



## International EPI Cell Evidence Digest – 01/07/2020

This Evidence Digest is produced by the PHE COVID-19 Literature Digest Team as a resource for professionals working in public health. We do not accept responsibility for the availability, reliability or content of the items included in this resource and do not necessarily endorse the views expressed within them. The papers are organised under the following themes:

- Serology and immunology
- Epidemiology and clinical - children and pregnancy
- Epidemiology and clinical - risk factors
- Epidemiology and clinical - other
- Infection control
- Treatment
- Miscellaneous
- Overviews, comments and editorials (no digest)

Please note that we are including preprints (**highlighted in red**), which are preliminary reports of work that have NOT been peer-reviewed. They should not be relied on to guide clinical practice or health-related behaviour and should NOT be reported in news media as established information.

### Serology and immunology

Publication Date	Title/URL	Journal/ Article type	Digest
29.06.2020	<a href="#">Robust T cell immunity in convalescent individuals with asymptomatic or mild COVID-19</a>	bioRxiv (non-peer reviewed) / Article	<ul style="list-style-type: none"><li>• In individuals with acute or convalescent COVID-19, acute phase SARS-CoV-2-specific T cells displayed a highly activated cytotoxic phenotype that correlated with various clinical markers of disease severity, whereas convalescent phase SARS-CoV-2-specific T cells were polyfunctional and displayed a stem-like memory phenotype.</li><li>• SARS-CoV-2-specific T cells were detectable in antibody-seronegative family members and individuals with a history of asymptomatic or mild COVID-19.</li><li>• The dataset shows that SARS-CoV-2 elicits robust memory T cell</li></ul>

			responses akin to those observed in the context of successful vaccines, suggesting that natural exposure or infection may prevent recurrent episodes of severe COVID-19 also in seronegative individuals.
28.06.2020	<a href="#">Seroconversion of a city: Longitudinal monitoring of SARS-CoV-2 seroprevalence in New York City</a>	medRxiv (non-peer reviewed) / Article	<ul style="list-style-type: none"> <li>• Retrospective, cross-sectional analysis of SARS-CoV-2 seroprevalence in a sentinel group and a screening group using &gt;5,000 plasma samples from patients at Mount Sinai Hospital in NY City, where seropositive samples were identified as early as in the week ending Feb 23, 2020.</li> <li>• A stark increase in seropositivity in the sentinel group started the week ending Mar 22 and in the screening group in the week ending Mar 29. By the week ending April 19, the seroprevalence in the screening group reached 19.3%, which is well below the estimated 67% needed to achieve community immunity to SARS-CoV-2.</li> <li>• These data potentially suggest an earlier than previously documented introduction of SARS-CoV-2 into the NYC metropolitan area.</li> </ul>

#### Epidemiology and clinical - children and pregnancy

Publication Date	Title/URL	Journal/ Article type	Digest
25.06.2020	<a href="#">Delayed access to care and late presentations in children during the COVID-19 pandemic: a snapshot survey of 4075 paediatricians in the UK and Ireland</a>	Arch Dis Child / Letter	<ul style="list-style-type: none"> <li>• The British Paediatric Surveillance Unit undertook a snapshot electronic survey on 24 Apr 2020 of 4075 paediatric consultants representing &gt;90% of paediatric consultants in the UK and Ireland, asking whether, during the previous 14 days, they had seen any children who, in their opinion, presented later than they would have expected prior to the COVID-19 pandemic (i.e., delayed presentation).</li> <li>• Overall, 241 (32%) of 752 paediatricians working in ED/PAU had witnessed delayed presentations, with 57 (8%) reporting ≥3 patients with delayed presentation.</li> <li>• Free text responses revealed diabetes mellitus (new diagnosis/diabetic ketoacidosis) as by far the most common delayed presentation, but also sepsis and malignancy. There were</li> </ul>

