EndCoronavirus.org COVID-19 Guidelines for High-Risk Care Institutions

Stephane Bilodeau, Briggs Clinco, Jeremy Rossman, Gary Chizever, Derrick Van Gennep, Andrew Zamora, Tracy Baving, Jonathan Tagliavini, Rachel Cohen Yeshurun, Katie Marsh, Leo PeBenito, Naomi Bar-Yam, Aaron Green and Yaneer Bar-Yam
EndCoronavirus.org
July 31st, 2020

TABLE OF CONTENTS

CONTEXT

Long-term care institutions, nursing homes, care homes, assisted living and retirement homes are high-risk institutions for disease transmission because residents are vulnerable due to their health status and their close proximity to one another. COVID-19 is a rapidly transmitting disease requiring hospitalization in about 20% of cases and resulting in death in 2-10% of cases in these high-risk settings. Complications further increase for persons 70 years old and above with pre-existing comorbidities especially heart failure, diabetes and hypertension. COVID-19 can transmit with mild symptoms (coughing, sneezing or elevated temperature) and even through asymptomatic persons unaware that they are infected. Reducing the likelihood of transmission is imperative in high-risk institutional environments as has been clearly shown initially in China and subsequently in European and American outbreaks.

Although the number of deaths from COVID-19 in care homes varies between and within countries, the percentage of COVID-related deaths in care homes worldwide range from 24% to 82% [4]. This policy snapshot looks at what countries have done to protect care homes during the COVID-19 crisis, including providing guidance, strengthening medical support, testing for residents and staff, and other supportive measures.

In the last four months, the medical and scientific communities and the Endcoronvirus.org team have examined measures different countries have taken to protecting care homes. The data we have obtained is consistent with basic principles on how to achieve robust prevention and risk reduction. In order to continue to improve, it is important to identify approaches that have led to better outcomes and to draw out learning for the ongoing and future outbreaks. Prevention and control systems and emergency plans should be developed. Strict management of movement in and out of centers, health monitoring for early detection of COVID-19 cases and quarantine and segmentation plans have shown to be important. In addition, studies found that caregivers working in multiple facilities leads to more cases and higher death rates (notably see [5]).

Here are recommended guidelines for prevention by introducing barriers to transmission from outside a facility, managing internal processes and helping the workforce to care for and protect residents. Developing guidelines is an ongoing effort, we summarise the main suggested strategies to deploy and highlight key items to take into account as of today.

The document is divided into sections. Section 1 covers rules for visitors, testing and outbreak monitoring, hygiene, dining and other high contact activities, employees and corporate environment, air quality and records. Section 2 covers enhanced rules for areas of active transmission regarding visitors and testing, dining and other high contact activities as well as employees, facilities and corporate environment. Section 3 lists a series of measures taken in some states and countries leading to distinct success in protecting care homes residents. Appendices cover A) employee safety and screening questions, B) Personal protective equipment (PPE), C) Definitions of COVID-19 cases and contacts, D) Isolation of confirmed, suspected or symptomatic residents, E) Receiving residents being discharged from hospital and F) Decontamination and cleaning processes for care homes with possible or confirmed cases.

Section 1: GENERAL RULES

In order to respond in a timely way to the COVID-19 pandemic in high-risk Institutions, it is important to enhance risk control strategically, as well as strengthen daily prevention and control measures such as personnel protection, environmental cleaning, and disinfection. Mitigation strategies that will be addressed: 1. Visitors; 2. Testing and outbreak monitoring; 3. Hygiene; 5. Dining and Other High-Contact Activities; 6. Employees and Corporate Environment; 7. Air Quality; 8. Records.

Visitors

- Discourage non-essential visitors. Note: an essential visitor is defined as necessary to the resident in terms of maintaining mental and/or physical health, or is required in specific situations including end-of-life, change in health status or other pressing or important circumstances (e.g. financial or legal matters, family crisis).
- Determine clear guidelines about conditions and behaviors for which visiting is not allowed including symptoms, travel, mask-wearing, occupational risks, and so on. Inform staff and residents about these guidelines. Specific conditions depend on the settings and the resident types. Examples of visiting conditions include:
    - Indoor visits conditions:
        - Each resident or alternate decision maker may designate one Family/Support Persons (over the age of 18) or up to two if it is essential to maintaining mental and physical health.
        - Additional visitors may be given access in specific situations including end-of-life, change in health status or other pressing circumstances (e.g. financial or legal matters, family crisis).
    - Outdoor visits conditions:
        - Up to four individuals, including the resident, may participate in outdoor visits, with distancing requirements, if consistent with site policy and public health measures.
- Position someone at entrances to query the purpose of the visit and ask if the visitors have any symptoms, have recently travelled to areas of active transmission, or have been exposed to people with symptoms as well as proceeding with scanning temperature of the visitors. Note: This must be communicated clearly before visitors arrive at the location, only to potentially be turned away at the door.
- Provide a questionnaire for those at entrances:
    - Symptoms that were present during 14 days before.
    - Do they live with other people and if so ask about symptoms of household members (they may be asymptomatic but the people living with them could be symptomatic).

    - Ask about travel in the last 14 days to identify the risk level of the locations of travel.
    - Do they work with infected or high-risk people in their jobs (doctors, nurses, ...).
    - Ask them to notify if they experience symptoms within 14 days after the visit.
- Keep a log of all visitors with contact information and in times of higher risk call them after the visit to determine if they subsequently have symptoms.
- Require wearing masks or face covering for each entering visitor. N95 masks are advised when possible for the visitors or if the facility can provide them.
- Visiting should be spaced at intervals to avoid crowding. Online appointments are suggested to simplify the process and reduce the risks of overcrowding the entrance pre-screening.
- Best practices guidelines should be posted in an easily readable format and relevant languages in public spaces for employees, residents and visitors to see.
- Have a designated area for visiting. Ideally, this area should have direct access to the entrance so visitors do not have to pass by various parts of the facility & should be cleaned & ventilated as often as possible (best after each visit) and having a hand sanitiser and mask station at entry.
- Spare room in the facility should never be used as quarantine housing for potential/positive cases
- Outdoor visiting is a safer option, weather permitting. These also have to be scheduled so there is not overcrowding. Tables, chairs and other outdoor equipment must be cleaned between visits.
- In times/regions of high community transmission, all visits should be prohibited except for an emergency.
- Provide for and facilitate alternate means of maintaining family contact - Zoom, Skype, assisted phone calls, etc., appropriate to the setting.

