"LONG THREAD on masks. Mute if not interested. Do masks work? Why do some people claim they don’t work? [...]"

Note: This thread is related to #COVID19.

Follow the World Health Organization's instructions to reduce your risk of infection. Avoid the three Cs: Crowded places, Close Contact Settings & Confined spaces. Airborne aerosols play an important role in transmitting COVID-19.

- Avoid crowded places and limit time in enclosed spaces

- Apply social distance

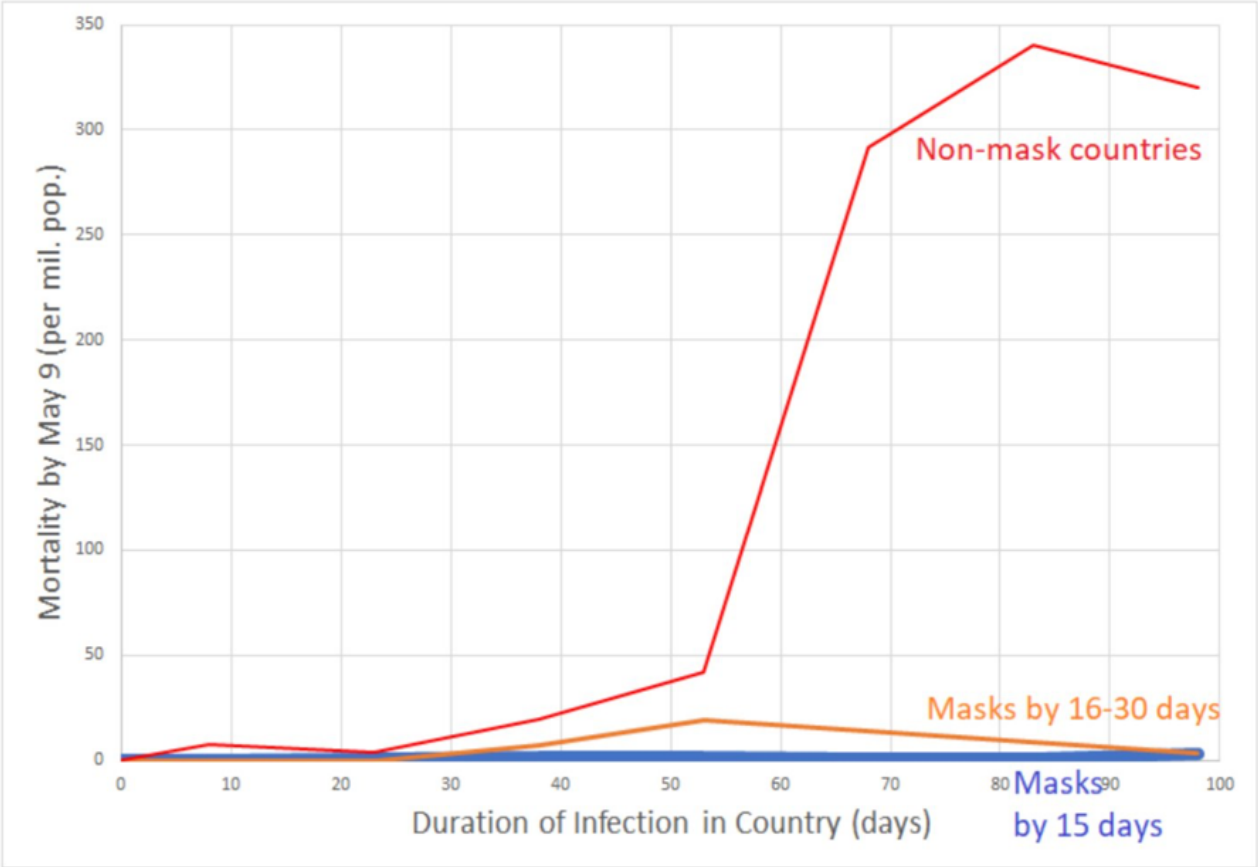
- Air rooms by opening windows & doors

- Keep hands and surfaces clean, cover coughs & sneezes

- Wear a mask when you are not at home or when physical distancing is not possible

