed. The positive results to be reported through the oversight person to the national Antarctic program and to the local authority as per local governmental regulations.
- Leaving any expeditioner that returned a positive result in an isolation facility with the other expeditioners means there is a risk the infection will spread to other members of the deploying team, especially if, for some reason, isolation management protocols are breached. The expeditioner that returned a positive result should be moved, through approved means, to a different managed isolation/quarantine facilities, or hospital, as per local governmental regulations in order to eliminate that risk.

5.25.2 Testing on days 1 and 6 and 14

- On day 1 of managed isolation (so on the day of arrival) all expeditioners should undergo a COVID-19 PCR test with results conveyed back to the expeditioner and recorded by oversight point of contact. Any positive results to be reported through the oversight person to the national Antarctic program and to the local authority as per local governmental regulations.
- On day 6 of managed isolation all expeditioners should undergo a second COVID-19 PCR test. Any positive results to be reported through the oversight person to the national Antarctic program and to the local authority as per local governmental regulations. All persons that return a negative test result to remain in managed isolation.
- Leaving any expeditioner that returned a positive result in an isolation facility with the other expeditioners means there is a risk the infection will spread to other members of the deploying team, especially if, for some reason, isolation management protocols are breached. The expeditioner that returned a positive result should be moved, through approved means, to a different managed isolation/quarantine facilities, or hospital, as

⁹ There is some epidemiological evidence that “calculates that the median incubation period for COVID-19 is just over five days and that 97.5% of people who develop symptoms will do so within 11.5 days of infection” and this therefore supports a 14-day isolation period. However, an incubation period beyond 14 days can be considered biologically plausible so 21 days may be considered as a highly precautionary approach.

- per local governmental regulations in order to eliminate that risk.
- Recognizing that isolation for 14 days is very demanding on an individual, for all expeditioners that returned a negative test result on days 1 and 6, those expeditioners can join together from day 7 through day 14 for socializing/recreation and for taking meals together. Therefore creating a “group quarantine” for those expeditioners while still maintaining isolation from others outside of this immediate group.
- On day 14 of managed isolation all expeditioners should undergo a final COVID-19 PCR test. Any positive results to be reported through the oversight person to the national Antarctic program and to the local authority as per local governmental regulations. All persons that return a negative test, and were not part of the positive test result person’s group quarantine, may be cleared to continue deployment processes.

5.26 No one with a positive pre-deployment COVID-19 test result to be deployed until a negative test result returned and until approval to proceed has been obtained from the expeditioner’s national Antarctic program.

5.27 For expeditioners who have been in managed isolation for 14 days and were tested under either regime above and returned a negative test result either on day 12 or day 14, they can be appropriately transferred from the managed isolation accommodation to the vessel or aircraft by way of managed transport.

Pre-boarding management procedures

5.28 Managed transport means transport that meets the criteria to continue managed isolation of the expeditioners. This does not include any form of public transport and usually requires contracted transport of bus/van where the driver is isolated by physical shielding, does not interact with passengers, and has one pick up point and one drop off point of all expeditioners/passengers on-board. The vehicle should be disinfected between trips.

5.29 Even after following robust pre-deployment processes deploying expeditioners may demonstrate symptoms after isolation and testing protocols have been adhered to and completed. Expeditioners who report for transport to the vessel or the aircraft should be screened. Expeditioners who present with respiratory disease symptoms and/or a fever should not board the transport at that time. They should be returned to isolation and reported to the care-giver/medical person in charge.

5.30 Any expeditioners’ luggage being transported to the vessel or aircraft from managed isolation should be handled only by that expeditioner until it is loaded onto the managed transport.

5.31 After transportation to vessel or aircraft boarding area, pre-boarding screening and observations should be undertaken. There should be verbal and written confirmation that the expeditioner returned a negative PCR test result on day 12 or day 14. Expeditioners may be prevented from making final boarding calls. National Antarctic program contingency plans should include consideration of this possible eventuality and provision for stand-by, backup of critical positions/personnel.