Testing and Outbreak Monitoring Strategies

- Pooled testing for residents and staff: If possible, implement a preemptive testing program using frequent individual screening or pooled testing, to identify cases early & better control spread from asymptomatic & pre-symptomatic cases.
- Targeted regular sampling of highly connected individuals: Identify individuals who are at risk for contracting the disease or for transmitting the disease because they are highly connected due to ongoing contact with multiple individuals in the population and regularly test them.
- Self-reporting and diagnosis: In this way of testing, an individual first has to identify they have symptoms that require medical care, and then report to a physician who performs a diagnosis, and if the diagnosis determines that they have this particular disease (with some false positives and negatives) the individual is isolated.
- Contact tracing including visitors if relevant: Individuals who have been in contact with a diagnosed individual (according to the self-reporting and diagnosis method, or from

clinical diagnostic testing) are identified and are contacted to either be on the lookout for symptoms or directly to be isolated. Even if they are not infected, their isolation (including many people who are not actually infected, i.e. false positives) is used to stop the outbreak. (see APPENDIX C: Definitions of COVID-19 cases and contacts)

- Targeted random sampling of staff and residents: In a regular (non-active) setting this way of testing, diagnostic or tests (DNA tests, qRT-PCR tests or possibly viral RNA tests or even the use of regular screening with pulse-ox meters where possible) as a further aid), are applied to individuals of high risk populations, for example, in confined communities such as nursing homes, rehabilitation facilities, psychiatric wards, medical facilities, or retirement communities. In those locations when one individual is infected many individuals are likely to be infected even if they are not yet showing symptoms or would have positive test results. In that case, the entire community can be isolated as individuals.
- Mass Screening: Systematic tests of everyone in a facility are recommended if a few cases are identified, or one case without clear prior cause or existing quarantine. Cases happen in clusters and testing everyone can expose multiple presymptomatic or asymptomatic cases whose isolation will prevent a much larger outbreak.

Hygiene

- Increased cleaning and sanitizing of all high-frequency touchpoints at a pace compatible with the usage. These include door handles, elevator buttons, sinks, toilets, tabletops and frequently handled machinery, equipment, electronic devices and other items. Particular attention must be devoted to hand grips and stair rails.
- Checking and ensuring that soap dispensers and paper towels in bathrooms remain adequately supplied throughout the day.
- Providing hand sanitizers at all entrances, exits and high-traffic locations.
- Providing tissues and sterilizing alcohol-based wipes.
- Replace commercial-style open-ring dropdown toilet seats with those fully covering, and post signage encouraging closing before flushing (may reduce aerosolization of infection).
- Engineer door-opening and closing to minimize need for hand surface contact following hand-washing or use of restroom, or for the entrance to the buildings, or when crossing different sections of a building.
- Install electronic (IR) switches, or elbow-operated faucet handles or foot-operated sink controls to minimize need for hand surface contact following hand-washing. Provide signage instructing in use.
- Use paper towels for hand drying. DO NOT use air blower hand dryers as they are known to widely spread viral particles.

Dining and Other High-Contact Activities

- Shared dining facilities are high risk activities for transmission. A shift to separated in-room dining should be done in high risk areas.
- Where residents are sufficiently autonomous, provide in-room food service with no-contact prepared food delivery.
- Sanitize areas of contact after each individual use, including tabletop, chair armrest, menu. Use washable or disposable tablecloths and menus.
- Give support and tools (hand sanitizers or else) for hand hygiene before eating.
- Wait and service staff should avoid contact and proximity.
- Stagger dining times to avoid crowding and sitting arrangements to avoid face-to-face dining.
- Where contact is essential for services provided, careful handling protocols should be made including effective ventilation, gloves, disposable overgarments, and masks.

Employees and Corporate Environment

Staff and family members preparedness

- Educate staff and their families, as well as residents and their families, of Coronavirus transmission and prevention. Ensure employees know that when they have even mild symptoms they should not be at work locations or in-person meetings and they will be paid and not penalized for sick days. Set up a reporting system for any cases (see Appendix A for a suggested “Employee Safety and Screening Questions for Employers”).
- Ensure employees have appropriate health insurance policies so that they will not be afraid to seek out care when they have symptoms, even mild ones.
- Ensure a proper and continuous supply of PPE for the workforce (see Appendix B for more info on PPE). Document proactive contingency plans for temporary PPE supply-chain interruptions. Eye protection (face shields or goggles) is to be encouraged along with masks or other face coverings (not as a substitute for mask). As a supplementary preventive measure, consider making masks or other face coverings available for workers’ families and household members.

Organizational considerations

- Prepare for employee substitutions in case they become ill individually or collectively.
- Proactive staff shortage contingency planning, possible use of trained staff augmentees
- Stay abreast of current information and advisories.

- Replace in-person office meetings with virtual ones.
- Staff buddy-care or other programs as appropriate to monitor for fatigue and precaution-measures burnout.
- Redundant/resilient staff emergency contact procedures.

Decision-making processes

- Designate leadership/decision-making authority chain allowing for after-hours and disruptive events such as short-notice need for isolating multiple residents.
- Increase emphasis on / allocation of resources for ongoing short-format staff trainings - “in-services”, to stay current with evolving best practices for all staff (see [16]).
- Designate Infection Prevention and Control Officer.
- Communicate with US HHS HealthCare Coalition Preparedness representatives or national equivalent.

Contingency planning:

- Proactive contingency planning for community members (resident, new admission, visitor, vendor or staff) positive COVID notifications, and for the possibility of a superspreader event within the community, causing staff outages.
- Guidance to, and as feasible, minimizing population mixing with, outside providers of services--barbers, beauticians, podiatrists, other consultants and ancillary service providers.
- Request all symptoms and keep a record for community members and outside providers. In case they live with other people, also request their symptoms (they may be asymptomatic but the people living with them could be symptomatic).
- Request all travel information including cities to which they travel to find out if they are more at risk of contagion.
- Consult if they are with infected people in their jobs (doctors, nurses...).