LONG THREAD on masks. Mute if not interested.
Do masks work? Why do some people claim they don’t work? Do they cause harm? What kinds of masks should we wear? How does masking need to change now we know that Covid is airborne? When can we stop wearing them?
Get your popcorn.
1/

Let’s start with observational data. Countries that introduced mandated masking within 30 days of the first case (mostly Asian) had *dramatically* fewer Covid-19 cases than those that delayed beyond 100 days (mostly Western).
https://www.ajtmh.org/view/journals/tpmd/103/6/article-p2400.xml ...
2/



Was this association or causation? Early on in the pandemic, we didn't know. But – important point - nobody in these Asian countries seemed to come to harm from wearing a mask.
3/

In this BMJ paper, we presented very limited and indirect empirical evidence (from non-Covid studies) and also *moral evidence* to argue for the precautionary principle: let's all wear masks, *just in case*.
https://pubmed.ncbi.nlm.nih.gov/32273267/
4/

Critics of that early paper were right that the empirical evidence was weak. But they didn't engage—and 16 months later have still not engaged—with the moral arguments. They continue to argue that the best course of action in the face of empirical uncertainty is to do nothing.
5/

New drugs & vaccines may have toxic side effects worse than the disease itself. Hence, it's appropriate to require definitive empirical evidence from RCTs of the benefit-harm balance before they're introduced. But critics inappropriately applied the same rules to mask studies.
6/

A bit of cloth over the face simply doesn't have the same risks as a novel drug or vaccine, and *doing nothing* could conceivably cause huge harm. Arguing for "caution" without engaging with the precautionary principle was scientifically naïve and and morally

reckless.
7/

But that's what happened. Tragically, WHO along with Public Health England, CDC and many other bodies around the world all focused on two things: a) the lack of incontrovertible, definitive evidence and b) speculation about possible harms.
8/

For many mission-critical weeks in early 2020, these bodies persisted in saying "there's not enough evidence of benefit" and (without evidence) "there could be harms", and insisting that these arguments justified inaction.
9/

Asian countries framed the challenge differently. Recalling SARS (2003) and MERS (2012), they weren't taking any chances. Masks *might* help in this new disease, so let's wear them just in case. (e.g. Taiwan: https://www.cnbc.com/2020/07/15/how-taiwan-beat-the-coronavirus.html ...)
10/

The most fundamental error made in the West was to frame the debate around the wrong question ("do we have definitive evidence that masks work?"). We should have been debating "what should we do in a rapidly-escalating pandemic, given the empirical uncertainty?".
11/

The putative harms of masks were twofold. First, self-infection. The idea was that the mask was dirty, and by touching it (while putting it on, or when your face itched under it) you might transfer virus to your hands and thence to your eyes etc.
12/

This never made sense. If your mask contains virus, it's likely come from you, so you're already infected. There was never any evidence that people touch their faces more when masked. They touch them less.
https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2768767 ...
13/

The meme that *touching your own mask* could kill you was an extraordinary fantasy in which many reputable scientists got swept up. Masking was depicted as a highly specialist activity, dependent on perfect donning/doffing procedures. The public simply weren't up to it.
14/

There was an alternative, common-sense view. Your cotton mask is no more likely to kill you than your cotton T-shirt which you pull over your head. In mid-2020, @jeremyphoward came up with the slogan "it's a bit of cloth, not a land mine".
15/

The other masks-are-harmful meme related to risk compensation. If you wear a mask, you'll feel protected and take more risks. Like the driver who becomes more reckless when wearing a seatbelt, you'll be slapdash about hand-washing and you'll get too close to passers-by.
16/

There was never one jot of evidence for risk compensation. But as Eleni Mantzari and team showed, scientists *talking up* risk compensation as a purely hypothetical problem led to significant negativity towards masks.
https://www.bmj.com/content/370/bmj.m2913 …
17/

In the name of evidence-based medicine (EBM), the West got off on the wrong foot. We became obsessed with the holy grail of a definitive randomised controlled trial (RCT) that would quantify both the benefits and the harms of masks, just as you would for a drug.
18/