5.32 Once pre-screening procedures are complete, the expeditioner should be allowed on-board. The hands of each expeditioner should be sanitized as they are boarding the vessel or aircraft.

5.33 Pre-departure access to the vessels and aircraft should be subject to strict restrictions. No access of visitors to the vessels or aircraft.

5.34 Preventive steps to be considered during deployment onboard vessels

5.35 Since all persons on board were subjected to extensive quarantine or managed isolation during pre-deployment period and returned a negative test result for coronavirus, the defined measures for contact avoidance/social distancing can be dispensed with for the most part on-board the vessel. Nevertheless, compliance with basic hygiene measures must continue for the duration of the deployment.

5.36 One person per cabin is best but often not possible.

5.37 It is strongly recommended that any Antarctic-going vessel carries on board at least one medical doctor and has the ability to isolate any person who presents with a suspected case of COVID-19.

5.38 If during the voyage, an expeditioner feels unwell they should report to the medical doctor immediately. If the medical doctor suspects a case of coronavirus, the emergency measures must be implemented immediately and expeditioners should follow all instructions.

5.39 Preventive steps to be considered during deployment onboard aircraft

5.40 Since all boarded passengers and crew are subjected to managed isolation in advance and tested several times for coronavirus, and given limited possibilities for aircraft seating arrangements, the defined measures for contact avoidance/social distancing can be dispensed with for the most part. Nevertheless, compliance with basic hygiene measures should continue for the duration of the deployment.

5.41 Preventive steps to be considered upon arrival to Antarctica

5.42 For those who arrived by vessel: If no medical incidents are reported on-board and if the journey to Antarctica is longer than 14 days in total, then upon arrival in Antarctica, the defined measures for contact avoidance/social distancing can be dispensed with, basic hygiene practices should be continued while in Antarctica.

5.43 Handles on luggage and carry bags should be cleaned before transfer to expeditioners' quarters.

5.44 For those who arrived by aircraft and by vessel journey of less than 14 days: Follow instructions on interaction with those already in Antarctica and for cleaning of personal luggage and cargo upon arrival.

5.45 Since all arriving expeditioners have been subjected to managed isolation and tested, there is little risk of an incoming expeditioner infecting a departing winter-over expeditioner with the novel coronavirus. Winter-over expeditioners tend to have suppressed immune systems and will be at greater risk for infection from the common cold and other viruses. Where possible, national Antarctic programs may therefore choose to disembark their summer crew and withdraw their winter-over team without physical interaction of the two groups in Antarctica recognizing that the turn-over from one team to the next requires safety briefings and other training that might only be possible through person-to-person interactions.

5.46 The aircraft should be cleaned as thoroughly inside as possible before allowing winter-over expeditioners to board. All garbage should be collected and sealed in bags away from the boarded passengers.

5.47 Be aware that departing winter-over expeditioners risk being exposed to the novel coronavirus at the gateway city or through-out their transit back to their home country.

5.48 Upon arrival to a facility in Antarctica, incoming personnel should be accommodated in separate rooms from any winter-over personnel and social distancing should be considered for the first 3 days. For example, if possible, meals should be taken in two groups (incoming expeditioners and departing expeditioners).

5.49 Clothing that is worn close to the skin and face should not be shared amongst expeditioners unless thoroughly washed between expeditioners.

5.50 If any person develops any upper respiratory tract symptoms, it is recommended that they wear a mask (FFP2 or lower) to reduce droplet spread to non-symptomatic persons. Any individuals who have symptoms should self-isolate and contact their medical officer immediately.

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

Key message – Proactively act to block intracontinental propagation paths.

“Given the global extent of COVID-19, the number of countries involved in Antarctic activities and the dependency on international collaboration that we base our Antarctic activity on, there is a recognized risk that SARS-CoV-2 will reach Antarctica even if all precautions are taken.”