			also nine deaths where delayed presentation was considered a contributing factor, resulting mainly from sepsis and malignancy.
29.06.2020	<a href="#">Critical paediatric COVID-19: varied presentations but good outcomes</a>	Arch Dis Child / Letter	<ul style="list-style-type: none"> <li>• This study describes a single-centre paediatric intensive care unit (PICU) experience of children who tested positive for SARS-CoV-2 in the first 10 weeks of the pandemic in the UK, excluding those who met PIMS-TS criteria as these have been described elsewhere.</li> </ul>
27.06.2020	<a href="#">Myocarditis in a 16-year-old boy positive for SARS-CoV-2</a>	Lancet / Article	<ul style="list-style-type: none"> <li>• A 16-year-old boy was admitted to emergency department, in Lombardy, complaining of intense pain in his chest—radiating to his left arm—which had started 1 h earlier.</li> <li>• The day before he had a fever of 38.3°C that decreased after 100 mg of nimesulide. He reported no other symptoms, no medical history, and no contact with anyone with confirmed COVID-19. On day 3, a nasopharyngeal swab test for SARS-CoV-2 was positive.</li> <li>• The authors' believe paediatric patients reporting chest pain and other features suggestive of acute myocarditis - with or without respiratory symptom, should also be tested for SARS-CoV-2.</li> </ul>
29.06.2020	<a href="#">Multisystem Inflammatory Syndrome in U.S. Children and Adolescents</a>	N Engl J Med / Research article	<ul style="list-style-type: none"> <li>• Of 186 patients with multisystem inflammatory syndrome in children (MIS-C) in 26 US states, the median age was 8.3 years, 62% were male, 73% had previously been healthy, 70% were positive for SARS-CoV-2 by RT-PCR or antibody testing, and 88% were hospitalized after April 16, 2020.</li> <li>• Organ-system involvement included the gastrointestinal system in 92%, cardiovascular in 80%, hematologic in 76%, mucocutaneous in 74%, and respiratory in 70%.</li> <li>• The median duration of hospitalization was 7 days; 80% received intensive care, 20% received mechanical ventilation, 48% received vasoactive support, and 4 (2%) died.</li> </ul>
29.06.2020	<a href="#">Multisystem Inflammatory Syndrome in Children in New York State</a>	N Engl J Med / Research article	<ul style="list-style-type: none"> <li>• As of May 10, 2020, a total of 191 potential cases of MIS-C associated with COVID-19 were reported to the NY State Department of Health.</li> <li>• Of 95 patients with confirmed MIS-C (laboratory-confirmed acute or recent SARS-CoV-2 infection) and 4 with suspected MIS-C, 54% were male; 40% were black, and 36% were Hispanic. 31% were 0 to 5 years of age, 42% were 6 to 12 years of age, and 26% were 13 to 20 years of age.</li> <li>• 80% were admitted to an intensive care unit, and 2 died. The median length of hospital stay was 6 days.</li> </ul>

## Epidemiology and clinical - risk factors

Publication Date	Title/URL	Journal/ Article type	Digest
24.06.2020	<a href="#">Differential occupational risks to healthcare workers from SARS-CoV-2: A prospective observational study</a>	medRxiv (non-peer reviewed) / Article	<ul style="list-style-type: none"> <li>• Voluntary Covid-19 testing programmes were conducted for 9809 symptomatic and asymptomatic staff at a large UK teaching hospital to investigate why healthcare workers remain at increased risk in spite of PPE and social distancing.</li> <li>• 11.0% of staff had evidence of Covid-19 at some time. Staff with a confirmed household contact were at greatest risk.</li> <li>• Higher rates of Covid-19 were seen in staff working in Covid-19-facing areas (21.2% vs. 8.2% elsewhere); otherwise risks were heterogenous across the hospital. Covid-19 intensive care unit (ICU) staff were relatively protected.</li> <li>• Positive results were more likely in Black and Asian staff, independent of role or working location, and in porters and cleaners.</li> </ul>
26.06.2020	<a href="#">Higher clinical acuity and 7-day hospital mortality in non-COVID-19 acute medical admissions: prospective observational study</a>	medRxiv (non-peer reviewed) / Article	<ul style="list-style-type: none"> <li>• Prospective NHS Lothian observational study of the effect of COVID-19 lockdown measures on severity of illness and mortality in non-COVID-19 acute medical admissions.</li> <li>• Non-covid-19 acute medical admissions reduced by a mean 43.8% across all 3 sites in comparison to the mean of the preceding 5 years <math>P &lt; 0.001</math>. The reduction in admissions predominated in the over 75 age category and a greater proportion arrived by emergency ambulance transport.</li> <li>• Non-covid-19 admissions during lockdown had a greater incidence of severe renal injury, hyperlactataemia and over twice the risk of hospital death within 7 days 5.01% vs 2.49% which persisted after adjustment for confounders.</li> </ul>
30.06.2020	<a href="#">Endotheliopathy in COVID-19-associated coagulopathy: evidence from a single-centre, cross-sectional study</a>	The Lancet Haematology / Article	<ul style="list-style-type: none"> <li>• To determine whether endotheliopathy is involved in COVID-19-associated coagulopathy pathogenesis, assessed markers of endothelial cell and platelet activation in critically and non-critically ill patients admitted to the hospital with COVID-19.</li> <li>• The authors' findings show that endotheliopathy is present in COVID-19 and is likely to be associated with critical illness and</li> </ul>