Air Quality

- Make sure that rooms are properly ventilated to ensure good air quality.
    - Open windows,
    - Determine air flow and circulation in the room,
    - Improve air flow if needed using supplementary mechanical ventilation such as fans, blowers, air exchangers and similar systems.
- If ventilation and fresh air intake is limited or impossible, use air purifiers.
- Incorporate HEPA filters and UV disinfection into air ducts of air conditioning systems.

Records

- Participate in national reporting, e.g. US Centers for Disease Control and Prevention National Healthcare Safety Network - Long-term Care Facility Module (CDC NHSN LTCF) or other nation equivalent.
- Record case lists - tabular record of residents with potential COVID symptoms and actual cases.
- Track and identify trends in weekly totals of acute care transitions - upticks have shown to be an early independent indicator of a possible outbreak.

ENHANCED RULES FOR AREAS OF ACTIVE TRANSMISSION

It is essential that High-Risk institutions follow Safe Zone practices and remain disease-free. When COVID-19 is found in a nursing home, the confirmed case and suspected cases (if any) should be immediately isolated from others and from each other (confirmed from suspected cases, and multiple suspected cases must be isolated from each other in case one of them is infected and the others are not, multiple confirmed cases may be isolated together). Off-site isolation should be facilitated when possible. Before entering the isolation area, cases should change their clothes and/or put on proper PPE such as gown, mask, face shield, gloves, etc. (see APPENDIX B for details on PPE and APPENDIX C for case definitions). Health care workers should adopt proper personal protection measures. Unnecessary personnel should be forbidden in isolation areas. Strict disinfection should be carried out for isolation areas and contaminated objects. (see APPENDIX D for more information on Isolation of confirmed, suspected or symptomatic residents)

Visitors

- If at all possible, avoid outside contact and encourage the use of text, phone and videoconference to communicate. Where visitors are necessary, consider setting up a separate area for visitor meetings, including enough space for everyone to remain at a safe distance (well over 6 ft), video links for virtual contact and glass or plexiglass partitions. Note: a necessary visit is defined as essential to maintaining mental and physical health, or is required in specific situations including end-of-life, change in health status or other pressing circumstances (e.g. financial or legal matters, family crisis).
- As soon as there are signs of an outbreak, the facility must provide masks (if possible N95) and they may be required even before outbreak confirmation.
- Deliveries should be made by single drivers who do not have symptoms of the disease and have not recently (within 14-21 days) had known exposures.
- Whenever possible, no-contact deliveries should be dropped off in a space that does not require entry into the facility.
- It is highly advisable that people allowed entrance into a high-risk institutional environment have been recently tested with negative results.
- Have a designated area for visiting; that area would be used only for necessary visits, as previously defined. Ideally this area should have direct access (not pass by various parts of the facility) & should be cleaned & ventilated as often as possible (ideally after each visit).

Testing

- Systematic and specific testing: If possible, DNA tests, qRT-PCR tests or possibly viral RNA tests or even the use of regular screening with pulse-ox meters where possible or other specific tests, should be applied widely and regularly (e.g. weekly, or every X days, etc.) to the workforce to identify and isolate individuals who are infected. This way of testing focuses on a specific facility or area, in order to identify potential cases to be isolated. If the test is specific enough and can be applied widely enough, this approach can stop an outbreak.
- CAUTION: COVID RT-PCR tests have a sampling induced false negative rates. Multiple tests are often needed to confirm a diagnosis. The false negative rates of RT-PCR may give false confidence to individuals who are sick to continue normal activities. Symptomatic individuals should not be considered to be COVID free even if they have negative test results. Therefore, RT-PCR tests cannot be relied upon by themselves for transmission prevention. Resolution of symptoms and multiple negative tests are necessary.
- Where RT-PCR test results are delayed, or for members of high risk institutions, or where isolation or workforce decisions must be made, CT-scans with lower false negative rates are better suited to ruling out a COVID diagnosis.
- Where persistent widespread testing within institutions is not possible due to resources or costs, pool testing can be used. Pool testing may be exploited in an optimal strategy, as an alternative to alleviate test availability or other limitations while still giving relevant information and controls. Since pool testing has its own issues with respect to false positive v. false negative rate, it should be used as a preliminary measure that is upgraded as soon as is feasible.
- Typically, the most important difficulty is false-negatives because of the initial self-reporting: people who are sick, but do not recognize it and don't self-report, perhaps because symptoms are generic/nonspecific, or immediately life-threatening, or because of false negative test results. Asymptomatics also represent a major risk factor in care homes. Alternatively, individuals may suspect they have the disease but for personal, financial, social or professional reasons don't choose to be diagnosed, or are not provided with the opportunity to be diagnosed, and isolated. Systematic testing minimizes the risk of both mildly symptomatic and asymptomatic being missed in the process and removes many social and professional reasons to avoid testing.
- Where effective contact tracing is operational, high-risk asymptomatic persons can be directed to present for testing, quarantined, or at a minimum explicitly discouraged or barred from visiting or working in the facility depending on local jurisdictions.

Employees, Facilities And Corporate Environment

- Emphasize to employees that their actions outside of work can lead to transmission of infection risking the lives of residents. Education should include how to mitigate risk to their families and households as well as to residents of the facilities where they work. Even if the disease has a low risk to them, any contact with individuals or surfaces in non-safe areas is extremely dangerous for those in the high-risk facility. They should take responsibility and limit off-work non-safe contact to a minimum, while their employers/facilities are making face coverings and/or masks available to their close relatives.
- Encourage employee adoption of safe space protocols at home limiting their contact and others who live with them with individuals and surfaces that are not safe and record which employees are following them on a voluntary basis. Note: a “Safe space” is defined by the CDC as a space where people can self-isolate or practice social (physical) distancing between themselves and other people who are not from the household.
- Encourage employers and facilities to communicate with workers and supervisors in order to prioritize and plan as soon as possible to:
    - pay workers enough so they don't need multiple jobs to subsist.
    - give workers enough hours so that they can work in only one place, and get good health insurance for themselves and their families.
    - find appropriate staffing levels for each type of worker so that there are the minimum number of staff coming in and out, and at the same time preventing overwork, exhaustion, burn out.
- Ensure additional and greater supplies of PPE equipment for the workforce (see Appendix B for more info on PPE). As a supplementary measure, ensure masks or face coverings are available for workers’ families.
- Engage with local medical facilities/laboratories or local and state/provincial public health agencies, to coordinate rapid testing and contact tracing of residents and employees.
- Partition facilities to separate zones, limiting employees and residents from crossing from one zone to another. This will limit contagion, in case one zone becomes infected.
- Stagger breaks and discourage socializing within indoor confined areas. Ensure mask wearing even for staff-staff interactions and ensure proper training in PPE wearing/fitting.
- Transfers of residents in or out of the institution should follow safe space requirements with attention to point of origin, point of destination, contact with those performing the transfer, and the vehicles that are involved. (see Appendix E for more informations on receiving residents being discharged from hospital)
- When bringing in new residents or starting new employees who are not coming from a Safe Zone quarantine for 14-21 days.
- Where possible, arrange facilities for residential accommodation of employees within this or another Safe Zone.