If you were raised in the EBM tradition, where "rigorous RCTs" are mother's milk, it's not easy to get your head round why this was a bad way to approach the problem. Looks like Prof Greenhalgh has lost it, dropped her standards, joined the dark side etc. Bear with me.
19/

A RCT is a controlled experiment. Since people (or animals) are randomly allocated to one or another group ('arm'), any confounding variables are distributed evenly between the arms so they all cancel out (so long as the study is large enough and allocation is truly random).
20/

Random allocation means that differences between the arms of a RCT are highly likely to be due to the intervention (in this case, masks) and not to confounders. But it does *not* follow that a RCT is better, for any scientific question, than a non-RCT design. Why not?
21/

Many reasons. Drugs are (arguably) a simple intervention, but masks are a highly complex one. As we all know, there are two key questions: do they protect the wearer from other people's germs – and do they protect other people from the wearer's germs ('source control')?
22/

The RCT design can't cope with this. It's easy to design a study where the primary outcome is infection in wearers, but how would a RCT of source control work? I consent to wearing a mask, but the whole town must consent to be tested (at baseline & repeatedly) for infection.
23/

More fundamentally, we're not just interested in whether my mask protects either me or you from catching Covid during a short intervention period (say, one month). We're interested in how masking impacts on the *exponential spread* of an accelerating

pandemic.
24/

Take the number 1 and double it, and keep going. 1 becomes 2, then 4, etc. After 10 doubles, you get 512. After 10 more doubles, you get 262144. Now instead of doubling, multiply by 1.9 instead of 2 (a tiny reduction in growth rate). After 20 cycles, the total is only 104127.
25/

=> if masks reduce transmission by a TINY bit (too tiny to be statistically significant in a short RCT), population benefits are still HUGE. UK Covid-19 rates are doubling every 9 days. If they increased by 1.9 every 9 days, after 180 days cases would be down by 60%.
26/

These two issues—the near-impossibility of using RCTs to test hypotheses about source control and over-reliance on "statistically significant effects" within a short-term intervention period—is why a RCT of masks is *highly likely to mislead us*.
27/

In short, EBM's preferred methods are unsuited to studying some aspects of the pandemic (notably masks), as is its philosophy of demanding definitive findings and waiting until you've got them.
https://journals.plos.org/plosmedicine/article?id=10.1371/journal.pmed.1003266 …
28/

Note: as a long-term survivor of a poor-prognosis cancer, I owe my life to RCTs of drugs and surgery. RCTs are fantastic for testing both treatments and vaccines, and have led to many lives being saved in the pandemic. But they are problematic for testing masks.
29/

There haven't been many RCTs of masks in the lay public. It's easier to randomise healthcare workers. A few (pre-Covid) RCTs in semi-institutionalised settings (university halls of residence) are summarised here.
https://onlinelibrary.wiley.com/doi/full/10.1111/jep.13415 …
30/

