Twitter Thread by Robin Monotti

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@robinmonotti

The evidence based science shows that medical face masks for the healthy do not alter rates of community transmission of SARSCoV2 while they contribute to the plastic pollution of planet. Cloth & masks of other materials increase rates of infection through nebulization spread.

"Speaking through some masks dispersed largest droplets into a multitude of smaller droplets..smaller particles are airborne longer than large droplets (larger droplets sink faster), a mask might be counterproductive."
https://t.co/jBQlWRxcEL

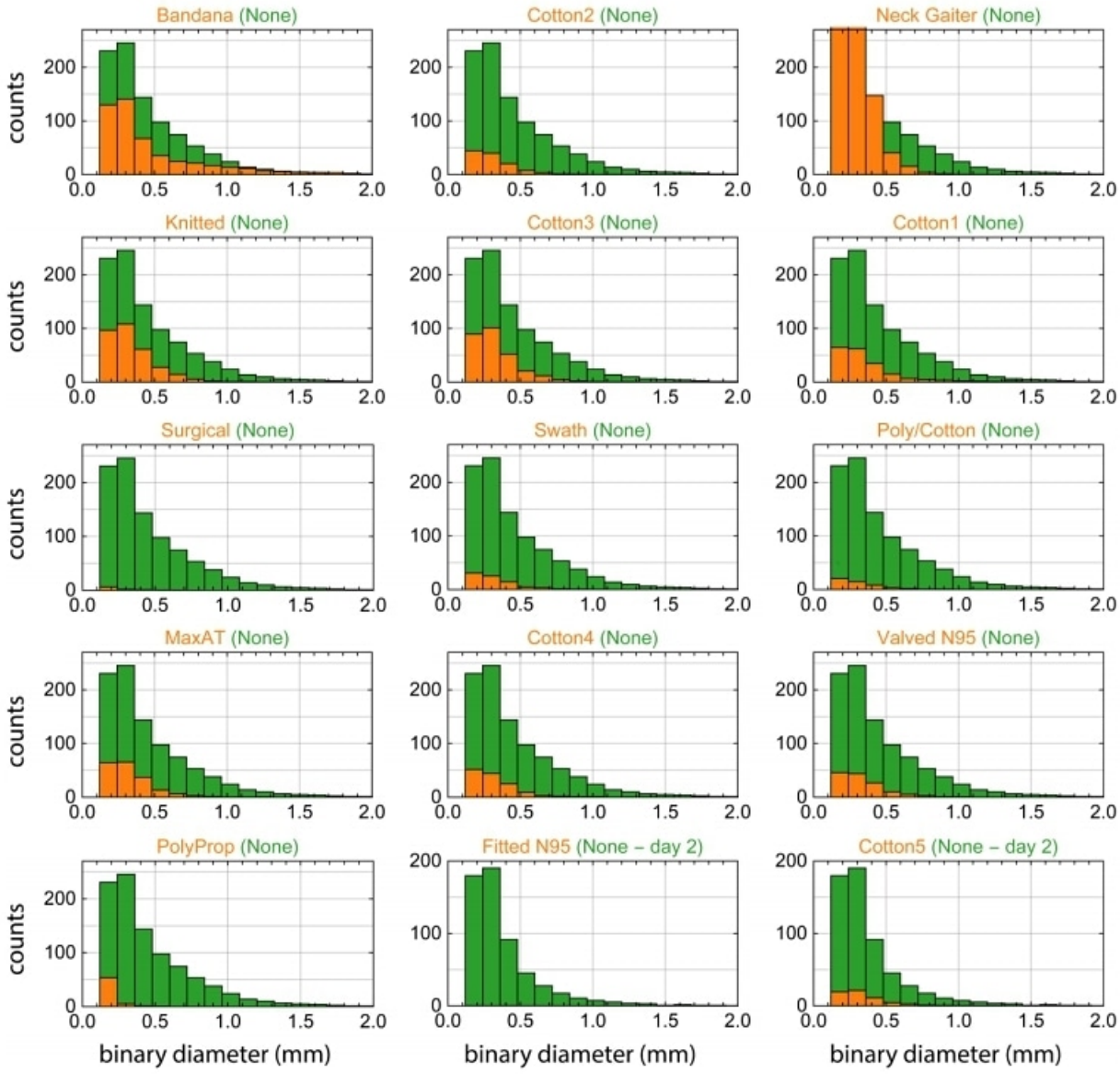

Fig. S5. Qualitative size histogram. Note that the size of droplets smaller than the resolution (120 µm) cannot be reliably measured. Also, note the decrease of large increase of smaller particles numbers for the neck gaiter. We attribute this to the bi of large droplets into several smaller ones when passing through the material. The measurements "Fitted N95" and "Cotton5" were performed by the same speaker as all other measurements, but on a different day. Therefore, they have a different control trial histogram (None – day2).