Block intracontinental paths

6.1 In planning Antarctic season activities, taking into consideration safety, and for non-emergency situations, consider reducing intracontinental operations and logistics such as fixed-wing and rotary-wing facility-to-facility flights, multiple landings at multiple facilities or vessels, rotary-wing aircraft from land to/from vessel transfers, and vessel-to-vessel transfers.

6.2 During planning, special consideration should be given to protocols at Antarctic transit points and facilities such as airfields that regularly receive inter- and intra-continental aircraft from more than one operator.

6.3 Mutual visits and social events between stations/facilities should be discouraged and should require prior national approval and confirmation of risks if essential. We recognize that some Antarctic facilities share infrastructure which requires regular maintenance-review in advance any shared infrastructure and shared maintenance in order to carry out safe and, in some cases, separate (as between different facility personnel) works and services.

6.4 Shared feeder flights or ship calls should be discussed in advance of planned activity and, if possible, avoided. If they cannot be avoided, then possible safe scenarios could be:

- a) Flights: Antarctica-based air crews with 14 days free of signs of an infection can be considered virus-free and can perform shared feeder flights of expeditioners coming from 14 days of quarantine or managed isolation. In cases of transiting aircraft, maintain social distancing practices between aircraft crew and facility crew.
- b) Ship calls: No direct contact between expeditioners and the crew, maintain social distancing practices between vessel and station crews Ship freight that remains untouched for more than 9 days might be considered as low risk. Where possible, external washing with soap or

disinfectant of cargo reduces risk, and avoids need to quarantine cargo.

6.5 Many national Antarctic programs have already indicated that no tourist visits to Antarctic facilities will be supported this Antarctic season. It is strongly recommended that tourists should be prevented from entering national Antarctic program facilities and from any interaction with national Antarctic program personnel recognising that tourists are less likely to have undergone the same rigorous pre-deployment medical screening processes and managed isolation and therefore present a greater risk population.

6.6 Continued discussion is recommended with IAATO as between any national Antarctic programs that have scheduled visitations planned with IAATO Member vessels/aircraft or that use IAATO Member operators for support to their national Antarctic programs. Note that many national Antarctic programs have already banned interaction in Antarctica between tourists/tour vessel crews and national Antarctic program expeditioners for the 2020/21 Antarctic season.

6.7 With “other operators” in Antarctica, that is with non-governmental operators from the tourism and fisheries communities, there is a risk that national Antarctic program medical facilities at stations will be called upon in the event of a medical emergency beyond their expeditioners. It should be noted there is a risk related to such medical support requests, in that, bringing a patient or patients from outside the station community risks opening up the station population to the introduction of the COVID-19 disease, especially if the patient brought into the station has not undergone pre-deployment medical screening, managed isolation and testing. Tourists are most likely the population at risk to develop severe complications considering age and lack of medical screening.

6.8 We recommend national Antarctic programs actively discuss with their National Ministries and Competent Authorities the risk tourism presents in the context of inter- and intra-continental spread of SARS-CoV-2 in the Antarctic Treaty area and the emergency response possibilities that could result should COVID-19 present in the area.

6.9 Recognizing that all operators strive to work together in Antarctica when called upon in a medical emergency or search and rescue situation, national Antarctic programs are advised to review and update medevac and/or medical emergency plans to strengthen self-sufficiency and overall capabilities in order to maintain isolation at facilities and reduce risk of intracontinental introduction and spread of COVID-19.

6.10 If SARS-CoV-2 should reach Antarctica, intracontinental propagation paths should be blocked taking into account the risks associated with blocking such pathways and recognizing that intracontinental activity supports exchange of supplies, cargo and personnel and is critical in times of accident, incident, near-miss and emergency. All aspects of safety of human life in Antarctica should be considered in any decision-making.

6.11 An intracontinental path may be between regions¹⁰, between stations/facilities and through vessel landings at coastal facilities, including sub-Antarctic facilities and any vessel-to-vessel transfers of personnel, cargo or rotary-wing aircraft. Your national Antarctic program plan should consider what are your usual and vital intracontinental pathways as an exercise before completing your plan.