- Arrange partnerships with sister institutions to follow Safe Zone practices for transfers and response to an outbreak.
- Arrange for office staff to work from home, develop protocols so that this is possible (for example, see Appendix F for more information on decontamination and cleaning processes for care homes with possible or confirmed cases of COVID-19).
- Avoid clustering in elevators. Elevators should not take more than half of their carrying capacity.
- When AC is used, disable re-circulation of internal air. Clean/disinfect/replace key components and filters weekly.
- Check the engineering design of the ventilation system to determine if air flows connect air from different rooms. Develop mitigation or alternative ventilation processes.
- Deploy air purifiers using HEPA filters around the facility.

Key Measures taken in some States and Countries having success in protecting care homes residents during COVID-19

1. Strengthening medical support
2. Reducing and managing visitors to prevent infection
3. Establishing long-term care COVID control task force
4. Devising creative ways to enable visits with relatives
5. Providing guidance - staff, residents, visitors, outside consulting and ancillary-service providers
6. Minimising infection through workforce management
7. Providing financial support to workforce and facility operators
8. Boosting staffing levels recruitment and retention
9. Repeat testing for staff
10. Centralising procurement of equipment
11. Planning for isolation and quarantine
12. Expanding testing for residents

(see [6] “European Observatory and Health System” for more details)

APPENDIX A: COVID-19 Employee Safety and Screening Questions for Employers

Employers that are striving to protect their customers and employees, especially those who are providing essential services during a lockdown, should engage with employees to determine their risks of becoming infected in order to protect them individually and collectively. This may contribute to the evaluation of how to organize workspaces and identify which employees serve in roles that require contact where it is necessary. This is particularly relevant to essential services such as supermarkets, pharmacies, groceries, and health care providers as well as high-risk institutions such as retirement communities, dormitories, nursing homes, rehabilitation facilities, psychiatric wards, and prisons. It is more generally relevant to any corporation that strives to protect its employees, whether they are working from home or idle until the activities are restored.

General guidelines for organizations include:

- Maximize work from home to enable self-isolation and promote Safe Spaces.
- Maintain essential functions and reduce the impact on all functions using Safe Space workspaces.

Extending safety practices to individual employees decrease their own risk and the impact on the organization. Reaching out to see how safe their environment is outside of work becomes essential to the safety of the workplace and how sustainable their contribution will be during and after this critical time. Their safe environment includes potential historical exposures during the most recent 14 day period. Actions that can be taken include:

- Encouraging individuals to implement Safe Space practices including isolation from others who are at risk.
- Encouraging individuals to maintain healthy activities to reduce their risk factors.
- Where exposure has happened, arrange for safe 14 day self-isolation to ensure that they are not infected, or if symptoms arise.
- Where risks are high, to arrange for separate housing for employees who are currently well to avoid becoming infected from, or infecting, roommates or family members over a 14 day period.
    - Especially for employees in high-risk institutions.
    - Especially where they are living with roommates or family members at risk of becoming infected (e.g. because they have been or are working in non-safe space workplaces).

- Especially where they are living with roommates or family members that are elderly or have pre-existing health issues that make adverse outcomes more likely.
- Especially if the employee is in a high-risk profession, e.g. health care and other hospital workers, and essential high contact service employees in supermarkets, groceries and pharmacies.

SAFETY SCREENING QUESTIONS FOR EMPLOYERS

Here is a list of useful questions to begin to determine their level of risk:

1. Where do you live?
    a. Private home, duplex, apartment
    b. Do you have a separate entrance?
        i. Common door / lobby
        ii. Elevator
2. How many people are in your household?
    a. What are they doing?
        i. Working outside of the home?
        ii. At school or other collective activity?
        iii. At home?
    b. Have you or anyone you live with travelled recently?
        i. Where?
        ii. Means of transportation?
    c. Have you or anyone you live with been in a health care facility for care or a visit recently?
3. How do you socialize now? How much, if at all?
    a. Are you socially isolating?
    b. Are you being or having guests?
4. What do you know about social distancing measures? And what are you practising?
    a. 6 feet between people
    b. Hand washing
    c. Not touching and cleaning surfaces.
5. How do you get the food you eat?
6. Do you have pets that you have to walk outside?
7. Do you or a household member have medical or age-related risk factors relevant to COVID-19?
8. Do you or a household member have symptoms related to COVID-19, such as fever, fatigue, headache, sore throat, changes in smell and/or taste etc.?

APPENDIX B: PERSONAL PROTECTIVE EQUIPMENT (PPE)

The type of PPE used will vary based on the level of precautions required, such as standard and contact, droplet or airborne infection isolation precautions. CDC recommendations are used as a reference.

SEQUENCE FOR PUTTING ON PERSONAL PROTECTIVE EQUIPMENT (PPE)

The procedure for putting on and removing PPE should be tailored to the specific type of PPE.

1. GOWN

- Fully cover torso from neck to knees, arms to the end of wrists, and wrap around the back
- Fasten in back of neck and waist

2. MASK (N95, surgical mask, other face masks [or respirator if need])

- Secure ties or elastic bands at the middle of head and neck
- Fit flexible band to the nose bridge
- Fit snug to face and below the chin

3. GOGGLES OR FACE SHIELD

- Place over face and eyes and adjust to fit

4. GLOVES

- Extend to cover wrist of isolation gown

USE SAFE WORK PRACTICES TO PROTECT YOURSELF AND LIMIT THE SPREAD OF CONTAMINATION

- Keep hands away from the face
- Limit surfaces touched
- Guidance on when gloves are needed is available. Research shows that routine use of gloves might actually be harmful and handwashing would generally more effective.
- If gloves are needed, change gloves when torn or heavily contaminated
- Perform hand hygiene
- stagger breaks - resist the tendency to gather and socialize in small enclosed areas

HOW TO SAFELY REMOVE PERSONAL PROTECTIVE EQUIPMENT (PPE)

Here is a suggested way to safely remove PPE without contaminating your clothing, skin, or mucous membranes with potentially infectious materials.