			death. Early identification of endotheliopathy and strategies to mitigate its progression might improve outcomes in COVID-19.
30.06.2020	<a href="#">The effect of frailty on survival in patients with COVID-19 (COPE): a multicentre, European, observational cohort study</a>	The Lancet Public Health / Article	<ul style="list-style-type: none"> <li>• In the COVID-19 in Older PEople (COPE) study the authors' aimed to establish the prevalence of frailty in patients with COVID-19 who were admitted to hospital and investigate its association with mortality and duration of hospital.</li> <li>• The study found that in a large population of patients admitted to hospital with COVID-19, disease outcomes were better predicted by frailty than either age or comorbidity, and the results support the use of CFS to inform decision making about medical care in adult patients admitted to hospital with COVID-19.</li> </ul>
24.06.2020	<a href="#">COVID-19 outcomes among people with intellectual and developmental disability living in residential group homes in New York State</a>	Disabil Health J / Brief report	<ul style="list-style-type: none"> <li>• People with intellectual and developmental disabilities (IDD) living in residential group homes were at greater risk of severe COVID-19 outcomes: case rates – 7,841 per 100,000 for people with IDD compared to 1,910 for NY State; case-fatality – 15.0% for people with IDD compared to 7.9% for NY State; and mortality rate – 1,175 per 100,000 for people with IDD compared to 151 per 100,000 for NY State.</li> <li>• Differences in cases and mortality rate were confirmed across regions of the state, but case-fatality rate was only higher for people with IDD in and around the NY City region.</li> <li>• COVID-19 appears to present a greater risk to people with IDD, especially those living in congregate settings.</li> </ul>
26.06.2020	<a href="#">Severe Asthma During the COVID-19 Pandemic: Clinical Observations</a>	J Allergy Clin Immunol Pract / Clinical communication	<ul style="list-style-type: none"> <li>• Determined the prevalence and characterization of COVID-19 infection among patients with severe asthma according to ERS/ATS criteria who presented to the allergy department during the COVID-19 pandemic.</li> <li>• Contrary to expectations, severe asthmatic patients (n=80) did not develop an aggressive form of COVID-19 infection (ARDS) and did not require intensive care.</li> <li>• This may be caused by the fact that drugs used to control asthma can contribute to the inhibition of viral replication as described in recent in vitro studies.</li> <li>• Alternatively, this effect may be linked to the reduction in pro-inflammatory lipids observed when using montelukast as pre-treatment in a mouse model of ARDS.</li> </ul>

Epidemiology and clinical – other

Publication Date	Title/URL	Journal/ Article type	Digest
29.06.2020	<a href="#">Snapshot PCR Surveillance for SARS-CoV-2 in Hospital Staff in England</a>	Journal of Infection / Article	<ul style="list-style-type: none"> <li>• Cross-sectional snapshot survey of HCWs recruited from six UK hospitals to study prevalence of SARS-CoV-2 carriage.</li> <li>• Point prevalence of SARS-CoV-2 carriage across the sites was 2.0% (23/1152 participants). Symptoms in the past month were associated with threefold increased odds of testing positive. SARS-CoV-2 virus was isolated from only one (5%) of nineteen cultured samples. 39% of participants reported symptoms in the past month.</li> <li>• The point-prevalence is similar to previous estimates for HCWs in April 2020, though a magnitude higher than in the general population.</li> <li>• Based upon interpretation of symptom history and testing results including viral culture, the majority of those testing positive were unlikely to be infectious at time of sampling. <i>(Previously included as a preprint) (One of today's 'top picks')</i></li> </ul>
30.06.2020	<a href="#">Suppression of a SARS-CoV-2 outbreak in the Italian municipality of Vo'</a>	Nature / Article	<ul style="list-style-type: none"> <li>• Collected information on the demography, clinical presentation, hospitalization, contact network and presence of SARS-CoV-2 infection in nasopharyngeal swabs for 85.9% and 71.5% of the population of Vo', Italy at two consecutive time points.</li> <li>• On the first survey, which was conducted around the time the town lockdown started, found a prevalence of infection of 2.6%. On the second survey, which was conducted at the end of the lockdown, found a prevalence of 1.2%.</li> <li>• Notably, 42.5% of the confirmed SARS-CoV-2 infections detected across the two surveys were asymptomatic. The mean serial interval was 7.2 days (95% CI 5.9-9.6).</li> <li>• Found no statistically significant difference in the viral load of symptomatic versus asymptomatic infections.</li> <li>• Sheds new light on the frequency of asymptomatic SARS-CoV-2 infection, their infectivity (as measured by the viral load) and provides new insights into its transmission dynamics and the efficacy of the implemented control measures. <i>(One of today's 'top picks')</i></li> </ul>