Influenza like illness rates 3 times higher with cloth masks when compared to control group: https://t.co/djT0mfutv9

Prof. Carl Heneghan, Oxford University: "The high quality trial evidence for cloth masks suggest they increase your rate of reinfection."

Please note, droplets smaller than 120 microns can't be measured. SARSCoV2 is 0.14 microns. This means that the nebulization effect of medical masks could not be measured, not that it does not happen. ■■ https://t.co/uAmlclH2jQ

> "Speaking through some masks dispersed largest droplets into a multitude of smaller droplets..smaller particles are airborne longer than large droplets (larger droplets sink faster), a mask might be counterproductive."https://t.co/jBQlWRxcEL pic.twitter.com/XeKYFmjsGs
>
> — Robin Monotti (@robinmonotti) January 15, 2021

The really small aerosols <1 μm [the ones that pass through ALL surgical masks] can penetrate all the way to the alveoli - the basic units for gas exchange ■■
https://t.co/BxVILCjtM0

> 4/In humans, larger aerosols deposit in upper throat, nose, & tracheobronchial region of the lung. Medium-sized aerosols mostly deposit in small airways further down. The really small aerosols <1 \u03bcm can penetrate all the way to the alveoli - the basic units for gas exchange. 4/7 pic.twitter.com/9ZJb4JrZqI
>
> — Dr. Ali Nouri (@AliNouriPhD) December 29, 2020

Why does nebulization (the breaking up of larger aerosols which fall quicker into smaller ones which float for longer) cause more severe cases & deaths? Explained in this thread:
https://t.co/icOmr0advF

> 1/\U0001f4ccNIH Study: COVID-19 severity could depend on route of infection: Infection through inhaling #Airborne virus could lead to more severe disease than infection from fomites (contact w/ contaminated objects.) To test it, hamsters were infected via the different routes. 1/7\U0001f9f5 pic.twitter.com/9lX7sMrKUG
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So although medical masks filter out coarse aerosol particles (which stay on the mask only to either later evaporate into smaller ones or be re-inhaled or re-exhaled), it is the finer smaller aerosols which are most conducive to transmission of severe disease on all counts.

"Fine particles contained 8.8 fold more viral copies than did coarse particles." This accounts for fine sized particles which can be measured, finer particles than those in this study (those which contain SARSCoV2) can't actually be measured reliably.
https://t.co/A6YBcGZLVN