- Remove all PPE before exiting the resident/patient room except a respirator, if worn.
- Remove the respirator (if needed) after leaving the patient room and closing the door.
- Remove PPE in the following sequence:

1. GOWN AND GLOVES

- Gown front and sleeves and the outside of gloves are contaminated!
- If your hands get contaminated during gown or glove removal, immediately wash your hands or use an alcohol-based hand sanitizer
- Grasp the gown in the front and pull away from your body so that the ties break, touching outside of gown only with gloved hands
- While removing the gown, fold or roll the gown inside-out into a bundle
- As you are removing the gown, peel off your gloves at the same time, only touching the inside of the gloves and gown with your bare hands. Place the gown and gloves into a waste container

2. GOGGLES OR FACE SHIELD

- The outside of goggles or face shields are contaminated!
- If your hands get contaminated during goggle or face shield removal, immediately wash your hands or use an alcohol-based hand sanitizer
- Remove goggles or face shield from the back by lifting headband and without touching the front of the goggles or face shield
- If the item is reusable, place in a designated receptacle for reprocessing. Otherwise, discard in a waste container

3. MASK (N95, surgical mask or other face masks)

- The front of the mask is contaminated — DO NOT TOUCH!
- If your hands get contaminated during mask/respirator removal, immediately wash your hands or use an alcohol-based hand sanitizer
- Grasp bottom ties or elastics of the mask, then the ones at the top, and remove without touching the front
- Discard in a waste container

4. WASH HANDS OR USE HAND SANITIZER IMMEDIATELY AFTER REMOVING ALL PPE

- Perform hand hygiene between steps if hands become contaminated and immediately after removing all PPE

APPENDIX C: Definitions of COVID-19 cases and contacts

- **Possible case of COVID-19 in the care home**: Any resident (or staff) with symptoms of COVID-19: high temperature, new continuous cough, and/or a loss of, or change in, sense of smell or taste, fever, chest pain, chest tightness, feelings of inability to catch one's breath, shortness of breath, general muscle pain, headaches, low oxygen saturation, rapid respiratory rate, marked fatigue, flu-like illness, unexplained diarrhea, blood clot, unilateral leg or arm swelling suspicious for blood clot, stroke, abdominal pain with no known cause, elevated C-reactive protein, elevated positive d-dimer saturation, unconsciousness.
- **Confirmed case of COVID-19**: Any resident (or staff) with laboratory-confirmed diagnosis of COVID-19.
- **Infectious case**: Anyone with the above symptoms is an infectious case until symptoms are resolved and there are two negative PCR tests on sequential days. Note: The highest likelihood period of transmission begins 2 days before symptom onset and continues until 10 days after symptom onset (see [20] for a Meta-Analysis on coronaviruses viral load dynamics, duration of viral shedding and infectiousness). The actual period of transmission for a particular individual varies and may extend longer.
- **Resident contacts**: Resident contacts are defined as residents that:
    - Live in the same unit/floor as the infectious case (e.g. share the same communal areas).

  or

    - Have spent more than 15 minutes within 2 metres of an infectious case.
- **Staff contact**s: Staff contacts are care, home staff, that have provided care within 2 metres to a possible or confirmed case of COVID-19 for more than 15 minutes.
- **Outbreak**: Two or more cases which meet the case definition of possible or confirmed case as above, within a 14-day period among either residents or staff in the care home.
- **Note:** Due to transmission that occurs through air and surfaces, direct contact is not necessary for an individual to be infected. For this reason the usual definitions of “contact” does not identify all at-risk individuals for transmission. This leads to a need for testing or quarantining a much larger set of individuals at care-homes and other high risk institutions. Experience shows that once there is an unidentified transmission event or more than one case, all members of the community should be tested.

APPENDIX D: Isolation of COVID-19 confirmed, suspected or symptomatic residents. Quarantine of close contacts.

The incubation period between exposure and symptom onset is typically no longer than 14 days, and this is used for quarantine of potentially infected individuals (non-symptomatic and not diagnosed). This should not be considered to be the isolation period for an infected individual. The infectious period and the duration of the disease vary widely and are often much longer than 14 days. Even after apparent recovery from the disease, viral shedding causing infections of others may continue. The total infectious period includes a few days prior to symptoms, the symptomatic period, and the post-symptomatic infectious period. Therefore, the end of the infectious period should be determined by both clinical observation and testing. Ruling out infectiousness should be done by waiting until symptoms resolve, isolating for 14 additional days, and waiting until two RT-PCR tests separated by 24 hours are negative.

Isolation of residents

1. Isolation of COVID-19 confirmed residents:
    a. Confirmed residents should be immediately isolated until symptoms pass, plus 14 days, plus 2 negative swab RT-PCR tests results 1 day apart.
    b. Confirmed residents may be isolated in a shared isolation area.
    c. Cohorting should be done for those who test positive. Otherwise we don't know who is sick and who isn't and they will infect each other.
    d. Follow contact precautions and clearly sign the isolation rooms by placing IPC signs, indicating droplet and contact precautions, at the entrance of the room.
2. Quarantine of contacts and suspected residents:
    a. Contacts of confirmed cases that are non-symptomatic should be immediately quarantined for 14 days pending symptom development.
    b. RT-PCR, CT-scans, blood tests, and clinical exam may be used to confirm or rule out a COVID diagnosis.
    c. Follow contact precautions and clearly sign the isolation rooms by placing IPC signs, indicating droplet and contact precautions, at the entrance of the room.
    d. If symptoms do not develop, and tests are negative, return to normal conditions after 14 days.
3. Single case - Isolation of a symptomatic resident:
    a. Symptomatic residents should be immediately isolated for 14 days from onset of symptoms and tested.
    b. Those who are confirmed by tests or continue COVID symptoms should be isolated until symptoms pass, plus 14 days, plus 2 negative test results 1 day apart.
    c. Follow contact precautions and clearly sign the isolation rooms by placing IPC signs, indicating droplet and contact precautions, at the entrance of the room.

