**Forty potential exposure situations evaluated**

1. **Long Term care dining room**

Safe situation only with high ventilation rate (>20) and low number of emitting persons. Mostly highly infectious.

1. **Patient ward, sleeping room**

Long staying periods many ill may well lead to extreme infection, even with high ventilation rates. Never safe.

1. **Patient ward visitor morning**

Visiting patients in the morning for two hours may often lead to infectious dose, lower chance with high ventilation rate and not many infectious persons.

1. **Bedroom, private**

With low ventilation rates, quite common, and small rooms, highly infectious.

1. **Dining room, guests**

High ventilation rate (20) required for safe dinners with a few infectious persons.

1. **Dining room, small family**

One ill, very low chance of spreading infection, except for VR1 and lower.

1. **Sitting room**

With one ill hardly chance on infection, except for VR1 and lower.

1. **Kitchen Private sitting**

Small space with one ill leads to infectious situation even with VR5.

1. **Kitchen Restaurant walking**

Larger space with one ill poses hardly risks as ventilation usually will be higher than VR5 (norms >10)

1. **Restaurant inside full**

With 1m2 per person and 2 ill in a ~30m2 room the ventilation must be high (>5) to prevent infections.

1. **Bar, well filled**

Also 1m2 per person. Homogeneous related groups may sometimes lead to a high share of infected persons. With 5 ill persons only VR20 prevents infectious exposures for a two hours stay, with longer stays always dangerous.

1. **Shopping mall**

The high air volume per average infected person, infection rate usually well below 4% makes risks minimal, even with exceptional low VR2.

1. **Supermarket**

The supermarket is like the shopping mall, but the residence time tends to be much lower.

1. **Small shop**

With lower numbers on a smaller spot the share of infected may be higher. But chance on infection remains extremely low, even with modest ventilation rates.

1. **Health club, groups**

Rules for ventilation will start at VR10. With 8% infected, 2 persons per 250m2 do not pose any risk.

1. **Shower room/ toilet**

The short residence time and high ventilation rates usual, and mostly required, makes this situation to a near zero-infection risk.

1. **Dressing room (sport, etc.)**

The usually short residence time in the ventilated facilities makes infection highly improbable.

1. **Coffee room (choir, clubs)**

The chance of a higher number of infected persons rises with people knowing each other well. The often longer staying periods increases exposures further. Lower VRs then result in an extreme risk of infection.

1. **Meeting room**

With a low ratio of infected persons (2.5%) and good ventilation there is hardly a risk on infectious exposure. Only VRs around five and lower pose a risk.

1. **Office room**

With a low ratio of infected persons (2.5%) and good ventilation there is hardly a risk on infectious exposure, even for a day-long stay. For the opposite there is always a serious risk of infection.

1. **Non-office workspace**

Larger person density and full working days, and with groups infected (50%) serious infection risks result.

1. **Church (high building)**

Old-fashioned church buildings tend to be very high, with a high dilution. With 2% infected a moderate ventilation rate of 5 is enough to reach a non-infectious situation. Only a very long stay (4 hours) and a ventilation rate of only 1 will some serious exposure result.

1. **Person car ventilation low - medium**

Ventilation rates are high even ventilation is set on low. However, space (in m3) is small. With a short trip of 15 minutes there is no risk yet, but with 2 hours the exposure rises to moderately dangerous.

The medium ventilation position will give a VR60, enough to reduce concentrations and exposures to safe levels even on longer trips.

1. **Train compartment**

With two ill persons in a 6-seats compartment an 8-hour trip will give a very high exposure, even at VR20. Only short trips are well below the 350 virions threshold. So are long trips with a ventilation rate of 40, or a limited presence of one ill person for not more than a few hours.

1. **Bus long distance**

With three ill persons, a 12-hour trip gives always a too high exposure, even with VR20. Only reduced to 4 hours VR20 is below 350.

1. **Bus, metro commuting, busy**

With 2 exhaling persons, short trips are below 350, as are 2-hour trips with 5 ill, but only at VR20.

1. **Airplane cabin (post-corona)**

IATA advice is minimum VR17, also at standing. With 1 exhaler per row of 10 (10%), VR20 suffices for a 2-hours trip. Eight-hour trips may always lead to substantial exposure.

1. **Passenger ship sleeper, next cabin**

They may have through ventilation with 50% fresh air to a next cabin. With four ill in a group of 6, the next cabin will always have an over 350 virions exposure, even at VR20

1. **Exhales normal direct face-to-face**

Single exhales don’t even reach 1 virion per inhale at 100cm, following exhale literature. Inhaling 100 times stays well below 350 but would better be analyzed based on the room ventilation model.

1. **Exhale cough-sneeze inhaled fully**

Though visually intense, the result of receiving the full cough-sneeze directly in the face is quite harmless even at only 100cm distance: the burst leads to fast dilution.

1. **Droplet cough/sneeze hit in** **nose, to alveoli**

Receiving one larger droplet in the nose, an extreme event, would still require the few virions arriving there to next create the way to the alveoli for COVID-19 pneumonia. A highly improbable situation, set at ‘3’, to give a number

1. **Fomite into nose, to alveoli**

Though some partial data are available common view now is that infection is hardly possible, supported by mainly assumption-based quantifications, set a ‘1’.

1. **Stool (fomite) to mouth**

Numbers of virions in stool are high but intake routes in volume seem quite improbable. Assuming them viable, then following the necessary steps as with fomites, leads to a very low chance on alveolar infection.

1. **Food to mouth**

Uncertain but unlikely route, even more unlikely through the hands on the food route.

1. **Terrace outside "room model"**

With a terrace open at three sides and the top it is an extremely well-ventilated room. With very low wind at 1m/s, fresh air comes in every 10 seconds, a ventilation rate of 360. When assuming only VR60, while staying for two hours with 5% ill persons, one may inhale 16 virions.

1. **Terrace outside "exhales & wind model"**

Infection seems highly improbable, as the model gives an upper estimate.

1. **Platform railway/bus station exhales**

With normal staying times exposure for infection seems extremely unlikely.

1. **Mink farms**

Workers have a substantial risk of infection, next spreading in the community. Possibly, infection in close vicinity of mink farms.

1. **Pets, ferrets in sleeping room**

Ferrets are used as animal model due to the similarity in SARS-2 illness, including pneumonia. At 1.5kg we take them as 0.02 person. Sleeping rooms may have a ventilation rate of 1 and often lower to 0.1. Then an exposure with well over 350 virions may come in one night’s sleep. Ferrets as pets may sleep in bed with persons, at less than 50cm breathing distance.