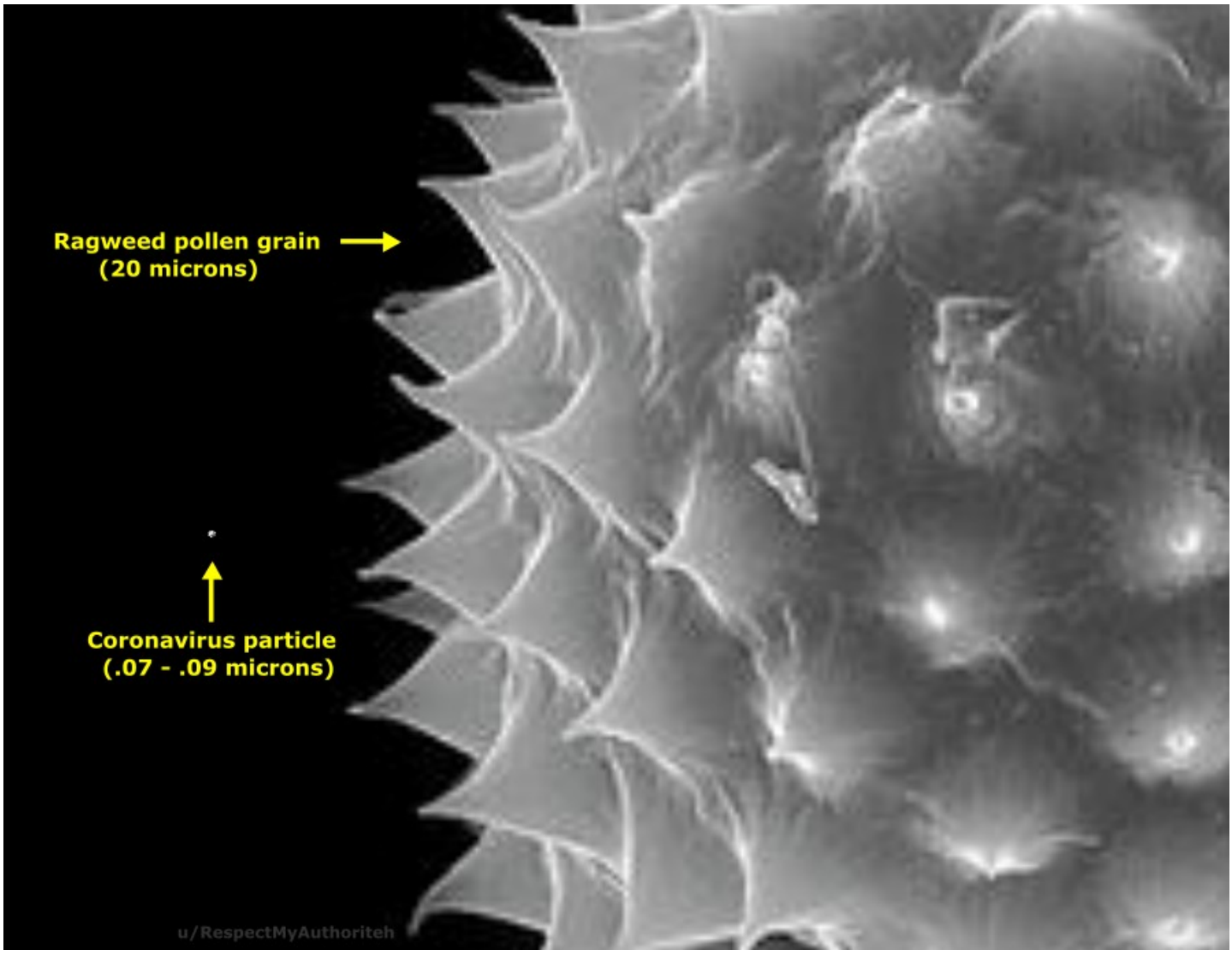
In conclusion, the nebulization effect into the smallest aerosols which has been measured reliably for all non medical masks, & assumed to be happening for medical masks too, increases both transmission & severity of disease for a number of different reasons:

1 Masks break up larger aerosols into smaller aerosols: the nebulization effect
2 Smaller particles float in air for longest, larger particles drop
3 Smaller particles get deeper into the lungs, leading to more severe infection & higher mortality
4 Reduce oxygen & increase CO2

The smallest aerosols which float in air for longest & contain most virions can directly reach the alveolar region in the lungs & attack alveolar cells that produce Pulmonary Surfactant which is needed to lower surface tension & prevent alveoli collapse:
https://t.co/77i7BWcpwF

