



COVID-19

Health Evidence Summary No.2

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This weekly COVID-19 Health Evidence Summary is to signpost DFID and other UK government departments to the latest relevant evidence and discourse on COVID-19 to inform and support their response. It is a result of half-a-day of work and is not intended to be a comprehensive summary of evidence.

1. Health Evidence Summary

UK coronavirus crisis ‘to last until spring 2021 and could see 7.9 million hospitalised’

Campbell D, Health policy editor | The Guardian | 15 March 2020 | News article

<https://www.theguardian.com/world/2020/mar/15/uk-coronavirus-crisis-to-last-until-spring-2021-and-could-see-79m-hospitalised>

This media article covers a PHE briefing document, by the PHE’s emergency preparedness and response team and approved by PHE’s lead official dealing with the outbreak Dr Susan Hopkins, for senior NHS officials. The COVID-19 epidemic in the UK could circulate for another 12 months lasting until next spring, infect as many as 80% of Britons, could lead to 7.9 million people being hospitalised (15%) and result in 531,100 deaths on the working assumption of a 1% mortality rate. Prof Chris Whitty has previously described these figures as the worst-case-scenario and that the mortality rate will be closer to 0.6%. The curve will peak at around the end of May to mid-June, drop for 10 weeks or more and possibly resurge in the autumn or winter months. This means planning for the long term will be necessary.

Characteristics of pediatric SARS-CoV-2 infection and potential evidence for persistent fecal viral shedding

Xu et al. | Nature Medicine | 13 March 2020 | Brief Communication

<https://www.nature.com/articles/s41591-020-0817-4>

Authors report on ten paediatric SARS-CoV-2 infection confirmed cases. Symptoms were nonspecific, no children required respiratory support or intensive care and there were no definitive signs of pneumonia on chest X-rays, a defining feature of infection in adult cases. Authors suggest that fecal-oral transmission could be possible given that eight children persistently tested positive on rectal swabs even after naopharyngeal testing was negative.

Detection of COVID-19 in children in early January 2020 in Wuhan, China

Liu et al. | NEJM | 12 March 2020 | Correspondence

<https://www.nejm.org/doi/full/10.1056/NEJMc2003717>

In a retrospective study from 7 to 15 January 2020 SARS-CoV-2 was detected in 6 children (median age 3 years (range 1 to 7)) from a total of 366 hospitalised at three branches of Tongji Hospital in central Wuhan. All six children had a high fever (>39°C) and cough and four had vomiting. Four patients had pneumonia. One child was admitted to the paediatric intensive care unit and received pooled immune globulin from health donors. All patients were treated empirically with antiviral agents, antibiotic agents and supportive therapies. All recovered after hospitalisation for a median of 7.5 days (range 5 to 13). COVID-19 occurred in children early in the epidemic.

LSTM researchers work on new diagnostics for COVID-19

LSTM | 12 March 2020 | News article

<https://www.lstmed.ac.uk/news-events/news/lstm-researchers-work-on-new-diagnostics-for-covid-19>

A team at LSTM is working with industry contacts to develop, evaluate and manufacture two point of care diagnostic tests for COVID-19 that can be carried out rapidly (results could be available in just 10 minutes), easily and in close to community settings and are suitable for implementation in low-middle income countries. Near-patient diagnostic capacity will help reduce transmission through effective triage of symptomatic patients and through infection control.

The value of early transmission dynamic studies in emerging infectious diseases

McBryde E | The Lancet Infectious Diseases | 11 March 2020 | Comment

[https://doi.org/10.1016/S1473-3099\(20\)30161-4](https://doi.org/10.1016/S1473-3099(20)30161-4)

Transmission dynamic models are a necessary first step in understanding the pandemic potential of an emerging infectious disease, including estimating the reproduction number (R_0) – the number of new cases arising from a typical infected case. Many estimates of the reproduction rate have appeared ranging from around 2 to more than 6. The study by Adam Kucharski and colleagues below addresses many assumptions of early works including a time-varying reproduction number, showing the effect of the massive public health interventions put in place by China from 23 January 2020.

