



International EPI Cell Daily Evidence Digest – 06/07/2020

This Daily 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:

- Diagnostics
- Genomics
- Epidemiology and clinical - children and pregnancy
- Epidemiology and clinical - risk factors
- Epidemiology and clinical - other
- Infection control
- Treatment
- Miscellaneous
- Modelling
- Guidance (no digest)
- 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Please note that we are including preprints (**highlighted in red**), which are preliminary reports of work that have NOT been peer-reviewed.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.

Diagnostics

Publication Date	Title/URL	Journal/ Article type	Digest
03.07.2020	Retrospective Screening for SARS-CoV-2 RNA in California, USA, Late 2019	Emerg Infect Dis / Research Letter	• Retrospective testing of pooled samples from 1,700 persons with respiratory signs/symptoms seen during the last 2 months of 2019 found no evidence of earlier infection with SARS-CoV-2.
03.07.2020	Kinetics and performance of the Abbott Architect SARS-CoV-2 IgG antibody assay	medRxiv (not peer-reviewed) / Article	• Study to assess the performance (sensitivity and specificity) of the Abbott Architect SARS-CoV-2 IgG antibody assay across three

			<p>clinical settings: hospitalised patients with PCR confirmation, hospitalized patients with a clinical diagnosis but negative PCR, and symptomatic healthcare workers (HCWs).</p> <ul style="list-style-type: none"> • Results show the sensitivity of the Abbot Architect SARS-CoV-2 IgG assay increases over time, with sensitivity not peaking until 20 days post symptoms. Performance varied markedly by setting, with sensitivity significantly worse in symptomatic healthcare workers than in the hospitalised cohort.
02.07.2020	Tissue-specific tolerance in fatal Covid-19	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> • Tissue was acquired from detailed post-mortem examinations conducted on 11 well characterised hospitalised patients with fatal Covid-19. SARS-CoV-2 organotropism was mapped at an organ level by multiplex PCR and sequencing, with cellular resolution achieved by in situ viral spike (S) protein detection. • Tissue inflammation and organ dysfunction in fatal Covid-19 do not map to the tissue and cellular distribution of SARS-CoV-2, demonstrating tissue-specific tolerance. They conclude that death in Covid-19 is primarily a consequence of immune-mediated, rather than pathogen mediated, organ inflammation and injury.

Genomics

Publication Date	Title/URL	Journal/ Article type	Digest
02.07.2020	Hidden genomic diversity of SARS-CoV-2: implications for qRT-PCR diagnostics and transmission	bioRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> • Study investigating over 7,000 SARS-CoV-2 datasets to unveil both intrahost and interhost diversity, yielding three major observations: <ol style="list-style-type: none"> 1. The mutational profile of SARS-CoV-2 highlights iSNV and SNP similarity, albeit with high variability in C>T changes. 2. iSNV and SNP patterns in SARS-CoV-2 are more similar to MERS-CoV than SARS-CoV-1. 3. A significant fraction of small indels fuel the genetic diversity of SARS-CoV-2.

Epidemiology and clinical - children and pregnancy

Publication Date	Title/URL	Journal/ Article type	Digest
03.07.2020	Disappearance of SARS-CoV-2 Antibodies in Infants Born to Women with COVID-19, Wuhan, China	Emerg Infect Dis / Research letter	<ul style="list-style-type: none"> • Report of the detection and decline over time of SARS-CoV-2 antibodies in infants born to women with coronavirus disease. • Among 11 infants tested at birth, all had detectable IgG and 5 had detectable IgM. • IgG titres with positive IgM declined more slowly than those without.
02.07.2020	Rise in the incidence of abusive head trauma during the COVID-19 pandemic	Arch Dis Child / Letter	<ul style="list-style-type: none"> • Letter presenting a brief review of the incidence of suspected abusive head trauma (AHT) at Great Ormond Street Hospital between 23 March and 23 April 2020 compared with the incidence in the previous 3 years. • Ten children (six boys, four girls; mean age 192 days) with suspected AHT were seen during this time in comparison with a mean of 0.67 cases per month in the same period over the previous 3 years. This equates to a 1493% increase in cases of AHT. • Demographics and implications are discussed.