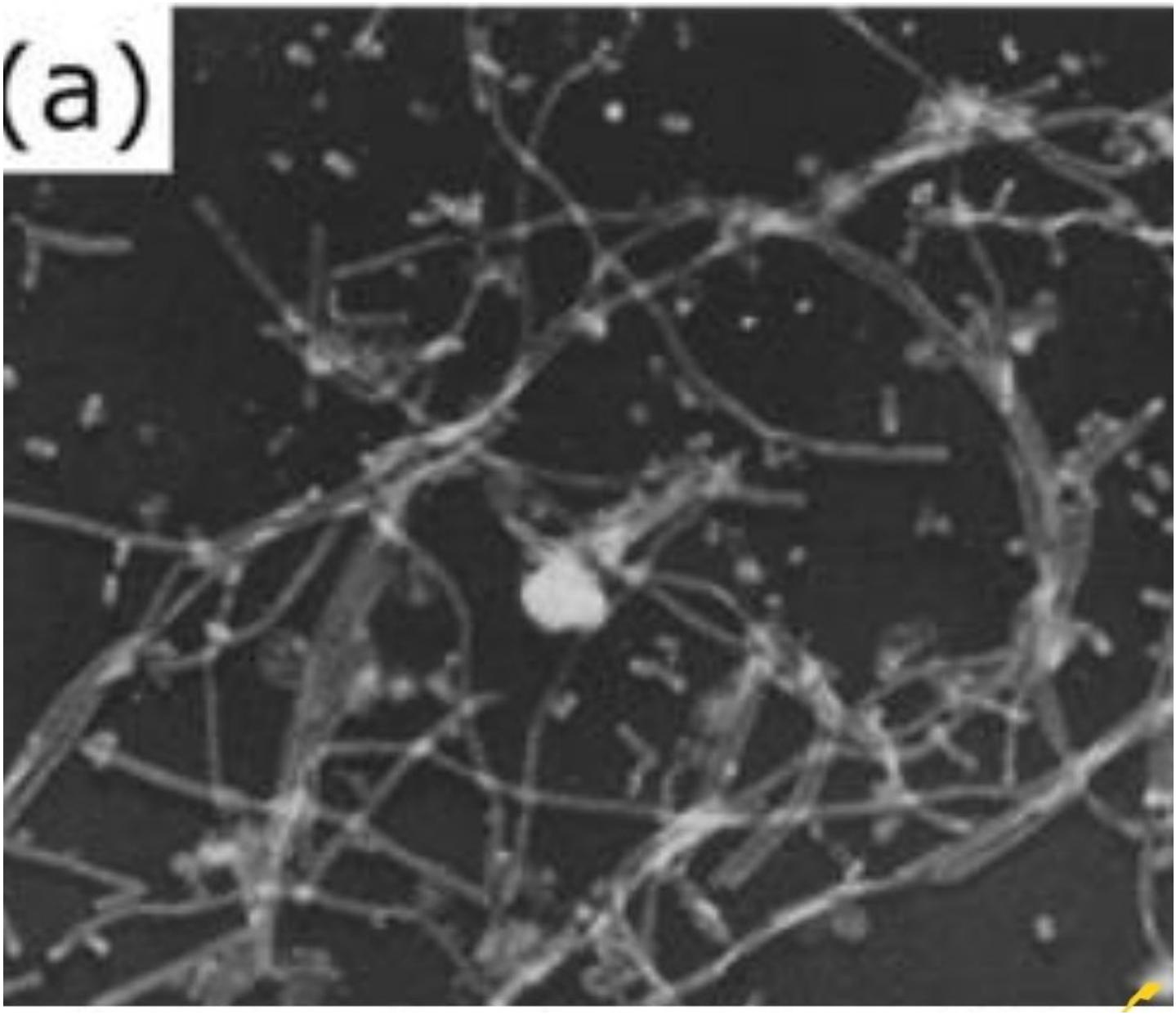
> 6/Loss of these alveolar cells results in alveolar instability, lung flooding, and respiratory failure - Acute Respiratory Distress Syndrome (ARDS). ARDS causes further damage through a hyperactive immune response of neutrophils and cytokines that damage alveoli even more. 6/7 pic.twitter.com/YicRqalyH5
>
> — Dr. Ali Nouri (@AliNouriPhD) December 29, 2020

This is why the Japanese started wearing face masks in Spring-Summer: pollen related hayfever & pollution. Look at the difference in size of a pollen with a coronavirus particle.



When science was scientific:2003: "N95 Masks Flying Off Shelves, but They Offer Scant Protection: Bad fits are deadly. Contaminated air breathed from around the unfiltered edges instead of through the N95-rated material undermines the purpose of a mask."
https://t.co/gDUiS1Ujet

Contrary to SARSCoV2, the length of influenza particles varies considerably, influenza is pleomorphic, the size can be in excess of many tens of micrometers, producing filamentous virions reaching or exceeding 30 μm in length:
https://t.co/lLvsmtGUmb



This means that randomised controlled trials for medical masks for the spread of the influenza virus may have different results than RCTs for the SARSCoV2 virus, which really leaves us with a single RCT on the use of medical masks (N98s with instructions on use) in the community:

Unlike other studies looking at masks, Danmask was a randomised controlled trial – the highest quality scientific evidence. It revealed a minimal statistical difference between those who wore medical masks & those who did not in terms of COVID-19 infection
https://t.co/WRFEAEE5wW

■■ This was written by a Professor of Evidence-Based Medicine, Director of the Centre for Evidence-Based Medicine & Director of Studies for the Evidence-Based Health Care Programme & Centre for Evidence-Based Medicine, University of Oxford, with a senior tutor & research fellow.

Danmask (original below) proves N98 masks make no difference to the user on whether they get infected. Contrary to popular unscientific belief, I demonstrate above that non medical masks worn by a SARSCoV2 infected person increase transmission to others compared to no mask use.