There remains though urgent unanswered questions including the infectiousness of cases over the duration of their illness – particularly how much transmission could occur from people who are unaware that they have the illness, including asymptomatic and mildly symptomatic people, which will make disease much harder to detect and therefore control. What contribution such people make to the overall epidemic is unknown. Also, what the infection severity is, including the infection-fatality rate across different ages and risk group. Whilst early reports provide estimates of case fatality of 2.3% within China, it is “notoriously difficult to make such estimates early in an outbreak”.

Ongoing modelling and surveillance should continue in mainland China and emerging foci outside of China, to determine if the reproduction ratio might vary in different climates and sociological contexts.

Early dynamics of transmission and control of COVID-19: a mathematical modelling study

Kucharski et al. | The Lancet Infectious Diseases | 11 March 2020 | Article

[https://doi.org/10.1016/S1473-3099\(20\)30144-4](https://doi.org/10.1016/S1473-3099(20)30144-4)

This study combines available evidence from multiple data sources, reducing the dependency of their estimates on a single timepoint or dataset, to estimate how transmission has varied over time. The reproduction number began at 2.35 and fell to 1.05 during December 2019 and January 2020, coinciding with the unprecedented public health restrictions in China. Up to four imported cases may be required to establish transmission. This estimate assumes that SARS-CoV-2 has similar heterogeneity of infectiousness to SARS-CoV, which was characterised by a number of super-spreaders with most cases infecting no other people, where multiple introductions might be required before an outbreak takes hold. Emerging evidence though is pointing to a more homogenous infectiousness profile of SARS-CoV-2 in which most people infect two to three others, where the risk of established local transmission with a single imported case is considerably higher.

Are patients with hypertension and diabetes mellitus at increased risk for COVID-19 infection?

Fang et al. | Lancet Respiratory Medicine | 11 March 2020 | Correspondence

[https://www.thelancet.com/pdfs/journals/lanres/PIIS2213-2600\(20\)30116-8.pdf](https://www.thelancet.com/pdfs/journals/lanres/PIIS2213-2600(20)30116-8.pdf)

The most frequent comorbidities reported in three studies of patients with COVID-19 are often treated with angiotensin-converting enzyme (ACE) inhibitors. SARS-CoV-2 binds to their target cells through angiotensin-converting enzyme 2 (ACE2), which is expressed by epithelial cells of the lung, intestine, kidney and blood vessels. ACE2 expression is increased in diabetes and treatment with ACE inhibitors and angiotensin II type-I receptor blockers (ARBs) increases ACE2 expression, which could facilitate infection with COVID-19. The authors hypothesise that diabetes and hypertension treatment with ACE2-stimulating drugs increases the risk of developing severe and fatal COVID-19.

The incubation period of COVID-19 from publicly reported confirmed cases: estimation and application

Lauer et al. | Annals of Internal Medicine | 10 March 2020 | Article

<https://annals.org/aim/fullarticle/2762808/incubation-period-coronavirus-disease-2019-covid-19-from-publicly-reported>

From pooled analysis of 181 confirmed COVID-19 cases reported between 4 January and 24 February 2020 a median incubation period is estimated to be 5.1 days (95% CI 4.5 to 5.8 days), similar to SARS, and 97.5% of those who develop symptoms will do so within 11.5 days (CI 8.2 to 15.6 days) of infection. Although publicly reported cases may overrepresent severe cases for which the incubation period may differ from that of mild cases, these results support current proposals for the length of quarantine or active monitoring of persons potentially exposed to SARS-CoV-2. Longer monitoring periods could be justified in extreme cases.

The impact of COVID-19 in informal settlements – are we paying enough attention?

