Notes on COVID-19

Part 12: 2020-07-01 to 2020-07-08

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2020-07-08

2020-07-01 The Covid Tracking Project is following developments in the USA, with data given per state https://covidtracking.com/data

2020-07-01 Abbass and Pittet take apart two studies of droplet/aerosol formation when speaking , in The Lancet Infectious Diseases on 2020-06-30 https://www.thelancet.com/journals/laninf/article/PIIS1473-3099(20)30558-2/fulltext

2020-07-01 In The Lancet Haematology on 2020-06-30 Goshua et al investigated 68 hospitalised patients (and 13 controls) with Covid-19, to see how endothelial cell disturbance (endotheliopathy) was associated with thrombosis and thrombitic effects (coagulopathy) which are a significant, often fatal consequence of severe Covid-19. https://www.thelancet.com/journals/lanhae/article/PIIS2352-3026(20)30216-7/fulltext They found significant correlation, in that markers of endotheliopathy were markedly elevated. The possible mechanisms are discussed in the Comment on 2020-06-30 by O'Sullivan et al https://www.thelancet.com/journals/lanhae/article/PIIS2352-3026(20)30215-5/fulltext

2020-07-01 In The Lancet Public Health on 2020-06-30, Hewitt et al report on an observational cohort study of frailty as a predictor of negative outcome in hospitalised Covid-19 patients, enrolling 1564 patients in ten UK hospitals and one Italian hospital. There is a "frailty" scale (CFS). They found that frailty was a better predictor of poor outcome than either age or comorbidity https://www.thelancet.com/journals/lanpub/article/PIIS2468-2667(20)30146-8/fulltext The frailty scale was devised by Rockwood et al at Dalhousie University in Canada and is available, for example, on the British Geriatric Society WWW site at https://www.bgs.org.uk/sites/default/files/content/attachment/2018-07-05/rockwood_cfs.pdf The paper introducing the scale is open access at https://www.cmaj.ca/content/173/5/489

2020-07-01 Ingrid Torjesen reports in the BMJ on the recent British reviews of Vitamin D and possible suppression of respiratory disease, which concluded that it didn't have a significant effect https://www.bmj.com/content/369/bmj.m2629

2020-07-03 TheG has a useful guide on 2020-07-02 to the progress of various vaccines for Covid-19 https://www.theguardian.com/world/ng-interactive/2020/jul/02/coronavirus-vaccine-tracker-how-close-are-we-to-a-vaccine ChAdOx1 nCoV-19, aka AZD1222, from Oxford University in cooperation with AstraZeneca, is in Phase 3 trials in UK, South Africa and Brazil. A vaccine from CanSino/Beijing Institute of Technology has completed Phase 2, but results have not been published. The Moderna/NIAID vaccine is also on the way to complete Phase 2. There are a bunch of others in Phase 1. The Uni Melbourne and Murdoch Children's Research Institute are trialing an old tuberculosis vaccine in a Phase 3. It is not known to be effective specifically against Covid-19 but it might boost a non-specific immune response.

2020-07-03 Robin Shattock and team at Imperial College have developed a new vaccine technology which in principle can be used to produce vaccines for almost anything at very low doses, and very low cost per dose, which vaccines in principle could be manufactured at lots of places throughout the world. They have a Covid-19 vaccine and are expecting to start "efficacy trial" (Phase 3?) in

October 2020 https://www.theguardian.com/society/2020/jul/03/im-cautiously-optimistic-imperials-robin-shattock-on-his-coronavirus-vaccine

2020-07-03 Lyu and Wehby published a study of the efficacy of mask use from US data in Health Affairs on 2020-06-16 https://www.healthaffairs.org/doi/10.1377/hlthaff.2020.00818 They suggest that mask requirements in public have reduced the daily growth rate of Covid-19 infections by 0.9% to 2%. This may not seem like a lot, but it translates into hundreds of thousands of cases potentially avoided. (Reference from a WashPost article by Tory Newmyer on a Goldman Sachs review which suggested that compulsory face-mask use could salvage up to $1tr of economic activity. Now that is a lot! https://www.washingtonpost.com/news/powerpost/paloma/the-finance-202/2020/07/01/the-finance-202-goldman-sachs-says-wearing-face-masks-could-save-the-economy/5efbc17388e0fa7b44f6b7f9/ … "*a federal mask requirement would boost their use by 15 percent and cut the daily rise in cases a full percentage point to 0.6 percent.*")