4. More than one case - Cohorting of all symptomatic residents:
    a. Symptomatic residents may not be infected with COVID and should be isolated in single occupancy rooms, without shared bathrooms, so that they don't infect each other.
    b. Residents with suspected COVID-19 should not be cohorted with residents with confirmed COVID-19.
    c. Where residents develop common symptoms at the same time so that they are likely all to be infected by the same disease (COVID or not), and test results are delayed, cohort symptomatic residents together in multi-occupancy rooms.
    d. Do not isolate suspected or confirmed patients adjacent to immunocompromised or other high risk residents.
    e. Follow contact precautions and clearly sign the isolation rooms by placing IPC signs, indicating droplet and contact precautions, at the entrance of the room.
    f. When transferring symptomatic residents between rooms, the resident should wear a surgical face mask.
    g. Staff caring for confirmed or symptomatic patients should also be cohorted away from other care home residents and other staff, where possible/practical. If possible, staff should provide support exclusively to either symptomatic or asymptomatic residents. Where possible, staff who have had confirmed COVID-19 and recovered should care for COVID-19 patients. Such staff must continue to follow the infection control precautions, including PPE as outlined in this document.

Isolation and cohorting of contacts:

Careful risk assessment of the duration and nature of contact should be carried out, to put in place measures such as isolation and cohorting of exposed and unexposed residents. Please refer to the definition of contacts in Appendix C.

Clinically vulnerable residents should be in a single room and not share bathrooms with other residents.

There are broadly four types of isolation measures:

1. **Partner with other facilities**: This is the preferred option at the facility level. Designate facilities for confirmed, suspected and well individuals, with appropriate training and care provided. Where separate facilities are not possible, designate separate regions of a facility with maximal isolation between them.
2. **Isolation of contacts individually in single rooms for 14 days after last exposure to a possible or confirmed case**: This is the preferred option. These contacts should be carefully monitored for any symptoms of COVID-19 during the 14-day period as described earlier.
3. **Cohorting of contacts within one unit rather than individually**: Consider this option if isolation in single rooms is not possible due to shortage of single rooms when large numbers of exposed contacts are involved.
4. **Protective cohorting of unexposed residents**: Residents who have not had any exposure to the symptomatic case can be cohorted separately in another unit within the home away from the cases and exposed contacts.

APPENDIX E: Receiving residents being discharged from hospital

During an outbreak hospitals might need as many beds as possible to support and treat an increasing number of COVID-19 cases. In some areas Health Departments have determined to discharge more patients into care homes for the recovery period. The practice of sending individuals back to care facilities from hospitals has led to many outbreaks and deaths in care facilities. Due to potential transmission within a hospital, even individuals who are not COVID patients are high risk individuals and should be considered as would a close contact.

It is very difficult to isolate in a care facility without creating a very separate space, a wing with separate staff. Even better is to have separate care facilities that are devoted to COVID positive individuals. The following suggestions are intended to minimize the risks when discharge to a specific care facility from a hospital is a requirement.

During the COVID-19 response, it will typically not be possible for nursing homes to visit a potential resident in hospital to assess their care needs. It is important that a discharge plan or model is in place to streamline the discharge process and the assessment of care needs will be undertaken by hospital discharge teams. If there is no specific plan upon discharge in the jurisdiction, Nursing Homes and other Care homes could follow the guidance below.

If a resident has no positive tests or symptoms of COVID-19

- Perform COVID tests upon discharge from the hospital.
- Coordinate safe transfer, as transfer including discharge, transit and arrival process, as transfer itself carries risk of transmission.
- Consider transferred patient as a close contact (Appendix D), including a 14 day quarantine period.
- Consult if the resident tests positive for COVID-19, how does recent hospitalization affect care protocols.
- What special care is required upon discharge?
- Is re-hospitalisation required upon any specfic developments?
- What special care is required upon the first sign of COVID or other symptoms?

If the resident has tested positive for COVID-19, is no longer showing symptoms but has not yet completed isolation.

- Follow protocols for isolation and care of COVID-19 positive individuals (Appendix D)
- What care is required upon discharge? Provide care in isolation.
- The resident does not leave the room (including for meals) for 14 days and 2 negative RT-PCR tests separated by 1 day.
- Staff wear PPEs & place in clinical waste after use.

APPENDIX F: Decontamination and cleaning processes for care homes with possible or confirmed cases of COVID-19

COVID-19 is mainly transmitted via droplets and aerosols and may persist in the air for hours and on fomites (surfaces, equipment, utensils, fabric, hair, dust and other particles) for days. The disease may be spread when people touch contaminated surfaces and then touch their face. Regular air exchange or filtering and cleaning and disinfecting of surfaces that are frequent touch-points helps to prevent disease spread.

Cleaning removes germs, dust, dirt and impurities from surfaces. Some forms of cleaning also kill germs. Even when cleaning doesn't kill germs, removing them from the immediate environment where people are located reduces the risk of spreading infection. Killing germs by disinfection should be performed after cleaning to further reduce the risk of spreading infection.

The coronavirus causing COVID-19 can be killed by soap, alcohol and chlorine bleach. More specifically: SARS-CoV-2 can be neutralized by lipid solvents including ether (75%), ethanol, chlorine-containing disinfectant, peroxyacetic acid and chloroform except for chlorhexidine. A list of disinfectants for SARS-CoV-2 can be found on the EPA's website https://www.epa.gov/pesticideregistration/list-n-disinfectants-use-against-sars-cov-2.

Time also kills viral particles. Current information indicates that over a period of hours, low density viral particles on cardboard become inactive, and over a period of a few days, they become inactive on hard plastic and metal surfaces.

However, systematic inactivation on a variety of fomites and conditions is not yet well understood. This includes its dependence on the quantity of viral deposits, temperature, humidity, and other ambient conditions. For high density or large areas, the reliability of inactivation decreases and chemical disinfection is highly recommended. Washing and the use of disinfectants also should allow time for the effects to occur. Applying disinfectant and leaving on surfaces before rinsing is important.

General cleaning processes and procedures

Domestic staff should be advised to clean the isolation room(s) after all other unaffected areas of the facility have been cleaned. Ideally, isolation room cleaning should be undertaken by staff who are also providing care in the isolation room or domestic staff designated to those areas.