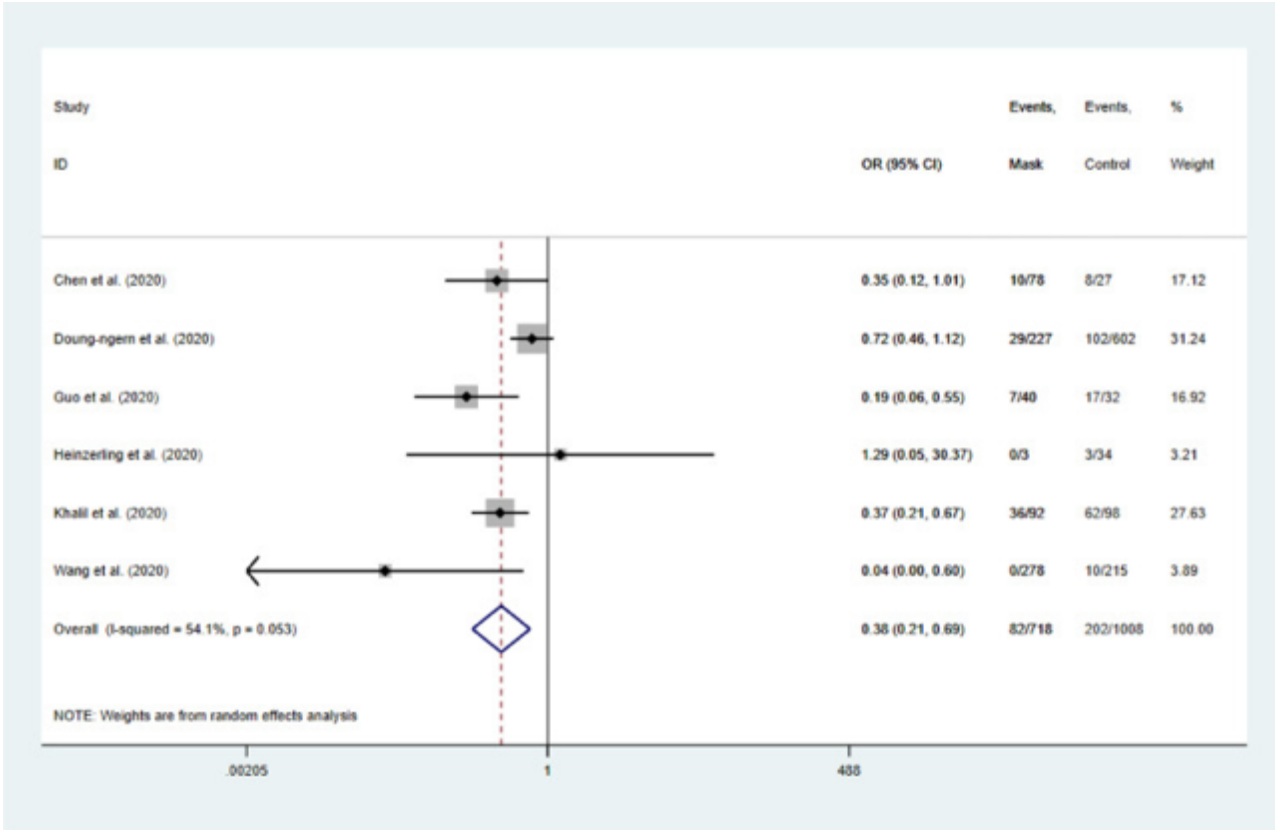
In sum, RCTs of masks were difficult to do, and participants randomised to wearing masks didn't comply well. But these RCTs were in the context of – for example – a flu outbreak on a university campus in a country that had never seen a deadly pandemic of anything.
31/

The *big Danish mask trial* seemed – on very superficial reading - to offer the methodological rigour we'd all been waiting for. Its main finding was negative (no significant impact of masks). But it was *fatally flawed* as @dgurdasani1 and I argued):
https://www.spectator.co.uk/article/eight-key-questions-on-the-danish-facemask-study …
32/

DANMASK key flaws in one tweet: no CONSORT statement, no ethical approval, inappropriate setting (there was almost no Covid circulating at the time!), under-powered sample, wrong primary outcome, wrong intervention period, inaccurate test, misinterpretation of own findings.
33/

There *never will be* an RCT to tell us definitively whether masks work, because RCTs can't generate dynamic evidence to understand complex interventions in diverse and changing contexts. If you're still looking for "effect size = 23% [CI 17-29]", you're missing the point.
34/

Yanni Li and colleagues did a meta-analysis of case-control studies. Acknowledging the limitations of such designs, Li et al found that masks reduced SARS-CoV-2 infections by (on average) ~70% in healthcare workers and ~60% in lay people.
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7748970/ ...
35/



What's a case-control study? Find people who caught Covid and match them with people who were similar but didn't catch Covid; ask whether each was wearing a mask. Relatively weak design because of unmeasured confounders (long story, not going there today).
36/

Hence we need to treat the Li meta-analysis finding with care. On its own, it's not definitive; combined with other evidence, it strengthens the case for masks. And another recent case-control study affirms Li's findings.

https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2781283 …
37/

Now let's consider observational studies – where we measure what happens before and after masking is introduced. These studies may need fancy statistics to correct for confounders (e.g. parallel introduction of lockdown). Some obs studies are pretty flaky; others less so.
38/