2020-07-03 Jeremy Farrar, Director of the Wellcome Trust, one of the largest charitable supporters of medical research https://wellcome.ac.uk/about-us , has pointed out in TheG what many seem to be forgetting, namely that we are still at the beginning of this pandemic and not near the end: "[s]*ecuring effective vaccines and treatments for Covid-19 and strengthening public health are the only ways to bring this pandemic to an end.*"
https://www.theguardian.com/commentisfree/2020/jul/02/security-global-pandemic-vaccines-treatments-coronavirus

2020-07-03 An astonishing story in TheG on 2020-07-02 about getting people to wear face masks in public in Texas https://www.theguardian.com/us-news/2020/jul/02/texas-masks-coronavirus-covid-battle Daily cases in Texas (population 29m) had just hit a daily high of 8,000+, a rate of 26.7 per 100,000 in *just one day.*

Compare: on one day in April, 2020-04-10, GB had 8,700 new cases (according to the JHU Dashboard), a rate of 13 per 100,000 residents; otherwise at the peak of infection, in April round into early May, it was around 6,000+ per day, a rate of about 9 per 100,000. So Texas is showing just under three times the infection rate of GB during its peak, and people are resisting taking simple but meaningful action to reduce it.

This is all about physics and biology, the aerial transmission of a highly-infectious bug that often leads to severe illness and death, and a demonstrated (and simple) means of reducing that transmission. What do political concepts such as "liberty" and "communism" have to do with it (invoked by two interviewees)? No one is trying to reorganise the political structure of Texas along communist lines, and most coherent notions of liberty do not involve any right to behave to the detriment of others. It seems as if public health education there could maybe do with a boost.

The governor has finally ordered mask-wearing in public, from Friday 2020-07-03
https://www.theguardian.com/us-news/2020/jul/02/texas-governor-face-mask-order-coronavirus-covid-19

The Texas situation is dwarfed by that in Florida, however. The state of 21.48m people recorded over 10,000 new cases on Thursday 2020-07-02. That is a rate of 46.5 per 100,000 residents.
https://experience.arcgis.com/experience/96dd742462124fa0b38ddedb9b25e429/

2020-07-05 Petersen et al in The Lancet Infectious Diseases on 2020-07-03 extensively compare the SARS-CoV-2 with the SARS-CoV and 2009 influenza pandemics
https://www.thelancet.com/journals/laninf/article/PIIS1473-3099(20)30484-9/fulltext

2020-07-05 Some helpful opinion on fomites for those of use hosting occasional social-distanced gatherings (in my case, to play music); tea served rather than self-poured; beakers for everybody; no shared snacks; separate labelled handtowels in the loo, wipedown with Isopropanol, and so on. As well as those of us supplying people in quarantine, or, more difficult, Covid-19 sufferers. It is not difficult but it is not trivial. Goldman opines in The Lancet Infectious Diseases on 2020-07-03 that the risk of transmission of SARS-CoV-2 through fomites is a lot lower in "real-life" situations than what specific tests have shown https://www.thelancet.com/journals/laninf/article/PIIS1473-3099(20)30561-2/fulltext He points out that the titres used for the viability tests are orders of magnitude larger than one can expect from deposit of droplets on surfaces. He references comparisons which have been performed for other air-transmissible diseases. "*In my opinion, the chance of transmission through inanimate surfaces is very small, and only in instances where an infected person coughs or sneezes on the surface, and someone else touches that surface soon after the cough or sneeze (within 1–2 h). …….I believe that fomites that have not been in contact with an infected carrier for many hours do not pose a measurable risk of transmission in non-hospital settings….*"

2020-07-05 Kucharski et al published a modelling study of isolation, testing, contract tracing and physical distancing as methods to reduce transmission of SARS-CoV-2 in various different settings, in The Lancet Infectious Diseases on 2020-06-16 https://www.thelancet.com/journals/laninf/article/PIIS1473-3099(20)30457-6/fulltext Somehow, I had missed this. None of the measures work very well alone; combinations are needed to get R_e below 1 and keep it there. The associated Comment by Chandini Raina MacIntyre makes this very clear https://www.thelancet.com/journals/laninf/article/PIIS1473-3099(20)30512-0/fulltext (articles are invariably accompanied by a Comment when they are published in The Lancet.) Governors of some US states might want to pay this article some attention.