Epidemiology and clinical - risk factors

Publication Date	Title/URL	Journal/ Article type	Digest
02.07.2020	Rapid risk assessment from ECDC: Resurgence of reported cases of COVID-19 in the EU/EEA, the UK and EU candidate and potential candidate countries	Eurosurveillance / Rapid risk assessment	<ul style="list-style-type: none"> • Summary of ECDCs rapid risk assessment published on 2 July 2020.
03.07.2020	Updated Estimates of Chronic Conditions Affecting Risk for Complications from Coronavirus Disease, United States	Emerg Infect Dis / Article	<ul style="list-style-type: none"> • Update to a previous publication, which substitutes obesity for cancer as an underlying condition and increases adults reporting any of the conditions from 45.4% to 56.0%. • Estimates that 56.0% of US adults, with a wide range across age groups and states, have >1 underlying conditions that increase risk for hospitalization caused by COVID-19. The 23% increase appears to be caused by inclusion of obesity as an underlying condition. • In addition, over 60% of adults with underlying conditions by this new definition are <60 years of age. The underlying condition rate

			of 49.2% among the employed and the 26.6% of all adults who reported >2 underlying conditions, suggests that risk stratification based on age or number of underlying conditions might be considered as a means of more safely phasing in returning to work.
02.07.2020	Ethnic and regional variations in hospital mortality from COVID-19 in Brazil: a cross-sectional observational study	The Lancet Global Health / Article	<ul style="list-style-type: none"> • Characterised the COVID-19 pandemic in Brazil and assess variations in mortality according to region, ethnicity, comorbidities, and symptoms. • Of 99 557 patients in the SIVEP-Gripe dataset, the authors included 11 321 patients in the study. 9278 (82.0%) of these patients were from the central-south region, and 2043 (18.0%) were from the north region. • Found evidence of two distinct but associated effects: increased mortality in the north region (regional effect) and in the Pardo and Black populations (ethnicity effect). • They speculate that the regional effect is driven by increasing comorbidity burden in regions with lower levels of socioeconomic development. The ethnicity effect might be related to differences in susceptibility to COVID-19 and access to health care across ethnicities.
01.07.2020	Protracted ketonaemia in hyperglycaemic emergencies in COVID-19: a retrospective case series	Lancet Diabetes Endocrinol / Correspondence	<ul style="list-style-type: none"> • Case series of 35 hyperglycaemic emergencies hospitalised during the COVID-19 outbreak in the UK, showing striking type 2 disease overrepresentation in those presenting with DKA. This suggests acute insulinopenia in patients with COVID-19 and with type 2 diabetes, which persisted up until the time of discharge in 30% of patients previously not insulin-treated. • Moreover, the study sample, with almost half of patients of African background, had protracted ketonaemia and ketoacidosis. • Limitations include the small sample size, the cross-sectional design, and the retrospective nature of the analysis. Levels of cortisol and c-peptide were not assessed.
03.07.2020	COVID-19 in patients with rheumatic disease in Hubei province, China: a multicentre retrospective observational study	The Lancet Rheumatology	<ul style="list-style-type: none"> • Between Mar 20 and Mar 30, 2020, 6228 patients with autoimmune rheumatic diseases were included in the study. The overall rate of COVID-19 in patients with an autoimmune rheumatic disease in study population was 0.43% (27 of 6228 patients). • Identified 42 families in which COVID-19 was diagnosed between Dec 20, 2019, and Mar 20, 2020, in either patients with a rheumatic disease or in a family member residing at the same physical address during the outbreak. Within these 42 families, COVID-19 was

			<p>diagnosed in 27 (63%) of 43 patients with a rheumatic disease and in 28 (34%) of 83 of their family members with no rheumatic disease.</p> <ul style="list-style-type: none"> • Patients with autoimmune rheumatic disease might be more susceptible to COVID-19 infection than the general population.
03.07.2020	The Impact of COVID-19 on Adjusted Mortality Risk in Care Homes for Older Adults in Wales, United Kingdom: A retrospective population-based cohort study for mortality in 2016-2020	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> • Study analysing the mortality of older care home residents in Wales during COVID-19 lockdown. • Survival curves show an increased proportion of deaths between 23rd Mar and 14th June 2020 in care homes for older people, with an adjusted HR of 1.72 (1.55, 1.90) compared to 2016. • Compared to the general population in 2016-2019, adjusted care home mortality HRs for older adults rose from 2.15 (2.11,2.20) in 2016-2019 to 2.94 (2.81,3.08) in 2020.