Evidence from observational studies (see tweet 2 in this thread) is pretty consistent, though causality is hotly contested. But broadly speaking, in countries and regions where mask mandates were introduced, the rate of spread of the virus subsequently fell substantially.
39/

Let's move on. We need to talk about *mechanistic evidence*. This means evidence – from basic science laboratory experiments and real-world case studies for example – that helps us understand how the virus spreads and how covering the face *could* work.
40/

Laboratory evidence is often dismissed as "low methodological quality" by the EBM crowd. Actually, lab studies can be done well or badly (full disclosure: my first doctorate is in lab science). High-quality lab studies are as important as high-quality RCTs.
41/

The idea that a laboratory finding can *contribute* to a scientific conclusion without being stand-alone definitive evidence is important. Masking a complex issue: we amass evidence from different sources: some to help us *understand mechanisms* and some to *test hypotheses*.
42/

Lydia Bourouiba studies how far the stuff that comes out of your mouth and nose when you cough and sneeze travels. Answer: a long way. Common sense says that something placed across the mouth and nose will block some of these flying germs.
https://jamanetwork.com/journals/jama/fullarticle/2763852 …
43/

Laboratory simulators can generate clouds of droplets and aerosols (more on those later) similar to a cough. Critics say these aren't "real" conditions. I agree we shouldn't take their quant findings as gospel. But they *add a piece of mechanistic evidence to the jigsaw*.
44/

Here's one lab study for example. Efficiency at reducing the transmission of an artificial respiratory aerosol:
-N95 respirator 99%
-Medical grade mask 59%
-Polyester neck gaiter (single) 47% (double) 60%

-Face shield 2%
https://www.tandfonline.com/doi/full/10.1080/02786826.2020.1862409 ...
45/

It's time to talk about how this virus spreads. This thread summarises the huge body of evidence that the SARS-CoV-2 virus is airborne. Not just "situationally" airborne, but floating++ in the air whenever it's breathed out.

46/

> This is a humanitarian emergency. The Covid-19 pandemic is out of control in many countries. A key priority is PREVENTING TRANSMISSION. To do that, we MUST acknowledge how this virus spreads. Thread.https://t.co/ZOY0lXx2VJ
> 1/
>
> — Trisha Greenhalgh (@trishgreenhalgh) May 3, 2021

For a long time, WHO and other bodies denied that SARS-CoV-2 was airborne. We wrote a paper on why this error happened (TL;DR: we hypothesised powerful people with entrenched mental models and reputations to lose).
https://wellcomeopenresearch.org/articles/6-126
47/

The airborne nature of SARS-CoV-2, now acknowledged by WHO, is a game-changer—both generally and in relation to masks specifically. Generally, we need to avoid close contact (airborne spread occurs *mostly* within 2m), prolonged time indoors, and crowds.
48/

Specifically, we need to shift our mechanistic model from one that focuses on projectile clouds of droplets that come from coughs and sneezes to one that sees the *very air we breathe* as laden with infectious particles. Detail here:

49/

> 1/ TIME FOR SOME AIRBORNE + DROPLET HISTORY
>
> Now that @WHO and @CDCgov have finally accepted *after a year of denial and delays* that airborne transmission is a major mode for COVID-19, it is time to review the history to try to understand why this response was so poor.
>
> — Jose-Luis Jimenez (@jljcolorado) May 8, 2021

There is strong and consistent evidence that (conservatively) 40-50% of all people who catch Covid-19 get it from someone who has no symptoms at the time (i.e. is generating few or no droplets but is just *exhaling* viral-laden air).
https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2774707/ ...
50/

March 2020 now seems ancient history. At that time, we were drawing on the Bourouiba study (tweet 43) and similar to argue that *any* bit of cloth over your face would serve as effective source control because it blocked gobby droplets and sneezy droplets.
51/

The 'large droplet' mental model of SARS-CoV-2 transmission also underpinned the argument (so 2020) that masks only work as source control (protecting others but not the wearer). Science has moved on from that position (see below).
52/

