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Dear fellow Health Workers,

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My Aim is to provide information to optimize security for health workers in diagnostic centres.

Attached you will find preliminary information to optimize security for health workers in diagnostic centres for the Corona outbreak. Health workers should be protected to prevent them to become the vectors of the virus or worse, a victim of Corona-disease.

Starting points:

- 1) The contamination is air borne.
- 2) The protection with masks and protective spectacles is not sufficient.
- 3) There is a worldwide lack of protective materials.
- 4) In general diagnostic centres do not have air flow management.
- 5) Patient flow is more or less random.
- 6) Low cost highly Evidence Based measurement will flatten the peak in the outbreak.

Strategy:

- 1) Air flow management.
- 2) Research into improvised and professional sterilisation of masks and specs.
- 3) Local production and professional production of protective masks and specs.
- 4) Spreading Evidence Based Air Flow management. See following Page.
- 5) Spreading Evidence Based Patient flow.
- 6) Use new media to spread the information.

To start with: Air Flow management!

The video presentation to support this information will follow.

Sincerely Yours

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www.iergenhuisarts.nl

Attachment viral infections and airflow

Upon aerosolization, bacteria and viruses desiccate when dispersed in liquid suspensions such as saliva and then surrounded by relatively dry air. Loss of water is the greatest environmental stressor to pathogens and results in a loss of viability. On the other hand, the high relative humidity level in the respiratory tract promotes aerosol growth and affects the deposition site and efficiency as well as some repair mechanisms in the viability of microbes upon inhalation.

The relative simplicity of viral structure explains why the results of aerosol inactivation studies are more consistent for viruses than for bacteria. Inactivation of viruses is affected by the following variables: (i) viruses with lipids in their outer membrane are more stable at low relative humidities (20%-30%) than at high relative humidities, (ii) viruses without lipids are more stable at high relative humidities, (70%-90%) than at low relative humidities, (iii) the nucleic acid for viruses without lipid membrane may be isolated and not detected during desiccation, while it can be recovered by prehumidification at sampling, (iv) minimal survival for both lipid and nonlipid membrane viruses occurs at intermediate relative humidities (40%-70%).

Example viruses with lipid membranes include Langkat, Semliki forest, Vesicular Stomatitis, Vaccinia, and influenza. Some nonlipid membrane viruses include respiratory Adenoviruses and Rhinoviruses.

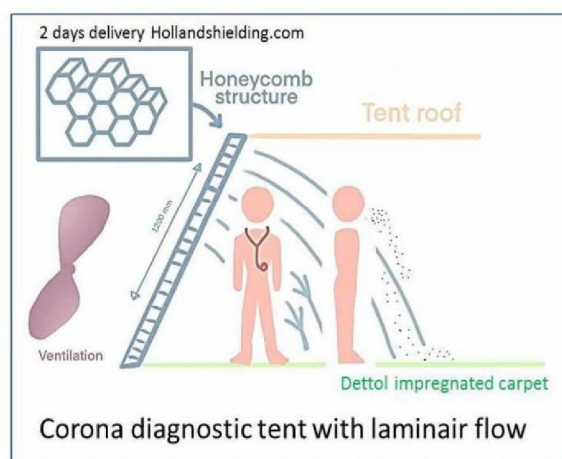
Source: <https://www.hindawi.com/journals/apm/2011/124064/>

Corona is a virus that has lipid bilayer around the functional components. There is still debate around how the virus is behaving exactly while airborne, but we do know that the particles in which the virus resides should not come in contact with our healthworkers. The following factors should be included: humidity, air flow and temperature.

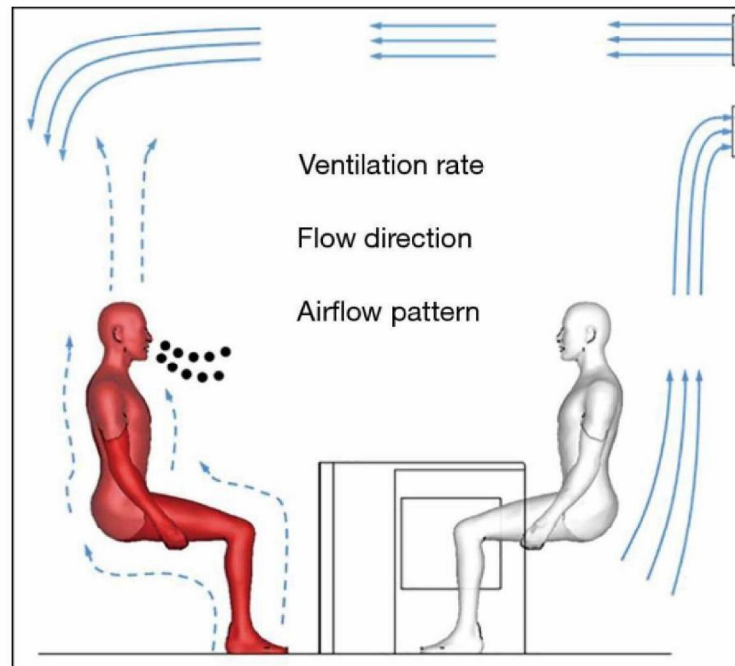
We know from previous research on SARS that a temperature above 38 degrees celcius and a relative humidity of at least more than 50% but preferably more than 95% reduces virus viability. The next page will go into detail around the question of airflow.



Corona diagnostic tent



Corona diagnostic tent with laminair flow



Source: <https://www.hindawi.com/journals/av/2011/734690/> As you can see on this image, using a correct airflow, away from the healthworker we prevent particles in which the virions reside to come in contact with healthworkers. A wet ground then prevents the virus from spreading further. Special care should be taken to place the patients in the direction facing away from the healthworkers.

Other Sources:

<https://www.hindawi.com/journals/apm/2011/124064/>
http://jtd.amegroups.com/article/view/18723/html_1
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6072925/>
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3457514/pdf/zam6781.pdf>
<https://www.hindawi.com/journals/av/2011/734690/>