DANMASK RCT for N98 masks: (SARSCoV2 prevalence was 2%)
People who got infected:
1.8% in the mask group
2% in group who wore masks exactly as instructed
2.1% in the no mask group:
"The difference observed was not statistically significant."
https://t.co/rCtekH6eoT

Table 2. Distribution of the Components of the Composite Primary Outcome

Outcome Component	Face Mask Group (n = 2392), n (%)	Control Group (n = 2470), n (%)	Odds Ratio (95% CI)*
Primary composite end point	42 (1.8)	53 (2.1)	0.82 (0.54–1.23)
Positive antibody test result†			
IgM	31 (1.3)	37 (1.5)	0.87 (0.54–1.41)
IgG	33 (1.4)	32 (1.3)	1.07 (0.66–1.75)
Positive SARS-CoV-2 RT-PCR	0 (0)	5 (0.2)	–
Health care–diagnosed SARS-CoV-2 or COVID-19	5 (0.2)	10 (0.4)	0.52 (0.18–1.53)

COVID-19 = coronavirus disease 2019; RT-PCR = reverse transcriptase polymerase chain reaction; SARS-CoV-2 = severe acute respiratory syndrome coronavirus 2.
* Calculated using logistic regression. The between-group differences in frequencies of positive SARS-CoV-2 RT-PCR were not statistically significant (P = 0.079).
† 124 participants in the mask group and 140 in the control group registered "not done" or unclear results of the antibody test—i.e., they were included in the analysis because they sent an oropharyngeal swab for PCR.

DANMASK: "In this community-based, randomized controlled trial conducted in a setting where mask wearing was uncommon and was not among other recommended public health measures related to COVID-19,
>>

<< a recommendation to wear a surgical mask when outside the home among others did not reduce, at conventional levels of statistical significance, incident SARS-CoV-2 infection compared with no mask recommendation."

Droplets vs Aerosols:
"Droplets are larger (>5 μm) rapidly drop to the ground by force of gravity.
Aerosols are smaller (≤5 μm) rapidly evaporate, leaving behind droplet nuclei that are small enough & light enough to remain suspended in the air for hours (analogous to pollen)."

"If SARS-CoV-2 is primarily spread by respiratory droplets, wearing a medical mask, face shield, or keeping 6 feet apart from other individuals should be adequate to prevent transmission." [DANMASK proved SARSCoV2 is not primarily spread by droplets].

"If, however, SARS-CoV-2 is carried by aerosols that can remain suspended in the air for prolonged periods, medical masks would be inadequate (because aerosols can both penetrate and circumnavigate masks) >>

<< face shields would provide only partial protection (because there are open gaps between the shield and the wearer's face), and 6 feet of separation would not provide protection from aerosols that remain suspended in the air or are carried by currents."

"Experimental data support the possibility that SARS-CoV-2 may be transmitted by aerosols (so-called airborne transmission) even in the absence of aerosol-generating procedures" [even in the absence of the further aerosol nebulization provided by breathing through face masks].

"Speaking & coughing produce both droplets & aerosols..it is feasible for SARS-CoV-2 to remain suspended in the air & viable for hours, SARS-CoV-2 RNA can be recovered from air samples in hospitals, poor ventilation prolongs the amount of time that aerosols remain airborne."

"Demonstrating that speaking and coughing can generate aerosols or that it is possible to recover viral RNA from air does not prove aerosol-based transmission; infection depends as well on the route of exposure, the size of inoculum, the duration of exposure, and host defenses."

"Close but less sustained contact such as sharing a meal is associated with a secondary attack rate of about 7%, whereas passing interactions among people shopping is associated with a secondary attack rate of 0.6%."

"Prolonged exposure to an infected person in a poorly ventilated space..allows otherwise insignificant amounts of virus-laden aerosols to accumulate."

Therefore the aerosol mode of transmission may not be the only one, but it is the one which leads to the most severe disease & higher mortality as it reaches deeper into the lungs. Ventilation, not face masks, is the solution: https://t.co/eHbaBbaPtk

> 7/Viewing transmission through the lens of bioaerosol mechanics highlights the need for mitigation approaches such as ventilation and other measures, and new therapeutic interventions, like surfactant therapy to alleviate ARDS symptoms. 7/7https://t.co/GLjdk9gkZU
>
> — Dr. Ali Nouri (@AliNouriPhD) December 29, 2020

@threadreaderapp pls unroll

When it comes to respiratory diseases, a healthy person is someone who has no symptoms of a respiratory disease. Chemical reactions in man made objects do not change this. Thread: https://t.co/7VSaerYh5p

> FACT: The PCR or lateral flow tests do not test for Covid19 nor do they test for even a single or even many SARSCoV2 particles or virions.
>
> — Robin Monotti (@robinmonotti) January 12, 2021