The person responsible for the cleaning with detergent and disinfectant should be familiar with these processes and procedures:

1. In preparation
    a. Collect any cleaning equipment and waste bags required before entering the room.
    b. Any clothes and mop heads used must be disposed of as single-use items.

   c. Supplies for cleaning should include:
      i. Waterproof gloves such as latex, nitrile or dishwashing
      ii. Soap/detergent, warm water, clean towels, leak-proof plastic trash bags
      iii. Disposable gowns for extensive cleaning related tasks including taking out industrial trash
      iv. Face mask
      v. Goggles (optional to prevent reactions to cleaning and disinfecting solvents)
      vi. Disinfectants
   d. Before entering the room, perform hand hygiene then put on an FRSM (fluid-resistant surgical masks), disposable plastic apron and gloves.
2. On entering the room
   a. Keep the door closed with windows open to improve airflow and ventilation whilst using detergent and disinfection products.
   b. Bag any disposable items that have been used for the care of the patient as clinical waste.
3. Cleaning process
   a. Use disposable cloths/paper roll/disposable mop heads, to clean and disinfect all hard surfaces/floor/chairs/door handles/reusable non-invasive care equipment/sanitary fittings in the room, following one of the 2 options below:
      i. Use either a combined detergent disinfectant solution at a dilution of 1000 parts per million (ppm) available chlorine (av.cl.).

      or

      ii. A neutral purpose detergent followed by disinfection (1000 ppm av.cl.).
   b. Follow manufacturer's instructions for dilution, application and contact times for all detergents and disinfectants.
   c. Any clothes and mop heads used must be disposed of as single-use items.
4. Cleaning and disinfection of reusable equipment
   a. Clean and disinfect any reusable non-invasive care equipment, such as blood pressure monitors, digital thermometers, glucometers, that are in the room prior to their removal.
   b. Clean all reusable equipment systematically from the top or furthest away point.
5. Carpeted flooring and soft furnishings
   a. For carpeted floors/items that cannot withstand chlorine-releasing agents, consult the manufacturer's instructions for a suitable alternative to use the following, or combined with, detergent cleaning.
6. On leaving the room
   a. Discard detergent/disinfectant solutions safely at disposal point.
   b. Dispose of all waste as clinical waste.
   c. Clean, dry and store re-usable parts of cleaning equipment, such as mop handles.
   d. Remove and discard PPE as clinical waste per local policy.
   e. Perform hand hygiene.

7. Staff Uniforms
    a. OSHA regulations prohibit home laundering of personal protective apparel or equipment, such as a lab coat or gloves. However, experts are divided about whether this regulation also extends to scrubs, uniforms, and other clothing. Nevertheless, if uniforms are required, the facility should make provisions to launder them properly on-site or provide the necessary information to employees regarding risks, infection control, and proper cleaning guidelines for the item based on duties being performed at the facility.
    b. If no on-site laundry is available at the facility, uniforms should be transported home in a disposable plastic bag.
    c. Uniforms should be laundered:
        i. separately from other household linen,
        ii. in a load not more than half the machine capacity,
        iii. with extra detergent or bleach,
        iv. at the maximum temperature the fabric can tolerate, then ironed or tumble dried.
8. Safe Management of Linen
    a. Any towels or other laundry used by the individual should be treated as infectious and placed in an alginate bag then a secondary clear bag. This should then be removed from the isolation room and placed directly into the laundry hamper/bag. The location of the laundry hamper should be as close to the point of use as possible, but do not place it inside the isolation room.
    b. When handling linen DO NOT:
        i. Rinse, shake or sort linen on removal from beds.
        ii. Place used/infectious linen on the floor or any other surface e.g. tabletop.
        iii. Re-handle used/infectious linen when bagged.
        iv. Overfill laundry receptacles; or
        v. Place inappropriate items in the laundry receptacle.
    c. Laundry must be tagged with the care area and date, and stored in a designated, safe lockable area whilst awaiting transport or laundering.
    d. Linens should be laundered according to local policy for infectious linen.
9. Waste
    a. Care homes that provide nursing or medical care are considered to produce health care waste and should comply with regulations.
    b. All consumable waste items that have been in contact with the individual, including used tissues, should be put in a plastic rubbish bag, double bagged and tied. This should be put in a secure location awaiting uplift in line with local policies for contaminated waste.
    c. Waste such as urine or faeces from individuals with possible or confirmed COVID-19 has not been designated to require special treatment and can be discharged into the sewage system. If possible, the individual can use their en-suite WC. However, due to precautions about the possible role of a fecal-oral route for infection avoid contact or breathing of vapors.
    d. Communal facilities should not be used for waste handling. Care homes should have well-established processes for waste management.

Surface specific cleaning guidelines

In general there are two types of surfaces that need to be cleaned and they require different protocols. Soft, porous materials include carpeting, rugs, towels, clothing, sofas, chairs, bedding, soft fabric toys (i.e., stuffed animals), etc. Hard non-porous surfaces include stainless steel, floors, kitchen surfaces, countertops, tables and chairs, sinks, toilets, railings, light switch plates, doorknobs, metal/plastic toys, computer keyboards, remote controls, recreation equipment.

GENERAL GUIDELINES WHEN CLEANING ANY TYPES OF SURFACE

- Discard rather than clean or disinfect highly contaminated items.
- Immediately throw away all disposable cleaning items
- Wash hands frequently, including after emptying waste baskets and touching tissues and similar waste.
- Wash your hands thoroughly with soap and water for at least 20 seconds or use an alcohol-based hand sanitizer that contains at least 60% alcohol

CLOTHING AND OTHER SOFT, POROUS MATERIALS THAT CAN BE LAUNDERED

- Place materials in a sealed plastic bag until laundering
- Launder using hot water and a detergent, preferably containing color-safe bleach
- Dry on high heat

SOFT, POROUS MATERIALS THAT CAN NOT BE LAUNDERED (CARPETS, COUCHES, OTHER POROUS SURFACES)

- Vacuum to keep dust from spreading into the air
- Spot-clean spills of bodily fluid promptly following safe procedures
- Deep clean carpets while avoiding splashing as much as possible
- Use steam cleaners to clean carpets and other porous surfaces as needed