Epidemiology and clinical – other

Publication Date	Title/URL	Journal/ Article type	Digest
03.07.2020	Asymptomatic SARS-CoV-2 infection in Belgian long-term care facilities	The Lancet Infectious Diseases / Correspondence	<ul style="list-style-type: none"> • In early Apr, the ministry of health decided to implement a mass testing campaign in long-term care facilities in Belgium. • Did a cross-sectional analysis of data received from the laboratories between Apr 8, and May 18, 2020. 280 427 people were tested, including 142 100 (51%) residents and 138 327 (49%) staff. • 8343 (3.0%) people tested positive, including 2953 (2.1%) staff and 5390 (3.8%) residents. When adjusted for the group category (i.e., staff or resident) and age group, the odds of testing positive were higher for women than for men and for people who were symptomatic than for those who were asymptomatic. • No symptoms were reported for 6244 of 8343 people who tested positive, including 2185 staff and 4059 residents.
30.06.2020	Clinical recurrences of COVID-19 symptoms after recovery: viral relapse, reinfection or inflammatory rebound?	J Infect / Letter	<ul style="list-style-type: none"> • National case series of 11 virologically-confirmed COVID-19 patients having experienced a second clinically- and virologically-confirmed acute COVID-19 episode. • According to the clinical history, the authors discuss either re-infection or reactivation hypothesis. Larger studies including further

			virological, immunological and epidemiologic data are needed to understand the mechanisms of these recurrences.
03.07.2020	Report 30 - The COVID-19 epidemic trends and control measures in mainland China	Imperial College / Report	<ul style="list-style-type: none"> • To understand the epidemic trends of COVID-19 in China, the authors carried out data collation and descriptive analysis in 31 provinces and municipalities, with a focus on the six most affected. • The description of the course of the epidemic and the timing of interventions is consistent with the interpretation that early implementation and timely adjustment of control measures could be important in containing transmission and minimising adverse outcomes of COVID-19. • However, further investigation will be needed to disentangle the effectiveness of different control measures. By making the collated data publicly available, they also provide an additional source for research and policy planning in other settings with an ongoing epidemic.
03.07.2020	Environmental Weather Conditions and Influence on Transmission of SARS-CoV-2	Oxford COVID-19 Evidence Service / Open evidence review	<ul style="list-style-type: none"> • In Mar 2020, the authors published an overview of how weather conditions may affect the transmission of SARS-CoV-2. The report concluded that weather conditions may influence the transmission, but the evidence was low quality and much of it not yet peer-reviewed. They now update this overview. • Weather conditions appear to influence transmission of SARS-CoV-2, although evidence is not sufficient nor consistent enough to allow causation to be definitely inferred. • Available studies, of low to moderate quality, tend to report lower transmission at warmer temperatures, and higher transmission in colder temperatures typical of the winter season, along with exacerbating effects of humidity, high levels of pollution, and low wind speed.

Infection control

Publication Date	Title/URL	Journal/ Article type	Digest
30.06.2020	Surfing the COVID-19 scientific wave	Lancet Infect Dis / Letter	<ul style="list-style-type: none"> • Letter criticising the methodology and conclusions of two publications from the same group whose objectives were to demonstrate that normal speech generates droplets that can be

			suppressed by covering the mouth of a speaker and aerosols that persist for several minutes.
02.07.2020	Exposure assessment for airborne transmission of SARS-CoV-2 via breathing, speaking, coughing and sneezing	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> • Study to assess exposure to airborne SARS-CoV-2 particles from breathing, speaking, coughing and sneezing in an unventilated indoor environment, using an exposure assessment model. • The calculated total volume of expelled aerosol droplets was highest for a sneeze, followed by a cough and speaking for 20 minutes, and lastly breathing for 20 minutes. • A few to as much as tens of millions of virus particles were expelled. Exposure probability strongly depends on the viral concentration in mucus, as well as on the scenario. • Exposure probabilities were generally below 1% at a virus concentration in mucus below 10⁵ per mL for all scenarios, increasing steeply at different higher concentrations.

