**Appendix A. Definitions of predictors of SARS-CoV-2 transmission among consecutive exposures of residents of congregate living settings (CLS).**

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| **Variable name** | **Description/definition** | **Type** | **Values** |
| Type of CLS | Type of CLS in which exposure occurred. | Categorical | Nursing homeIndependent living facility |
| Memory care unit | Whether exposure occurred on a memory care unit, defined as unit dedicated to providing care for residents with dementia.  | Categorical | YesNo |
| Location of exposure | Location in which exposure occurred (or majority of cumulative exposure). | Categorical | Private room (with private bathroom)Shared room (shared bathroom between 2-3 residents)Jack and Jill room (shared bathroom only, between two adjoining resident rooms)Common room (includes activity area, library, chapel and other common spaces)Dining room (for resident dining only) |
| Occurrence of outbreak on unit | Whether active COVID-19 outbreak was present on unit at time of exposure.  | Categorical | YesNo |
| Cumulative duration | Duration of exposure, including sum of time spent with source at close proximity (within 6-feet) within 48-hours of onset of infection (symptom onset or test positivity, whichever was first) and up to 10-days following.  | Categorical | Less than 15 minutes15 minutes to 1 hour1 to 2 hoursMore than 2 hours |
| Ventilation – total ACH | Estimated ACH of location in which exposure occurred. All room sizes within a CLS where exposures occurred were tested with 2 instruments: 1) direct air volume readings at the ceiling terminal using a Balometer capture hood (digital micromanometer with a flow hood kit), and 2) digital vane anemometer used for velocity readings at grille-type terminals with air volume conversion from a K factor. Fan level measurements (OSA ACH) were taken from ducts traversing the supply, return and exhaust airstreams using a digital micromanometer and pitot tube. The difference in airflow between supply and return airstreams was assumed to equal the OSA volume. | Continuous | Total ACH |
| Ventilation – fresh ACH | Estimated fresh ACH of location in which exposure occurred. To determine percentage of OSA at the fan level, a physical inspection of the unit was required including: 1) ducted system types: a) mixed air draw through or b) mixed air with assisted power exhaust or return fan; 2) OSA duct present, unobstructed and intake reasonably distanced from external contaminant sources (e.g., sanitary or fumehood discharge vents; 3) OSA plenum is negatively pressurized to induce OSA into the distribution system, confirmed by pressure test in unit mixed air plenum. In some cases, the fan equipment serving the space was not known or access to that equipment was not available, which resulted in inability to measure fresh ACH.  | Continuous | Fresh ACH |
| Humidity | Estimated relative humidity of location in which exposure occurred. Indoor Air Quality Meter (TSI probe, IAQ-Calc Meter 7545) was used to measure relative humidity. | Categorical | Below acceptable (less than 30%)Acceptable (30-60%) |
| Room size | Volume of location in which exposure occurred. The volume of every room in each facility with a known exposure was measured using a laser measuring tool. Rooms were further categorized as small, medium or large, based on size distribution of resident rooms and common rooms within each facility. Medium rooms were defined as volumes falling between the smallest and largest rooms for that facility based on histogram of room volume distribution. The following distribution of room volumes were obtained by room type.

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| Room size in ft3 | Common area or dining room |  | Resident room |
| Median (IQR) |  | Median (IQR) |
| Small  | 6658.9 (9368.5) |  | 1782.9 (548.1) |
| Media | 10965.2 (7837.5) |  | 2598.2 (946.4) |
| Large | 15426.2 (16365.2) |  | 3743.4 (1522.6) |

 | Categorical | SmallMediumLarge |
| Type of source | Type of source involved in exposure. Resident sources included roommates, tablemates, activity partners and wandering residents in close proximity. Healthcare workers and caregivers were grouped together given that both provide care to residents. Visitors included those spending time with a resident for social reasons and not considered caregivers. Others included all other sources not included in the above, including those providing services to the home from the community.  | Categorical | Resident Healthcare worker/Caregiver VisitorOthers  |
| Symptom status | Whether source was symptomatic at time of exposure. Asymptomatic source was defined as asymptomatic at time of exposure and did not develop symptoms within 48-hours afterward. Pre-symptomatic source was defined as asymptomatic at time of exposure and developed symptoms within 48-hours afterward. Symptomatic source was defined as having symptoms of COVID-19 infection at time of exposure. | Categorical | Asymptomatic Pre-symptomatic Symptomatic  |
| Day from onset of infection | Source’s duration of infection at time of exposure, defined as number of calendar days from onset of infection (symptom onset or test positivity, whichever was first). | Categorical | Less than 1 dayEqual or greater than 1 day |
| Cycle threshold | Cycle threshold is the number of test cycles required to detect SARS-CoV-2 gene targets on PCR. This result was routinely available for sources tested on-site, but otherwise not available for sources tested elsewhere. | Continuous | Cycle threshold value |
| RAT positivity | Whether source RAT was positive (if collected). RATs were widely available during the study period and used to supplement PCR testing in some CLS, but their use was not universal.  | Categorical | YesNo/unknown |
| Exposed resident level of care | Exposed resident’s level of care as reported by CLS. Independent residents were defined as residents needing no support with activities of daily living. Residents requiring moderate assistance were defined as those requiring increased care while remaining ambulatory (with or without assistance). Residents limited to bed and generally requiring full care were categorized as bedbound.  | Categorical | Independent Minimal to moderate assistance Bedbound  |
| Exposed resident vaccination within 3-months | Whether exposed resident received COVID-19 vaccination within 3-months of exposure.  | Categorical | YesNo |
| Occurrence of secondary exposure | Whether exposed resident was involved in secondary exposure with >1 other resident(s) within their incubation period (defined as 2-5 days). | Categorical | YesNo |

CLS=congregate living setting; OSA=Outside air; ACH=air changes per hour; RAT=rapid antigen test; PCR=polymerase chain reaction.