If it was all large droplets, masks would work mainly as source control. But given that SARS-CoV-2 travels deep into the lungs in tiny airborne particles, masks need to protect against *inhaling air that others have exhaled*.
https://www.acpjournals.org/doi/10.7326/M20-6625 …
53/

Table 2. Summary of Particle Properties, Role in Transmission, and Implications for Infection Control

Name and Size	Properties	Role	Implications
Ballistic drops (droplets larger than 100-200 µm*)	Expelled when (e.g.) talking or coughing. Fall through the air like a projectile. Do not evaporate fast enough to remain suspended.	Can infect a person either directly by hitting conjunctivae, nasal, or oral mucosa or indirectly by settling on objects, which become fomites	Contact and droplet precautions (e.g., cough/sneeze hygiene); physical distancing; masks as source control and possible protection of mucosae when within 6 ft of others; disinfection (fomites)
Inhalable aerosols (droplets 10-100 µm)	The smaller the droplets, the longer they can remain suspended in the air. Local airflows can disperse and spread these particles in a closed space like a cloud. Over time and without air exchange, they accumulate, increasing the risk of transmission.	Normally inhaled only into the nose and pharynx	Ventilation; avoiding closed spaces, crowds and situations with talking, singing and shouting for extended periods of time; masks as source control can help reduce the amount of aerosols exhaled in such situations
Thoracic aerosols (5-15 µm)		Inhaled and reach more deeply into the upper respiratory tract, reaching trachea and large bronchi	
Respiratory aerosols (2.5-5 µm)		Inhaled and reach smaller airways and even alveolae in lower respiratory tract	

* The seemingly imprecise size categories are chosen because the U.S. Environmental Protection Agency defines categories in terms of a distribution of particle sizes. This system was chosen to emulate how particles gradually settle in the respiratory tract. For example, no particles of 15 µm and above settle in the bronchioles, but about 50% of particles of 10 µm do.

In short, it's not coughing and sneezing that spreads this virus so much as breathing and speaking (and also singing) – things that generate a lot of aerosols but few droplets.
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8242678/ …
54/

Let's talk about the complex transmission dynamics of SARS-CoV-2, specifically the over-dispersion of R (80% of Covid cases come from only 10-20% of infected people – the super-spreaders).
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7338915/ …
55/

Super-spreading individuals (who infect a lot of others) and super-spreading events (where lots of people get infected) are what *drive* the pandemic. Here's a thread of a few.

56/

> [Thread] Learning from #COVID19 #superspread
>
> 🇺🇸USA Skagit Choir practice: 1 person with mild symptoms, 2.5-hours indoors, 50 infected, 2 deaths
>
> "you can be inhaling what someone else exhaled even if they are far away from you" 1/ https://t.co/6q611svPIc
>
> — Orla Hegarty (@Orla_Hegarty) January 23, 2021

In a nutshell, we need to *reframe* the key mask research question from "what is the effect size of masks on individuals?" to "how might universal masking impact on the highly non-linear transmission dynamics of this curious virus – which behaves VERY differently to flu?".
57/

This is why I and others are banging on about masking in public places. If people in England stop wearing masks on so-called "Freedom day" (19 July), it is highly likely that we will see a vast number of super-spreader events where large numbers of people become infected.
58/

Not only do we need to keep wearing masks, but we need masks that protect us against *airborne transmission* as well as against droplets. Yes it's a pain. Yes prolonged masking is a political hot potato bc "freedom". But don't shoot the messenger: I didn't invent this virus.
59/

So: What changes do we need to make to our masks to accommodate the fact that Covid is airborne? I want to talk first about lay people and then about the special case of healthcare workers.
60/

There has been a huge amount of research on what makes a perfect mask. In our paper we reviewed 3 factors: how well it filters, how well it fits, and whether you actually wear it (which in turn depends on how comfortable it is).
https://www.acpjournals.org/doi/10.7326/M20-6625 …
61/