Treatment

Publication Date	Title/URL	Journal/ Article type	Digest
01.07.2020	Convalescent Plasma for COVID-19. A randomized clinical trial	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> • Report from the ConCOVID randomized trial comparing convalescent plasma with standard of care therapy in patients hospitalized for COVID-19 in the Netherlands, which was halted prematurely after 86 patients were enrolled. • Although symptomatic for only 10 days at the time of inclusion, 53 of 66 patients tested had anti-SARS-CoV-2 antibodies at baseline, and in 79% of patients, median titres were comparable to the 115 donors, raising concerns about the potential benefit of convalescent plasma in the study population. • The authors conclude that screening for antibodies and prioritizing convalescent plasma to risk groups with recent symptom onset will be key to identify patients that may benefit from convalescent plasma.

Miscellaneous

Publication Date	Title/URL	Journal/ Article type	Digest
02.07.2020	Methodological Rigor in COVID-19 Clinical Research: A Systematic Review and Case-Control Analysis	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> • Systematic review and case-control analysis to systematically evaluate the quality of reporting of currently available COVID-19 studies compared to historical controls. • Of the 686 COVID-19 articles included in the final analysis, high quality/low-bias studies represented less than half - 49.0% of case series, 43.9% of cohort, 31.6% of case-control, and 6.4% of diagnostic studies. • In the final analysis including 539 control articles matched to COVID-19 articles from the same journal in the previous year, the median time to acceptance was 13.0 days in COVID-19 articles vs. 110.0 days in control articles. • Overall, methodological quality was lower in COVID-19 articles with 41.0% COVID-19 articles of high quality vs. 73.3% control articles.

Modelling

Publication Date	Title/URL	Journal/ Article type	Digest
01.07.2020	Association between mobility patterns and COVID-19 transmission in the USA: a mathematical modelling study	Lancet Infect Dis / Article	<ul style="list-style-type: none"> • Using daily mobility data derived from aggregated and anonymised cell (mobile) phone data, mobility patterns were found to be strongly correlated with decreased COVID-19 case growth rates for the most affected counties in the USA. • The effect of changes in mobility patterns, which dropped by 35-63% relative to the normal conditions, on COVID-19 transmission are not likely to be perceptible for 9-12 days, and potentially up to 3 weeks, consistent with the incubation time of SARS-CoV-2 plus additional time for reporting. • This study strongly supports a role of social distancing as an effective way to mitigate COVID-19 transmission in the USA.

Guidance

Publication Date	Title/URL	Journal/ Article type
03.07.2020	Guidance on the provision of support for medically and socially vulnerable populations in EU/EEA countries and the United Kingdom during the COVID-19 pandemic	European Centre for Disease Prevention and Control / Technical report
03.07.2020	Infection prevention and control and surveillance for coronavirus disease (COVID-19) in prisons in EU/EEA countries and the UK	European Centre for Disease Prevention and Control / Technical report
03.07.2020	Infection prevention and control and preparedness for COVID-19 in healthcare settings - fourth update	European Centre for Disease Prevention and Control / Technical Report

Overviews, comments and editorials

Publication Date	Title/URL	Journal/ Article type
02.07.2020	England's new covid-19 monitoring outfit: the Joint Biosecurity Centre	Bmj / Feature
03.07.2020	Comparing SARS-CoV-2 with SARS-CoV and influenza pandemics	The Lancet Infectious Diseases / Personal view
02.07.2020	COVID-19-associated pulmonary aspergillosis: adding insult to injury	The Lancet Microbe / Correspondence
02.07.2020	COVID-19 and fungal superinfection	The Lancet Microbe / Correspondence

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