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

¹⁰ National Antarctic programs generally work in regional groups with little interaction between groups under usual season circumstances. The regional groups, generally are those operating in: King George Island, the Peninsula, East Antarctica, Larsemann Hills, Dronning Maud Land, Ross Island, and Terra Nova Bay, but these are not strictly defined nor strictly isolated.

Key message – Proactively act to block propagation paths within a station.

7.1 If SARS-CoV-2 should reach an Antarctic station/facility, propagation paths within the station have to be blocked. This is recognized as extremely difficult given the infectious risk in isolated confined environments. Each national Antarctic program should prepare in advance of the start of the season a plan in order to proactively reduce risk of spread in the event of a suspected case of COVID-19 at the station/facility. Emergency shelter or isolation facilities should be considered as part of the planning process bearing in mind the primary principle of safety of human life and the other “usual” risks we address and manage in “usual” Antarctic operations. Expeditioners should be trained in regards to the plan and be prepared to implement the plan if needed.

7.2 Regularly communicate and share information with all personnel at the station, raise awareness on how to act to block propagation, communicate to your national Antarctic program and to any other national Antarctic programs operating in the same region.

7.3 Remind everyone at the station to follow basic hygiene practices.

7.4 During cleaning, use appropriate disinfectant on surfaces (at least 2/d).

7.5 Medical personnel should be versed to identify the frequently reported signs and symptoms of suspected cases. All suspected cases should be managed by the medical personnel at the station/facility or on the vessel.¹¹

7.6 All suspected cases should be tested if testing capabilities and results laboratories are available at the station/facility or on the vessel.

7.7 If testing is not available or while awaiting test results, suspected cases/contacts/patients have to be totally isolated for 14 days with separate air conditioning (negative pressure if possible) or patient should be medevac'd. These decisions should be based on circumstances and are under the authority of the medical doctor on station.

7.8 In regards to all contacts with suspected cases or confirmed cases all contact persons have to be identified:

- In case of unprotected medical intervention or close contact (less than 2 meters distance face-to-face and greater than 15 cumulative minutes exposition), contact persons should be isolated and placed under observation.
- In case of lesser contact, measures should be individually discussed. Given the remote location and limited medical infrastructure of most Antarctic stations and the possible extent of damage, a liberal isolation regime seems advisable.¹²
- All contacts to use personal protection equipment (Mask FFP 2 or 3, Eye protection, disposable clothing, gloves).

¹¹ See <https://www.cdc.gov/coronavirus/2019-ncov/hcp/clinical-guidance-management-patients.html>. Symptoms of patients admitted to the hospital include fever (77–98%), cough (46%–82%), myalgia or fatigue (11–52%), and shortness of breath (3–31%) at illness onset. Among 1,099 hospitalized COVID-19 patients, fever was present in 44% at hospital admission, and developed in 89% during hospitalization. Other less commonly reported respiratory symptoms include sore throat, headache, cough with sputum production and/or hemoptysis. Some patients have experienced gastrointestinal symptoms such as diarrhea and nausea prior to developing fever and lower respiratory tract signs and symptoms.

¹² An example, in German, here: https://www.rki.de/DE/Content/InfAZ/N/Neuartiges_Coronavirus/Kontaktperson/Management.html

7.9 If there is a suspected case or confirmed case on a station/facility or vessel, anxiety amongst all expeditioners is to be expected and support should be given to reassure all expeditioners, and especially any expeditioner that becomes infected and requires medical care (see section 9.0 Psychological Considerations).