2020-07-05 This reality is underlined by an article in The Economist entitled "The New Normal", published in the July 4th edition https://www.economist.com/international/2020/07/04/covid-19-is-here-to-stay-the-world-is-working-out-how-to-live-with-it (reading on-line requires registration) It discusses the political possibilities and difficulties which have arised with what are called non-pharmaceutical interventions. (It refers to "*A recent study published in the Lancet….estimates that about 4.5% of people infected by Covid-19 glabally are likely to become so ill they require hospitalisation.*" I have not found that study yet.)

2020-07-05 Nishiura et al looked at secondary transmission in a number of cases (110) and concluded that closed environments facilitate transmission 18.7 times more than open air (95% CI 6.0 to 57.9) The note is a preprint from 2020-04-16 https://www.medrxiv.org/content/10.1101/2020.02.28.20029272v2

2020-07-06 Bastos et al have published a metaanalysis of serological tests for Covid-19 in the BMJ on 2020-07-03 https://www.bmj.com/content/370/bmj.m2516 . An editorial by Duong, Wright and Justman suggests that serological testing is "not ready for prime time", and such tests are better used via algorithms (e.g., screening with one; confirming with a second) https://www.bmj.com/content/370/bmj.m2655 Bastos et al suggest the lateral-flow immunoassay (LFIA), a "point of care" test performs particularly poorly; however, a letter by Moyse points out that the study was using pooled data, from particularly poor tests (specificity < 20%) to high-sensitivity tests with 100% specificity https://www.bmj.com/content/370/bmj.m2516/rapid-responses . Further, Deeks pointed out in a response that these were likely to have been administered early (less than two weeks after infection) which is known to give poor response. Deeks et al published a Cochrane Systematic Review of antibody tests a week earlier on 2020-06-25 https://www.cochranelibrary.com/cdsr/doi/10.1002/14651858.CD013652/full The Cochrane Review highlighted the point at which the test was conducted, and showed that sensitivity was low

in the first week, rises in the second, and is highest in the third week after infection.

2020-07-06 James Brophy in the BMJ on 2020-07-03 suggests that the "good news" on remdesivir might not be quite as good as suggested. He points out that the study showing some benefit had many features known to increase bias, and an independent RCT had shown no benefit. https://blogs.bmj.com/bmj/2020/07/03/as-the-us-purchases-world-stocks-of-remdesivir-why-the-rest-of-the-world-should-be-glad-to-be-at-the-back-of-the-queue/

2020-07-06 The extensive Vò study by Lavezzo et al has been published on-line in Nature on 2020-06-30 https://www.nature.com/articles/s41586-020-2488-1 Elizabeth Mahase summarises in the BMJ on 2020-07-01 https://www.bmj.com/content/370/bmj.m2647 Of the two appraisals made, 42.5% of the infected were asymptomatic, and there appeared to be no statistically significant difference in viral shedding between symptomatic and asymptomatic cases.

2020-07-06 In the BMJ today, Sridhar and Chen indicate that Scotland's approach to Covid-19 is working. Scotland implemented a "test, trace, isolate" strategy and exhibits a very cautious approach to easing lockdown. The positivity rate on tests is under 0.5% on most days – less than one in two hundred people tested. https://www.bmj.com/content/370/bmj.m2669

2020-07-06 Leclerc et al from CMMID have published on the settings linked to Covid-19 transmission clusters ("superspreading events") https://wellcomeopenresearch.org/articles/5-83 The authors found 201 events (Table 1) which they classified into 22 settings (Table 2).