Table 3. Factors Affecting Mask Performance

How Do Masks Work?	Implications for Improving Performance
1. Filtration Masks filter via a combination of mechanisms, including (55): *Diffusion:* particles are bombarded by air molecules, some of which push them in the direction of a fiber* *Straining:* akin to passing through a sieve† *Inertial impaction:* the particle directly collides with a fiber† *Interception:* when the particle gets stuck to the fiber strands† *Electrostatic attraction:* an oppositely charged particle is held up by a charged fiber*† Filtration efficiency of materials used for cloth masks and different kinds of medical and surgical masks varies widely (30, 31, 56-58). Filtration efficiency decreases if a mask gets wet (58).	If making or selecting a cloth face covering (30, 31, 58, 60, 66): Use *multiple layers* (to block by diffusion) Use *closely woven fabrics* (to block by straining, impaction, and interception) Use *more than 1 type of fabric* (to block by electrostatic attraction) Insert a *waterproof layer* (to stop the item from getting wet) Select fabrics with *low resistance* relative to their filtration efficiency Wash the face covering in *detergent* when it is wet or dirty
2. Fit Medical masks and cloth face coverings may generate strong backward and downward jets unless they *fit snugly* around the face (65) Masks and face coverings are often *worn incorrectly*, most commonly not covering the nose or chin (62)	To improve fit (65): Make or buy the correct size Ensure that the mask fits closely and comfortably around the face Use ties behind the head rather than ear loops To improve correct wearing: Inform and educate the public
3. Adherence A mask will only be effective when (and for the duration that) it is worn). This is affected by (59, 63, 64, 67): *Comfort:* a mask that is uncomfortable is less likely to be worn *Meaning:* masks and face coverings can have symbolic meanings (positive and negative) *Psychological effects:* mask wearing may threaten (or, in some cultures, strengthen) a sense of autonomy, connectedness, and competence *Empathy:* mask wearing is more likely if persons feel empathy for the vulnerable	To increase adherence (59, 63, 68): Incorporate features associated with *greater comfort* (low density, permeable filter, and thermally conductive) Encourage *customization* (e.g., cartoon fabrics for children) Acknowledge and address political and ideological resistance to mask wearing Seek to promote empathy rather than merely providing information

* Works for smaller particles less than 100 μm.
† Works for larger particles greater than 100 μm.

Clearly, filtration depends on the material. @cmclase is the expert on this (her early paper here https://www.acpjournals.org/doi/10.7326/M20-2567 ...). She and colleagues have a plain-language website here:
https://www.clothmasks.ca
62/

Mask design is now very niche (preprint here), but note: “Despite the complexity of the design of a very good mask, it is clear that for the larger aerosol particles, *any* mask will provide substantial protection to the wearer & those around them.”
https://arxiv.org/pdf/2008.06001.pdf ...
63/

Nerdy paper here showing that if you layer different materials in a cloth mask, you can hugely increase the filtration efficiency. But you MUST make sure it fits you and doesn’t leak around the edges (see next tweet for tricks).
https://www.tandfonline.com/doi/full/10.1080/02786826.2020.1817846 ...
64/

Two tricks to improve the fit of a medical mask: a) wear a cloth mask OVER it (“double masking”), b) knot the ear loops before going round your ears. (I have a third: use a section of old tights / panty hose instead of the cloth in (a)).
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7891692/ ...

So if you're not a healthcare worker you can get a lot of protection by pimping a cloth or medical mask, though you may prefer to go for a higher-grade respirator mask. Useful review by @davidshukmanbbc:
https://www.bbc.co.uk/news/health-57636360 ...
66/

What about valves in respirators? Respirators were designed to protect healthy healthcare workers from germs breathed out by patients. The valve was there to make breathing easier. But if the HCW is infected, the valve acts as an exhaust pipe, releasing virus into the air.
67/

That's why valved respirators were banned in some public places in 2020. But design has since moved on. *Some* masks and respirators now filter the exhaled air as it passes through the valve, thus removing the virus. I'm not plugging any products – Google 'smart respirator'.
68/

Now for healthcare workers (HCWs). Big problem here right now. As I've argued, the SARS-CoV-2 virus is airborne. Airborne virus is a particular problem in hospitals and other healthcare facilities because that's where you go when you're not well.
69/

At the beginning of the pandemic, we talked about 'aerosol-generating procedures' (AGPs) such as intubation, which we thought were the only situations where SARS-CoV-2 became airborne. Here's a thread explaining that tragic error.