7.10 In preparedness, **all national Antarctic programs should immediately review and enhance for the 2020/21 Antarctic season:**

- 7.10.1 Proposed healthcare staffing levels at Antarctic facilities, training and remote medical support requirements.
- 7.10.2 Diagnostic capability.
- 7.10.3 Identify nearest availability or implement PCR respiratory panel diagnostic testing (e.g. BioFire PCR with FilmArray Respiratory Panel testing for 20 common respiratory pathogens or Aprimeo Vivalytic).¹³
- 7.10.4 Teleradiology and Telemedical support capability.
- 7.10.5 Infection control and isolation capability.
- 7.10.6 Aeromedical evacuation capability.
- 7.10.7 ICU capability including prolonged capabilities.

7.11 In preparedness, and in the event that a COVID-19 patient requires evacuation from Antarctica, national Antarctic programs should review their medevac procedures and capabilities in consultation with regional and gateway partners and Rescue Coordination Centres to ensure clear lines of communications and clear understanding of bio-medical procedures and requirements.

8.0 Objective 4: Dealing with COVID-19 in Antarctic operations

Key Message: Be Prepared. Plan Ahead.

8.1 As with any medical situation in Antarctica, the station medical doctor or medical team leader has control of the medical situation and should follow national Antarctic program procedures.

8.2 National experts should be available for a telemedicine response team to monitor and respond to the helpline queries with the latest & updated knowledge.

8.3 Note the strong correlation between age, preexisting/chronic conditions and COVID-19 severity and case fatality. "Compared to patients not admitted to an intensive care unit, critically ill patients were older (median age 66 years versus 51 years), and were more likely to have underlying co-morbid conditions (72% versus 37%)."¹⁴ When possible, persons belonging to a cohort with higher mortality (e.g. over 60, preexisting chronic conditions) might be excluded from traveling to Antarctica and/or should be early evacuated in case of an outbreak as a precaution.

8.4 Patients should self-isolate in their own rooms where possible and should be empowered to monitor and observe their own health and communicate those observations to the medical person. Where self-isolation is not possible or appropriate, review station facilities and identify in advance a possible isolation area at the station. Isolation or care rooms should be not be furnished with soft

¹³ Australia has implemented at Macquarie Island pending lack of COVID-19 test access to exclude diagnosed respiratory illness and thus exclude COVID-19. See <https://www.biomerieux.com.au/product/filmarray-multiplex-pcr-system>.

¹⁴ <https://www.cdc.gov/coronavirus/2019-ncov/hcp/clinical-guidance-management-patients.html>

furnishing but should have plastic chairs or items that can be disinfected/wiped down.

8.5 In cases where testing is available, all confirmed COVID-19 cases should be evacuated from Antarctica if possible according to national aeromedical, maritime-infection-control and biosecurity procedures and in consultation with authorities at the relevant Antarctic gateway. Importantly, regardless of availability of testing, all patients exhibiting symptoms should be assumed positive and isolation plans should be implemented.

8.6 Review medevac plan

- a) The plan should include identifying a suitable hospital infrastructure (external to Antarctica) for any COVID-19 patients. Think about where is the next available ICU, where is the next ECMO (extracorporeal membrane oxygenation) at the relevant gateway city or a city close to the relevant gateway city.
- b) While the patient remains on the Antarctic station, your medevac plan should consider that the expected time to Medevac will dictate the amount of equipment needed.
- c) The plan should include a decision-making matrix in regards to evacuation of the entire station/facility population in the case of a positive test for COVID-19.¹⁵

8.7 The optimal minimal Personal Protective Equipment (PPE) at each facility should be:

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

8.7.1 As an example calculation: In case of an expected time to Medevac of 10 days and 2 persons helping the patient/s that would add up to a minimum stock on station of:

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

8.8 Discuss or arrange for additional PPE to be stocked (for at least two patients) at nodal points of entry or exit to Antarctica with points of contact at the gateway. Such stock can be collectively utilized by several stations/national Antarctic programs in times of need on first-come, first-served basis.

8.9 Review any plan or to establish a plan as to how to proceed in case of (suspected) infection including chain of information for individual stations and allaying fear, anxiety amongst neighbouring stations. Information sharing should be paramount with neighbouring stations or regional facilities.