2020-07-06 Pollán et al have published in The Lancet today an extensive seroprevalence study in Spain involving over 35,000 households and 61,000 participants. They report "*Seroprevalence was 5·0% (95% CI 4·7–5·4) by the point-of-care test and 4·6% (4·3–5·0) by immunoassay, …., with no differences by sex and lower seroprevalence in children younger than 10 years (<3·1% by the point-of-care test). There was substantial geographical variability, with higher prevalence around Madrid (>10%) and lower in coastal areas (<3%).*" The Comment by Eckerle and Meyer https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(20)31482-3/fulltext , which also involves the report of Stringhini et el from Switzerland published three weeks ago (see Notes Part 10, entry from 2020-06-15), notes that "*The key finding from these representative cohorts is that most of the population appears to have remained unexposed to SARS-CoV-2, even in areas with widespread virus circulation.*"

2020-07-07 The US National Academies of Sciences, Engineering and Medicine has funded a series of engineering-innovation projects to help around Covid-19. Projects currently running are described in https://www.nationalacademies.org/news/2020/07/troubleshooting-the-pandemic-engineers-pitch-innovative-solutions-to-help-address-covid-19

2020-07-07 The Royal Society DELVE Initiative has a report from 2020-05-04, Face Masks for the General Public. DELVE Report No. 1. Published 04 May 2020 https://rs-delve.github.io/reports/2020/05/04/face-masks-for-the-general-public.html It rehearses well the reasons why wearing face masks in public reduces transmission, with extensive references. The recommendation to do so was reiterated yesterday by the Royal Society President, Sir Venki Ramakrishnan, as another report said that uptake amongst the British public was only 25%. Ramakrishnan said not wearing a mask in public should be as taboo as drink-driving or not wearing a seatbelt https://www.theguardian.com/world/2020/jul/07/refusal-to-wear-mask-should-be-as-taboo-as-drink-driving-says-royal-society-chief

2020-07-08 Paterson et al report in Brain on 2020-07-08 on a number of cases of severe neurological disease following relatively "mild" cases of Covid-19

https://academic.oup.com/brain/article/doi/10.1093/brain/awaa240/5868408 The concerns these phenomena raise are reported by Ian Sample in The G on 2020-07-08 https://www.theguardian.com/world/2020/jul/08/warning-of-serious-brain-disorders-in-people-with-mild-covid-symptoms Brain involvement following viral respiratory disease is not unknown – there are reports that cases were associated with the 1918 Spanish flu epidemic.

2020-07-08 There was a press conference with Martin Exner, Director of the University of Bonn Institute of Hygiene and Public Health (IHPH) on, I think, 2020-06-25, widely reported in the German press on 2020-06-26. For example, a report in the Frankfurter Allgemeine Zeitung https://www.faz.net/aktuell/gesellschaft/gesundheit/coronavirus/klimaanlagen-koennten-corona-ausbrueche-bei-toennies-beguenstigt-haben-16830627.html (in German). IHPH has their logo along with RKI on the German Covid-19 Dashboard which uses the JHU CSSE Dashboard SW. Professor Exner has been looking at the air conditioning in the meat-cutting part of the Tönnies plant, in which part two-thirds of the workers were infected. The air is kept necessarily cold and is recirculated, and the filtering is inadequate to eliminate aerosols.

So far, there are only news media reports, and I was waiting for something more substantial, but it hasn't yet arrived. Exner was also involved in the Heinsberg study and said that the air conditioning in the room where the Carnival celebration was taking place only used 20%-30% fresh air per circulation, and the filtering was not sufficient to eliminate SARS-CoV-2-carrying particles (this is what the news says; I don't have any more exact description at this point of precisely what this means).

This gives some weight to the thought that viable SARS-CoV-2 virus is transmitted not merely by droplets, but also by microdroplets (see next entry) and aerosols, but maybe not in sufficient quantity to infect others unless the aerosols are accumulated in large concentrations, as in recirculating air conditioning using low quantities of fresh-air mix. They must also remain viable, best accomplished I understand at a temperature of around 4°C.

I hope people are designing a way to test this phenomenon experimentally.

2020-07-08 The short article (3pp) by Morawska and Milton on airborne transmission via microdroplets, and the persistence of viable SARS-CoV-2 virus in such microdroplets, has appeared in Clinical Infectious Diseases on 2020-07-06 https://academic.oup.com/cid/article/doi/10.1093/cid/ciaa939/5867798

The commentary is referenced in many newspapers. It advocates protective measures against microdroplets, and has been endorsed by 239 other scientists. The authors say "*There is significant potential for inhalation exposure to viruses in microscopic respiratory droplets (microdroplets) at short to medium distances (up to several meters, or room scale), and we are advocating for the use of preventive measures to mitigate this route of airborne transmission.*" Microdroplets are droplets of size around 5 μm, which the authors say can travel "*tens of meters*" when exhaled.