

### Appendix 3 – High Risk Routine Encounter Scenarios for Health Care Worker COVID-19 Transmission

Type of Patient / Client <sup>20</sup> Expiratory Action	Estimated Quantity of SARS CoV-2 Emitted from Patient / Client Breathing Zone <sup>21</sup>	Comments on Drivers of the Estimated Quantity	Scenarios Where Aerosol Transmission Could Occur <sup>22</sup>
Breathing Only (with no Talking, Coughing or Sneezing)	100 per minute	While virus concentrations are higher in lung fluid than saliva, breathing generates a very small total volume of expelled liquid, and the small droplet size distribution precludes presence of virus in most droplets and hence nuclei	<p><u>Well Ventilated Indoor Locations<sup>23</sup>:</u>                      Face-to-face interactions with infected persons at a distance of 1.5 meters or closer for a cumulative duration of 10 minutes or more during a work shift. Note: if two patients / clients are close together such that there is simultaneous proximity of 1.5 meters or less, that counts as a double exposure for purposes of tallying up total exposure duration.</p> <p><u>Poorly Ventilated Indoor Locations:</u>                      The scenario above applies. In addition to the above, cumulative unprotected presence at a distance of more than 2 meters away from the patient’s breathing zone, in a single patient / client room for 2 hours per shift. Reduce this pro rata</p>

<sup>20</sup> I use both patient and “client” in recognition of (1) there being care-giving settings where the individual is not ill and not receiving treatment for an illness (e.g. nutrition, counselling, physiotherapy, etc.), and may not be thought of as a “patient”, and (2) the likelihood that in those care settings there is a statistical likelihood that the percentage of persons getting care who are SARS CoV-2 positive, asymptomatic and unidentified, will be comparable to the percentage in the general population.

<sup>21</sup> Totals are for inhalable fraction only, which includes any droplet that is originally 100 microns or smaller at the time of expulsion, or which converts to a droplet nucleus 100 microns or smaller before being transported away from the breathing zone of the health care worker. Particles larger than 100 microns are unlikely to be inhaled for aerodynamic reasons.

<sup>22</sup> Patients / clients are assumed to not be masked or have other devices in use to block their expiratory actions.

<sup>23</sup> Herein, “well-ventilated” means a space with total and outside supply air volumes, air velocities, and exhaust volumes (where applicable) in line with recommendations provided in ASHRAE 62.1-2019, or ASHRAE 170-2017.

			for rooms with more than one patient (e.g. maximum 1 hour in that case).
Talking (with no Coughing or Sneezing)	1000 per minute	Higher total volume of liquid expelled, increasing droplet size distribution permits increased prevalence of viruses in expelled droplets.	<u>Poorly Ventilated Indoor Locations:</u> The scenario above applies. In addition to the above, cumulative unprotected presence at a distance of more than 2 meters away from the patient's breathing zone, in a single patient / client room for 12 minutes per shift. Reduce this pro rata for rooms with more than one patient (e.g. maximum 6 minutes in that case).
Coughing	6000 per cough	Much higher total volume of liquid expelled per event, larger droplets almost certain to contain one or more virions. However, virus concentrations in saliva have been found to be one or more orders of magnitude lower than in respiratory fluids, so the larger liquid volume doesn't result in proportionately greater virus shedding.	<u>Well Ventilation Indoor Locations:</u> Any face-to-face interactions with infected persons who are coughing.  <u>Poorly Ventilated Indoor Locations:</u> Any entry into a room where the person is present and is, was, or likely will be coughing.
Sneezing	70,000 per sneeze	Very high total volume of liquid expelled per event, most emanating from the sinuses. In addition to underlying low volume distributions of small lower airway droplets, sneezing discharges most of its volume in high velocity liquid sheets that immediately sheer to form large ballistic droplets. The total droplet count can be close to half-million, but most fallout ballistically and / or are too large to be inhaled. Sneezing theoretically presents contact and fomite transmission risks not associated with the other	<u>Well Ventilation Indoor Locations:</u> Any face-to-face interactions with infected persons who are coughing. Face or eye protection also recommended.  <u>Poorly Ventilated Indoor Locations:</u> Any entry into a room where the person is present and is, was, or likely will be coughing. Face or eye protection also recommended.

		expiratory events above. While total liquid discharge volume is high, virus concentrations in sinus and oral fluids are much lower than in lung respiratory fluids.	
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