8.10 Have a communications plan, especially in order to keep families of station personnel informed and to inform media requests.

8.11 Review all aeromedical evacuation protocols. It is likely procedures will require modification to avoid spread of the virus during medevac.

8.12 After medevac of confirmed COVID-19 patient, national Antarctic programs should implement their decontamination plan. Such plans should give consideration to:

- 8.12.1 Leaving room(s) that require decontamination empty for a period of 72 hours before cleaning begins.

¹⁵ Any plan should address the risk that should one person test positive on station and if managed isolation is not successful and virus has spread, multi-medevacs may be required to move personnel from the station/facility, thus consideration of evacuation of all personnel should be part of the decision-making matrix.

- 8.12.2 All cleaning personnel should wear PPE during decontamination activity.
- 8.12.3 Disinfect all surfaces with a cleaning agent with a diluted strength of 1000 parts per million available chlorine (ppm av cl). Items that cannot be wiped clean, such as soft furnishings and mattresses, should be steamed clean if possible and in cases where such items are heavily contaminated with bodily fluids, they should be disposed of properly.
- 8.12.4 All cleaning materials, such as mop heads, cloths and towels, should be used only once and disposed of properly after use.
- 8.12.5 Launder washable items on the highest possible heat settings available and allow to dry thoroughly before further use.
- 8.12.6 All waste materials, including cleaning materials, from the rooms that require decontamination should be placed in sealed double bagged or other sealed waste containers and ideally incinerated. If they are returned from Antarctica as waste, they should be treated as biomedical waste and procedures must be followed for adequate disposal of these.

8.13 Ensure that your pre-planning includes consideration of where on stations “usual” medical consultations could take place in the case where your medical rooms or facility is managing a possible or confirmed COVID-19 patient. “Grab bags” (built to specific clinician specifications) should be placed in alternative locations in advance in order to be in a position to provide continuing care and medical services to other expeditioners while the medical facility is considered a quarantine area.

9.0 Psychological Considerations

Understanding risk of deployment & non-deployment

9.1 The impact of remote deployment can be significant on any individual, regardless of previous personal or professional experience. It is recognised that there will be significant concern that, whilst working remotely, of the risks of potentially contracting COVID-19. Early discussion with deploying personnel is paramount to ensure adequate time to understand the risk and discuss any concerns they may have about deploying.

9.2 For many, it is a lifelong dream to travel to work in the Antarctic and may represent the culmination of years of work. Precautions due to COVID-19 mean there exists a risk of non-deployment at two stages:

9.2.1 Non-Deployment following screening. This will impact those individuals deemed too high risk to deploy given existing health complaints. Appropriate structures should be in place for such individuals that should include debrief with management/internal staff and the option of repeat screening at a later stage if health risks can be mitigated.

9.2.2 Non-Deployment following symptoms. This will impact those individuals deemed unable to deploy due to symptom development and closure of travel routes. This is likely to be of greater psychological morbidity given the fact it is likely to occur in a gateway location in the absence of familiar support structures. Consideration should therefore be given as to how these individuals are best supported whilst in a gateway location that may require some form of permanent staff from home nations to provide initial assistance.

Understanding risk of increased mortality

9.3 Regardless of co-morbid status, individuals should be aware of the risk of death from COVID-19. This should be explained as:

9.3.1 Potential for deterioration and inability to evacuate.

9.3.2 Potential for deterioration despite evacuation.

9.3.3 Potential for deterioration in gateway location if contracting the disease.

9.4 Regardless of mechanism, all three carry increased psychological morbidity and should be discussed early in pre-deployment training to ensure individuals are fully informed and able to make decisions based on the information as to whether they still wish to deploy.

Explaining effective preventative behaviours

9.5 Without a vaccine, the only effective preventive to becoming infected with COVID-19 is behavioural. These behaviours may include social distancing, sanitizing and cleaning protocols, and wearing facemasks.