30.06.2020	<a href="#">Large SARS-CoV-2 Outbreak Caused by Asymptomatic Traveler, China</a>	Emerg Infect Dis / Research letter	<ul style="list-style-type: none"> <li>• An asymptomatic person infected with SARS CoV-2 returned to Heilongjiang Province, China, after international travel.</li> <li>• The traveller's neighbour became infected and generated a cluster of &gt;71 cases, including cases in 2 hospitals.</li> <li>• Genome sequences of the virus were distinct from viral genomes previously circulating in China.</li> </ul>
30.06.2020	<a href="#">Characteristics of Adult Outpatients and Inpatients with COVID-19 — 11 Academic Medical Centers, United States, March–May 2020</a>	Morbidity and Mortality Weekly Report (MMWR) / Article	<ul style="list-style-type: none"> <li>• In a multistate telephone survey of 350 adult inpatients and outpatients who tested positive for SARS-CoV-2 infection, only 46% reported recent contact with a COVID-19 patient. Most participants' contacts were a family member (45%) or a work colleague (34%). Two thirds of participants were employed; only 17% were able to telework.</li> <li>• Case investigation, contact tracing, and isolation of infected persons are needed to prevent ongoing community transmission, given the frequent lack of a known contact.</li> <li>• Enhanced measures to ensure workplace safety, including social distancing and more widespread use of cloth face coverings, are warranted.</li> </ul>
27.06.2020	<a href="#">Bacterial and fungal coinfection among hospitalised patients with COVID-19: A retrospective cohort study in a UK secondary care setting</a>	Clin Microbiol Infect / Article	<ul style="list-style-type: none"> <li>• Retrospective observational study across two London hospitals to investigate the incidence of bacterial and fungal co-infection of hospitalised patients with confirmed SARS-CoV-2 found a low frequency of bacterial co-infection in early COVID hospital presentation, and no evidence of concomitant fungal infection, at least in the early phase of COVID-19.</li> </ul>
01.07.2020	<a href="#">Community Acquired Co-infection in COVID-19: A Retrospective Observational Experience</a>	Clin Infect Dis / Article	<ul style="list-style-type: none"> <li>• In this retrospective report, co-infection was identified in 3.7% of patients and 41% of patients admitted to intensive care (<math>p &lt; 0.005</math>).</li> <li>• Despite infrequent co-infection, antibiotics were used in 69% of patients.</li> </ul>
19.06.2020	<a href="#">Possible indirect transmission of COVID-19 at a squash court, Slovenia, March 2020: case report</a>	Epidemiol Infect / Case study	<ul style="list-style-type: none"> <li>• Epidemiological investigation which revealed a cluster of five COVID-19 cases, linked to playing squash at a sports venue in Maribor, Slovenia.</li> <li>• Acquired data raises possibility that the transmission occurred indirectly through contaminated objects in changing room or squash hall or via aerosolization in squash hall.</li> </ul>
29.06.2020	<a href="#">COVID-19, smoking, vaping and quitting: A representative population survey in England</a>	medRxiv (non-peer reviewed) / Article	<ul style="list-style-type: none"> <li>• UCL-led survey of 3,285 adults to explore associations between suspected SARS-CoV-2 infection, hand washing, smoking status, e-cigarette use, and nicotine replacement therapy (NRT) use, and</li> </ul>