Wilkinson A | IDS | 10 March 2020 | Opinion

<https://www.ids.ac.uk/opinions/the-impact-of-covid-19-in-informal-settlements-are-we-paying-enough-attention/>

What if you can't wash your hands for 20 seconds and self-isolate if sick? One billion people live in slums or informal settlements where water for basic needs is in short supply and where space is constrained, and rooms are often shared. Discussion about vulnerability in these contexts has been startlingly absent. IDS, ESRC funded [Sierra Leone Urban Research Centre](#) (SLURC) and the GCRF funded hub on [Accountability for Informal Urban Equity](#)

(ARISE) have been exploring how do residents organise to address existing health threats and how does this provide a basis for a COVID-19 response?

- Data gaps: Data, especially for health, is often simply not collected so how do you develop preparedness and response plans if you do not even know the number of people living in an area? Response planners should engage with community-based groups who do collect their own data to understand the realities and challenges of diseases control in slums.
- Interdependences: Informal settlements and their residents are part of the city system, often subsidising and contributing to life elsewhere in the city making containment and reductions in movement control efforts difficult to implement. Slum-wide quarantines were **ineffective with Ebola**.
- Inequalities and vulnerabilities: People rely on informal health providers as a first port of call, especially for fevers and coughs. These providers should be included in pandemic response plans and could detect early cases. Health systems in informal settlements are limited. Older people can be relatively isolated, especially childless women or widows. There may be pockets of highly vulnerable and isolated people – the old and those with co-morbidities without support and unable to access care.
- Community engagement: Delivering trusted messages, carrying out surveillance, or attempting to limit movement must engage the community to be effective. There is no simple answer though to who people trust and what a 'community' is in these contexts. An effective leader could be a chief or councillor, businessperson, traditional healer, member of a youth group or even a gang leader. Working with the community-based groups that already exist to respond to repeated disasters – cholera, fires, flooding and mudslides – will be key.

There is a real risk that the COVID-19 “impacts on the urban poor will be considerably higher than elsewhere”. To mitigate these impacts and to achieve longer-term changes in urban planning, the discussion needs to change from responding to COVID-19 in universal terms to how to improve the way we see, understand and address health and living conditions in informal settlements.

Clinical course and risk factors for mortality of adult inpatients with COVID-19 in Wuhan, China: a retrospective cohort study

Zhou et al. | *The Lancet* | 9 March 2020 | Article

[https://doi.org/10.1016/S0140-6736\(20\)30566-3](https://doi.org/10.1016/S0140-6736(20)30566-3)

In this retrospective multicentre cohort study of 191 adult (18 years or older) inpatients in two hospitals in Wuhan, China assessing risk factors of mortality for adult patients with COVID-19, authors found that increasing odds of in-hospital death was associated with older age, high Sequential Organ Failure Assessment (SOFA) score and d-dimer levels greater than 1.0 ug/mL on admission. The most common comorbidity was hypertension (91 (48%) patients), followed by diabetes (36 (19%) patients) and coronary heart diseases (15 (8%) patients). Duration of viral shedding ranged between 8 and 37 days. The median duration of viral shedding was 20.0 days (IQR 17.0 to 24.0) in survivors but continued until death in fatal cases. Older age, elevated d-dimer levels and high SOFA score could help clinicians to identify at an

early stage those patients with COVID-19 who have poor prognosis. Prolonged viral shedding provides the rationale for a strategy of isolation of infected patients.

A coordinated Global Research Roadmap: R&D blueprint

WHO | 4 March 2020 | R&D blueprint

<https://www.who.int/blueprint/priority-diseases/key-action/Roadmap-version-FINAL-for-WEB.pdf?ua=1>

This document presents critical research questions that need to be answered urgently; immediate, mid-term and longer-term priorities for a global research response; and ways to work together to accelerate and fund priority research that can curtail the COVID-19 outbreak and prepare for future outbreaks. This document was produced based on the Global Research and Innovation Forum of world scientists at WHO Geneva from 11 to 12 February 2020. The latest reports on vaccines, therapeutics, diagnostics and Global Coordination Mechanism can be found here

<https://www.who.int/blueprint/priority-diseases/key-action/novel-coronavirus/en/>

Strategic preparedness and response plan for the new coronavirus

WHO | 3 February 2020 | Response plan

<https://www.who.int/publications-detail/strategic-preparedness-and-response-plan-for-the-new-coronavirus>

This plan outlines public health measures that the international community can provide to support all countries to prepare and respond to COVID-19. The document provides strategic action to guide national and international partners when developing context-specific national and regional operational plans.