9.6 National Antarctic programs educational efforts, including familiarization with resources and support en route to, while deployed, and on return will be essential to the effective engagement of these behaviours

9.7 Environmental support and reinforcement for adopting preventive measures by national Antarctic programs for all personnel deploying or supporting deployment to the ice require training for all personnel and clear and constant messaging throughout the preparation, deployment and return process.

9.8 Clear behavioural messaging are short, easy to understand, and easy to measure. They should be easily understandable, data-driven and include an executive summary, the required or requested behaviour and researchable data-driven analysis.

9.9 All messaging should emphasize the importance and high value national Antarctic programs place on people and their safety and well-being.

9.10 Facilitate requested behaviour by providing easy access to sanitizing washing stations, masks and easily identifiable social distancing at potential areas of congregation.

9.11 Communicate the basic message consistently and frequently.

9.12 Use a positive theme where possible; helping others, helping your own family, friends and colleagues. Use positive reinforcement whenever possible.

9.13 Give your messaging a constant presence: newsletter material, posters, throughout all phases of mission; pre-deployment training, through transport, through time on ice, return and re-integration in home environment.

Resources to support psychological well-being

9.14 In order to fully support all deployed personnel in adhering to all recommendations, adequate resources must be provided. These may include:

9.14.1 Signage and posters outlining what would be social distancing.

9.14.2 Example hand washing protocols.

9.14.3 Floor markings outlining distance and direction of foot traffic.

9.15 Station management and leaders should demonstrate model behavior in their own actions and activities.

9.16 There should be open and transparent information sharing. This will ensure personnel remain aware of events outside of the station but also the current position, planning and actions being taken by their program. In order for personnel to remain informed, briefings could include:

- 9.16.1 Current information from the home nation, particularly in relation to COVID-19.
- 9.16.2 Current activity within the program and on station.
- 9.16.3 Medical update to re-enforce open door policy.
- 9.16.4 Review of current policy, action and plans in case of outbreak.
- 9.16.5 An opportunity for personnel to ask questions and share concerns in an open and supportive forum.
- 9.16.7 If required, personnel should understand the implications of what would happen if there were any deaths on station due to COVID-19 as this will further re-enforce the open and transparent nature of communication between leaders and personnel.

Planning in case of an outbreak on station

9.17 Any management of an outbreak on station will necessitate activation of local protocols and procedures. Have an outbreak plan ready and communicate that plan in advance to all station personnel. Discuss these plans with your relevant governmental agencies and authorities and share through COMNAP or directly with neighbouring Antarctic programs.

9.18 Stations with an individual COVID-19 patient that requires medevac risks further transmission during medevac procedure. Review those procedures and also practice remote medical capabilities in order to keep station in lockdown while providing patient required medical care and support.

9.19 In some cases of station outbreak, the protocol may call for station evacuation and closure. Make sure your plans address this possibility.

9.20 Ensure your outbreak plans consider the potential impact on neighbouring stations and on collaborative operations and logistics activities.

APPENDICES

Appendix 1: Demographics of at-risk individuals¹⁶

1. Notable High Risk Factors:

1. Age >60
 2. BMI >30 esp in younger (<60 yo)
 3. Smoker or ex-smoker (consideration to revise if low pack year history and less than 40 years old)
 4. Asthma particularly moderate/ severe
 5. Chronic lung disease
 6. Diabetes
 7. High blood pressure (even if normal treated with medication)
 8. Cardiovascular disease
 9. Renal disease
 10. Cancer
 11. Immunodeficiency (due to illness or medications such as steroids)
 12. Hepatitis (limited data- probably on a case by case review basis and not generally publicised as at risk)
2. The data suggests that individually the above risk factors seem associated with approximately 20% requirement for ITU, whereas 2 or more risk factors is associated with approximately 35% requirement for ITU. This is with a baseline risk of approximately 5% in the healthy young individual without any of the above.
3. Additionally it is also noted that males have approximately 2x Relative Risk (RR) of increased morbidity, and in the UK it has been noted that those from Black, Asian and Minority Ethnic (BAME) Groups have increased risk of mortality. The causality behind this is presently not understood; it is felt that the RR for males as an independent risk is not sufficient to preclude deployment, For BAME groups, it is felt that this is probably cultural rather than biomedical, and that within the small communities in the Antarctic there is a more inclusive cultural practice with equal access and use of healthcare.