HARD, NON-POROUS SURFACES

- Follow labeled instructions on all containers
- Clean surface with soap and water to remove all visible debris and stains
- Rinse surface with clean water and wipe with clean towel
- Apply the disinfectant. To effectively kill the virus, make sure the surface stays wet with the disinfectant for at least 10 minutes before wiping with a clean towel. If an EPA registered disinfectant (or equivalent) is not available a 2% chlorine bleach solution can be used. Take care with alcohol based disinfectants as they tend to evaporate quickly and may not fully disinfect if instructions are not followed
- Rinse with water and allow surface to air dry. Rinsing following use of a disinfectant is especially important in a food preparation area
- Mop heads should be cleaned with soap and hot water and sanitized with an EPA-registered disinfectant or bleach solution and allowed to dry. Consider using single-use, disposable mop heads or cloths as an alternative
- Remove gloves and place in a trash bag and discard
- Wash hands after removing gloves and handling any contaminated material, trash or waste

References

1. ECV March Guidelines “Outbreak Guidelines for High-Risk Institutions”: https://assets-global.website-files.com/5e62f57a6f9734c5e7879c84/5e6ee4bd7ef394e84d554c42_outbreak_guidelines_for_high_risk_institutions.pdf
2. Asymptomatic in Care Homes: https://www.thelancet.com/journals/laninf/article/PIIS1473-3099(20)30560-0/fulltext
3. The CMS June 21st mapping of Nursing Homes Death in the States: https://data.cms.gov/Special-Programs-Initiatives-COVID-19-Nursing-Home/Map-of-Deaths-per-M-Residents-in-Nursing-Homes-SB-/f7fj-fpid
4. Last update for the #outreach-high-risk-institutions on the Nursing Home project on Medium: https://towardsdatascience.com/nursing-homes-in-covid-19-time-why-so-many-examples-of-failure-to-care-and-protect-e0ea38f6fd2c
5. The Vivaldi study by the ONS: https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/conditionsanddiseases/articles/impactofcoronavirusincarehomesinenglandvivaldi/26mayto19june2020
6. European Observatory and Health System study: https://analysis.covid19healthsystem.org/index.php/2020/06/08/what-measures-have-been-taken-to-protect-care-homes-during-the-covid-19-crisis/
7. Prevention and control of COVID-19 in nursing homes, orphanages, and prisons, by J.Wang et al. Environmental Pollution Volume 266, Part 1, November 2020, 115161: https://www.sciencedirect.com/science/article/pii/S0269749120327627?via%3Dihub
8. Sanchez GV, Biedron C, Fink LR, et al. Initial and Repeated Point Prevalence Surveys to Inform SARS-CoV-2 Infection Prevention in 26 Skilled Nursing Facilities — Detroit, Michigan, March–May 2020. MMWR Morb Mortal Wkly Rep 2020;69:882-886: https://www.cdc.gov/mmwr/volumes/69/wr/mm6927e1.htm?s_cid=mm6927e1_w#suggestedcitation
9. Pillemer K, Subramanian L, Hupert N. The Importance of Long-term Care Populations in Models of COVID-19. *JAMA.* 2020;324(1):25–26. doi:10.1001/jama.2020.9540: https://jamanetwork.com/journals/jama/fullarticle/2767062
10. Beunardeau M., Brier E., et al., Optimal Covid-19 Pool Testing with a priori Information, arXiv, May 2020, arXiv:2005.02940: https://arxiv.org/abs/2005.02940
11. "Sequence for Putting On Personal Protective Equipment (PPE)", Center for Disease Control and Prevention (CDC): https://www.cdc.gov/hai/pdfs/ppe/PPE-Sequence.pdf
12. "COVID-19: how to work safely in care homes", Public Health England, Last updated 15 June 2020: https://www.gov.uk/government/publications/covid-19-how-to-work-safely-in-care-homes

13. https://www.cdc.gov/nhsn/ltc/covid19/index.html, accessed 15 July 2020
14. https://www.phe.gov/Preparedness/planning/hpp/Pages/find-hc-coalition.aspx accessed 15 July 2020
15. https://www.health.state.mn.us/diseases/coronavirus/hcp/ltctoolkit.pdf accessed 15 July 2020
16. Improving Health Care Leadership in the Covid-19 Era, NEJM Catalyst, a division of the Massachusetts Medical Society. https://catalyst.nejm.org/doi/full/10.1056/CAT.20.0225
17. https://www.cdc.gov/coronavirus/2019-ncov/hcp/long-term-care.html?CDC_AA_refVal=https%3A%2F%2Fwww.cdc.gov%2Fcoronavirus%2F2019-ncov%2Fhcp%2Flong-term-care-checklist.html accessed 15 July 2020
18. https://vimeo.com/434765728 attended 1 July 2020
19. https://catalyst.nejm.org/doi/full/10.1056/CAT.20.0225 accessed 15 July 2020
20. M. Cevik, M., Tate, et al. Division of Infection and Global Health Research, School of Medicine, University of St-Andrews, UK, “SARS-CoV-2, SARS-CoV-1 and MERS-CoV viral load dynamics, duration of viral shedding and infectiousness: a living systematic review and meta-analysis” https://www.medrxiv.org/content/10.1101/2020.07.25.20162107v2
21. https://wwwnc.cdc.gov/eid/article/26/7/20-0764_article accessed 15 July 2020
22. https://www.nist.gov/news-events/news/2020/06/nist-airflow-model-could-help-reduce-indoor-exposure-aerosols-carrying accessed 15 July 2020
23. https://www.kare11.com/article/news/health/coronavirus/u-of-m-researchers-study-indoor-spread-of-covid-19/89-56f00a52-172e-4218-bbb5-1a79f27727c3 accessed 15 July 2020
24. S. Lauer, J. Lessler, et al., Bloomberg School of Public Health, Johns Hopkins University, “The Incubation Period of Coronavirus Disease 2019 (COVID-19) From Publicly Reported Confirmed Cases: Estimation and Application” https://www.acpjournals.org/doi/10.7326/M20-0504
25. https://www.nature.com/articles/d41586-020-02053-6 accessed 15 July 2020
26. https://www.medrxiv.org/content/10.1101/2020.04.05.20050245v2 accessed 15 July 2020 (EndCoronavirus - affiliated researchers)
27. Variation in SARS-CoV -2 Prevalence in US Skilled Nursing Facilities. E.M. White, C.M. Kosar, R.A. Feifer, et al. https://onlinelibrary.wiley.com/doi/abs/10.1111/jgs.16752