2. Tracking COVID-19 cases

Global

WHO COVID-19 daily situation reports

<https://www.who.int/emergencies/diseases/novel-coronavirus-2019/situation-reports>

An interactive web-based dashboard to track COVID-19 in real time

<https://gisanddata.maps.arcgis.com/apps/opsdashboard/index.html#/bda7594740fd40299423467b48e9ecf6>

COVID-19: PHE track coronavirus cases in the UK

<https://www.gov.uk/government/publications/covid-19-track-coronavirus-cases>

UK case tracing infographic

<https://www.arcgis.com/apps/opsdashboard/index.html#/f94c3c90da5b4e9f9a0b19484dd4bb14>

3. Online course

COVID-19: Tackling the Novel Coronavirus

LSHTM | FutureLearn course | Starts 23 March 2020 | 3 weeks | 4 hours weekly study | Free

<https://www.futurelearn.com/courses/covid19-novel-coronavirus>

On this course you will learn what is known about the outbreak of COVID-19 (week 1); what the practical implications for responding to COVID-19 are (week 2); and what we need to find out about COVID-19 (week 3).

4. Funding

WHO, UN Foundation and partners launch first-of-its-kind COVID-19 Solidarity Response Fund

WHO | 13 March 2020 | News release

<https://www.who.int/news-room/detail/13-03-2020-who-un-foundation-and-partners-launch-first-of-its-kind-covid-19-solidarity-response-fund>

This new Fund will raise money from a wide range of donors, including private individuals, corporations and institutes anywhere, to support the work of the WHO and partners implement the COVID-19 Strategic Preparedness and Response Plan to enable all countries to prepare for and respond to the COVID-19 crises and in particular those most vulnerable and at-risk, and with the weakest health systems.

5. Resource Hubs

Global research on COVID-19

<https://www.who.int/emergencies/diseases/novel-coronavirus-2019/global-research-on-novel-coronavirus-2019-ncovnovel-coronavirus-2019-ncov>

WHO R&D Blueprint

<https://www.who.int/blueprint/priority-diseases/key-action/novel-coronavirus/en/>

WHO: Coronavirus disease (COVID-19) outbreak resources

<https://www.who.int/emergencies/diseases/novel-coronavirus-2019>

Latest information and advice from the UK Government

<https://www.gov.uk/guidance/coronavirus-covid-19-information-for-the-public>

CDC COVID-19 Resources

<https://www.cdc.gov/coronavirus/2019-ncov/index.html>

The Global Health Network Coronavirus outbreak knowledge hub

<https://coronavirus.tghn.org>

The Lancet COVID-19 Resource Centre

<https://www.thelancet.com/coronavirus>

Elsevier's Novel Coronavirus Information Center

<https://www.elsevier.com/connect/coronavirus-information-center>

Cell Press Coronavirus Resource Hub

<https://www.cell.com/2019-nCoV>

Cochrane Special Collections - COVID-19: infection control and prevention measures

<https://www.cochranelibrary.com/collections/doi/SC000040/full>

The BMJ Coronavirus (covid-19): Latest news and resources

https://www.bmj.com/coronavirus?int_source=wisepops&int_medium=wisepops&int_campaign=DAA_CoronaVirus_Jan24

Johns Hopkins Coronavirus Resource Centre

<https://coronavirus.jhu.edu>

And finally, for now...

There is discussion about changing the term "social distancing" to "physical distancing"
#PhysicalDistancing #SocialDistancing

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