70/

> A story about mental models, aerosol-generating procedures, and why we sometimes need to change our research questions. Here's the paper this thread is referring to. https://t.co/c44Zm4NarK
> 0/
>
> — Trisha Greenhalgh (@trishgreenhalgh) March 13, 2021

In short, the only HCWs who were given high-grade protection (including the more efficient respirator masks) were those conducing so-called AGPs. But since *breathing* (especially when unwell) generates aerosols, it makes no sense to have a two-tier protection system.
71/

As I describe in detail in the linked thread from tweet #68, *all* HCWs need to wear respirator masks or some other high-grade protection against aerosols. The refusal of healthcare employers to provide workers with such protection is now a political and legal issue.
72/

Next question: should fully-vaccinated people still wear masks? USA has famously said they don't have to, so let's look at both sides of the argument.
73/

On the one hand, vaccination gives high protection (70-95% depending on the vaccine) against catching the virus and seems to provide similar protection against transmitting it to others.
https://www.gavi.org/vaccineswork/mounting-evidence-suggests-covid-vaccines-do-reduce-transmission-how-does-work?gclid=Cj0KCQjwraqHBhDsARIsAKuGZeEzQEOk8U_T4qi-Kfv3t6NVJT6bIZmVE76nSjVE1qzJQiYW-bZmpF0aAmN2EALw_wcB ...
74/

On the other hand, even 95% protection isn't perfect. It means that if 20 vaccinated people all leave their masks off, that's equivalent to one unvaccinated person. And if we're unlucky, one of those 20 people will be a super-spreader.
75/

Whereas masking of HCWs is medical procedure, masking of lay people is a collective cultural activity. It has social significance and moral worth. It conveys messages such as "our society is still at risk" and "I am doing my bit to protect others".
https://www.bmj.com/content/370/bmj.m3021 …
76/

As @zeynep has argued, we wear masks for 3 reasons: to protect ourselves, to protect others, and to model the kind of behaviour that is appropriate in a global pandemic. Creating a vax'd vs unvax'd apartheid will undermine this ethic.
https://www.nytimes.com/2021/05/14/opinion/coronavirus-masks-vaccines.html …
77/

What about exercise? Do we really need to wear masks when jogging? The answer is if and only if we're getting close enough to share air. So yes, on narrow pavements. Otherwise no.
https://theconversation.com/joggers-and-cyclists-should-wear-masks-if-they-cant-maintain-a-physical-distance-from-pedestrians-153110 …
78/

Since airborne virus floats away in the outdoors, we usually only need to wear them *indoors*. And the most important settings are where we risk being exposed to high viral loads (i.e. crowded, poorly-ventilated places—especially hospitals).
https://science.sciencemag.org/content/372/6549/1439.full …
79/

When, then, will it be safe for the public to stop wearing masks in indoor spaces? The answer is when there is no longer uncontrolled spread in the community. This US study confirms that if we do it before then, cases are likely to skyrocket.
https://link.springer.com/article/10.1007/s11606-020-06277-0 …
80/

There are lots of other questions I could have addressed – such as masking in kids, more on the politicization of masks, viricidal masks and other novelty designs, future research. But you've probably had enough by now. I've shared only about 40 papers of 2500.
81/

Thanks to @andreadgibbons@asitmishra@paulglasziou@huffmanlabDU@AndrewsAmbler@originalcoolski@fascinatorfun@PaulWMcCormack@deliman1933@helenchauhanoz@Paul_Briley@cmclase@seaninsound and others who suggested sources.
82/

END
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> LONG THREAD on masks. Mute if not interested.
> Do masks work? Why do some people claim they don’t work? Do they cause harm? What kinds of masks should we wear? How does masking need to change now we know that Covid is airborne? When can we stop wearing them?
> Get your popcorn.
> 1/
>
> — Trisha Greenhalgh (@trishgreenhalgh) July 11, 2021