			<p>smoking and vaping quit attempts.</p> <ul style="list-style-type: none"> <li>• Odds of suspected SARS-CoV-2 infection were significantly greater among current smokers (20.9%, adjusted odds ratio [OR<sub>adj</sub>]=1.34, 95% confidence interval [CI]=1.04-1.73) and long-term (&gt;1-year) ex-smokers (16.1%, OR<sub>adj</sub>=1.33, 95%CI=1.05-1.68) than never smokers (14.5%).</li> </ul>
29.06.2020	<a href="#">Forecasting spatial, socioeconomic and demographic variation in COVID-19 health care demand in England and Wales</a>	BMC Med / Research article	<ul style="list-style-type: none"> <li>• Combining multiple sources, the authors' produce geospatial risk maps on an online dashboard that dynamically illustrate how the pre-crisis health system capacity matches local variations in hospitalization risk related to age, social deprivation, population density and ethnicity, also adjusting for the overall infection rate and hospital capacity.</li> <li>• This flexible online dashboard allows policy-makers and health officials to monitor and evaluate potential health care demand at a granular level as the infection rate and hospital capacity changes throughout the course of this pandemic.</li> </ul>

## Infection control

Publication Date	Title/URL	Journal/ Article type	Digest
24.06.2020	<a href="#">Sentinel Coronavirus Environmental Monitoring Can Contribute to Detecting Asymptomatic SARS-CoV-2 Virus Spreaders and Can Verify Effectiveness of Workplace COVID-19 Controls</a>	medRxiv (non-peer reviewed) / Article	<ul style="list-style-type: none"> <li>• Over a two week period, nine workplace locations were chosen to test employees for SARS-CoV-2 infection (841 tests) and high-frequency-touch point environmental surfaces (5,500 tests) for Coronavirus using Eurofins COVID-19 Sentinel™ RT-PCR methods.</li> <li>• 3 workplaces had one or more employees infected with SARS-CoV-2, neither of whom had symptoms at the time of testing nor developed symptoms.</li> <li>• Locations with Coronavirus contaminated surfaces were 10 times more likely to have clinically positive employees than locations with no or very few positive surfaces.</li> <li>• Break room chairs, workbenches, and door handles were the most frequently contaminated surfaces. Coronavirus RNA was detected at very low concentrations (RT-PCR 34 to 38 Cq). <i>(Authors are Eurofins employees)</i></li> </ul>

## Treatment

Publication Date	Title/URL	Journal/ Article type	Digest
19.06.2020	<a href="#">Use of seasonal influenza and pneumococcal polysaccharide vaccines in older adults to reduce COVID-19 mortality</a>	Vaccine / Article	<ul style="list-style-type: none"> <li>• The authors' conducted a non-systematic review of the published, pre-print and grey literature to evaluate whether vaccination of older adults with seasonal influenza vaccine or PPV23 could help reduce COVID-19 mortality.</li> <li>• In summary, where already in routine use among older adults and/or adults at-risk, maintaining both seasonal influenza and PPV23 at high coverage have the potential to not only reduce the burden of the targeted diseases but also prevent a proportion of COVID-19 morbidity and mortality, if they can be delivered while minimising the risk for SARS-CoV-2 transmission.</li> <li>• However, for countries who previously decided that seasonal influenza vaccine or PPV23 programmes for older adults are not a priority, there is currently little evidence to encourage implementation of either during the COVID-19 pandemic solely for the purpose of reducing COVID-19 mortality.</li> </ul>

## Miscellaneous

Publication Date	Title/URL	Journal/ Article type	Digest
Jun-2020	<a href="#">'My Back to School Bubble' e-Storybook</a>	e-Bug / e-book	<ul style="list-style-type: none"> <li>• The e-book 'My Back to School Bubble' is a resource created with input from a network of teachers, parents and public health professionals and aims to help children understand the new protective measures that may be in place at their school, in an age-appropriate way. <i>(The e-Book was produced by PHE's e-Bug Team in collaboration with NABU, a global non-profit organisation.)</i></li> </ul>

## Overviews, comments and editorials

Publication Date	Title/URL	Journal/ Article type
30.06.2020	<a href="#">The ethics of COVID-19 treatment studies: too many are open, too few are double-masked</a>	Oxford COVID-19 Evidence Service / COVID-19
29.06.2020	<a href="#">Taking a Closer Look at COVID-19, Health Inequities, and Racism</a>	Jama / Video
30.06.2020	<a href="#">Endothelial cells orchestrate COVID-19 coagulopathy</a>	The Lancet Haematology / Comment
29.06.2020	<a href="#">Digital tools against COVID-19: taxonomy, ethical challenges, and navigation aid</a>	The Lancet Digital Health / Health policy
29.06.2020	<a href="#">Applications of digital technology in COVID-19 pandemic planning and response</a>	The Lancet Digital Health / Viewpoint
27.06.2020	<a href="#">Re-starting Travel in the Era of COVID-19: Preparing Anew</a>	J Travel Med / Article

Produced by the PHE COVID-19 Literature Digest Team