Personnel listed to deploy should be risk stratified according to the demographics and their deployed roles reviewed. Anyone deemed at “increased risk” should be counselled appropriately before any deployment.

¹⁶ As defined in July 2020 in the BASMU (UK) Risk Stratification Tool, that is based on WHO, CDC and UK NHS reviews of current data sets.

Appendix 2: COVID-19 Therapy in Antarctica

(General advice only - given limited medical response capability if at all in Antarctica):

Refer also to:

<https://www.cdc.gov/coronavirus/2019-ncov/hcp/clinical-guidance-management-patients.html>

https://www.who.int/docs/default-source/coronaviruse/clinical-management-of-novel-cov.pdf?sfvrsn=bc7da517_2

1 Clinical presentation among reported cases of COVID-19 varies in severity from asymptomatic infection to mild illness to severe or fatal illness. Some reports suggest the potential for clinical deterioration during the second week of illness. Acute respiratory distress syndrome (ARDS) developed in 17–29% of hospitalized patients, and secondary infection developed in 10%. In one report, the median time from symptom onset to ARDS was 8 days.

➔ **Fast Medevac seems advisable.**

2 Approximately 20–30% of hospitalized patients with COVID-19 and pneumonia have required intensive care for respiratory support.

➔ **Medevac in order to provide intensive care for respiratory support seems advisable.**

3 Among critically ill patients admitted to an intensive care unit, 11–64% received high-flow oxygen therapy. Apart from the possible lack of equipment at Antarctic stations, high-flow oxygen therapy requires an oxygen-flow-rate of up to 60 l/Min. It seems nearly impossible to stock enough medical oxygen at an Antarctic facility for this scenario. Never-the-less it seems reasonable to stock as much oxygen as safely possible.

➔ **Increase the stock (safe storage) of medical-oxygen/consider the use of an oxygen concentrator-modern high-flow versions can deliver approximately 9 l/Min.**

➔ **Early medevac of an oxygen-dependent person highly advisable.**

4 Among critically ill patients admitted to an intensive care unit, 47–71% received mechanical ventilation; some hospitalized patients have required advanced organ support with endotracheal intubation and mechanical ventilation.

➔ **Endotracheal intubation and mechanical ventilation should be available.**

5 A small proportion of patients have also been supported with extracorporeal membrane oxygenation (ECMO, 3–12%). This is an unrealistic therapeutical option in Antarctica.

6 Other reported complications include cardiac injury, arrhythmia, septic shock, liver dysfunction, acute kidney injury, and multi-organ failure.

➔ **Appropriate medication (also for possible super infections/ pneumonia) and sufficient i.v. fluids should be on stock. Check stocks at Antarctic facilities.**

7 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
- Possibility of intubation and mechanical ventilation
- I.V. fluids and possibility to administer
- Appropriate Antipyretics, antibiotics, and general medication

8 The infection period for the virus will vary from person to person. Mild symptoms in an otherwise healthy individual may resolve over just a few days. German authorities suggest the following criteria for the repeal of isolation:¹⁷

- ➔ Earliest repeal of isolation 10 days after symptom-onset AND if fulfilling ALL following criteria:
 - No fever for at least 48 hours
 - Symptom-free for at least 24 hours in respect to the acute COVID-19 disease
 - Two negative SARS-CoV-2-PCR-tests within 24 hours
- ➔ As a PCR-test most likely won't be available, a feasible answer to the question of the repeal of isolation (e.g. in case of impossible Medevac) remains open.

¹⁷ https://www.rki.de/DE/Content/InfAZ/N/Neuartiges_Coronavirus/Entlassmanagement.html