



## COVID-19 Literature Digest – 07/09/2020

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:

- Serology and immunology
- Diagnostics
- Genomics
- Epidemiology and clinical - children and pregnancy
- Infection control
- Treatment
- Guidance, consensus statements and hospital resources (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Please note that we are including preprints (**highlighted in red**), which are preliminary reports of work that have NOT been peer-reviewed.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.

### Serology and immunology

Publication Date	Title / URL	Journal / Article type	Digest
04.09.2020	<a href="#">Broad and strong memory CD4+ and CD8+ T cells induced by SARS-CoV-2 in UK convalescent individuals following COVID-19</a>	Nature Immunology / Article	<ul style="list-style-type: none"><li>• The authors studied T cell memory in 42 patients following recovery from COVID-19 (28 with mild disease and 14 with severe disease) and 16 unexposed donors.</li><li>• The breadth and magnitude of T cell responses were significantly higher in severe as compared with mild cases.</li><li>• They identified 41 peptides containing CD4+ and/or CD8+ epitopes, including six immunodominant regions. Six optimized CD8+ epitopes were defined, with peptide–MHC pentamer-positive cells displaying the central and effector memory phenotype.</li></ul>

			<ul style="list-style-type: none"> <li>• In mild cases, higher proportions of SARS-CoV-2-specific CD8+ T cells were observed.</li> </ul>
04.09.2020	<a href="#">Safety and immunogenicity of an rAd26 and rAd5 vector-based heterologous prime-boost COVID-19 vaccine in two formulations: two open, non-randomised phase 1/2 studies from Russia</a>	The Lancet / Article	<ul style="list-style-type: none"> <li>• Developed a heterologous COVID-19 vaccine consisting of two components, a recombinant adenovirus type 26 (rAd26) vector and a recombinant adenovirus type 5 (rAd5) vector, both carrying the gene for SARS-CoV-2 spike glycoprotein (rAd26-S and rAd5-S).</li> <li>• Assess the safety and immunogenicity of two formulations (frozen and lyophilised) of this vaccine.</li> <li>• Concluded that the heterologous rAd26 and rAd5 vector-based COVID-19 vaccine has a good safety profile and induced strong humoral and cellular immune responses in participants. Further investigation is needed of the effectiveness of this vaccine for prevention of COVID-19.</li> </ul>
03.09.2020	<a href="#">A Single Dose of Self-Transcribing and Replicating RNA Based SARS-CoV-2 Vaccine Produces Protective Adaptive Immunity In Mice</a>	bioRxiv (non-peer reviewed) / Article	<ul style="list-style-type: none"> <li>• A self-transcribing and replicating RNA-based vaccine (LUNAR®-COV19) encodes an alphavirus-based replicon and the SARS-CoV-2 full length spike glycoprotein.</li> <li>• A single prime vaccination in mice led to robust antibody responses, with neutralizing antibody titres increasing up to day 60.</li> <li>• Activation of cell mediated immunity produced a strong viral antigen specific CD8+ T lymphocyte response.</li> <li>• Single LUNAR-COV19 vaccination at both 2 µg and 10 µg doses completely protected human ACE2 transgenic mice from both mortality and even measurable infection following wild-type SARS-CoV-2 challenge.</li> </ul>

## Diagnostics

Publication Date	Title / URL	Journal / Article type	Digest
05.09.2020	<a href="#">SARS-CoV-2 RNA in plasma is associated with ICU admission and mortality in patients hospitalized with COVID-19</a>	Clin Infect Dis / Article	<ul style="list-style-type: none"> <li>• In this prospective cohort study, the authors detected viral RNA in the plasma of 58/123 (47%) patients hospitalized with COVID-19.</li> <li>• RNA was detected more frequently, and levels were higher, in patients who were admitted to the ICU and/or died.</li> </ul>
05.09.2020	<a href="#">A study of universal SARS-CoV-2 RNA testing of residents and staff in a large group of care homes in South London</a>	J Infect Dis / Article	<ul style="list-style-type: none"> <li>• Testing of 2455 residents and staff across 37 care homes across a three-week period. Data were collected on the presence or absence of symptoms.</li> <li>• Point prevalence of SARS-CoV-2 infection was 6.5% with higher rate</li> </ul>

		<p>in residents (9.0%) than staff (4.7%).</p> <ul style="list-style-type: none"> <li>• A high proportion of asymptomatic infection was detected in staff (69%) and residents (51%) with evidence of under-detection of symptoms by care home staff.</li> <li>• Offering a test to all residents and staff in care homes with rapid reporting of results would assist accurate identification of infected individuals, facilitating prompt infection prevention and control action.</li> </ul>
--	--	---

## Genomics

Publication Date	Title / URL	Journal / Article type	Digest
05.09.2020	<a href="#">Symptomatic SARS-CoV-2 reinfection by a phylogenetically distinct strain</a>	Clin Infect Dis / Article	<ul style="list-style-type: none"> <li>• Case study of symptomatic COVID-19 reinfection 3 months after first infection. Human non-SARS coronaviruses reinfections are typically milder as in this case.</li> <li>• Full-length genome sequencing revealed initial infection caused by a lineage B.1.1 SARS-CoV-2 virus; relapsing infection by a lineage A.</li> <li>• Healthcare workers and patients with prior SARS-CoV-2 infection are not always protected against re-infection, despite the presence of antibodies.</li> </ul>
04.09.2020	<a href="#">Genomic diversity and evolution of coronavirus (SARS-CoV-2) in France from 309 COVID-19-infected patients</a>	bioRxiv (non-peer reviewed) / Article	<ul style="list-style-type: none"> <li>• A comparative analysis of 309 SARS-CoV-2 genomes from French patients and the reference Wuhan coronavirus genome revealed 315 substitution mutations and six deletion events.</li> <li>• Six different deleted areas were also identified in nine viral variants. In particular, 30 substitution mutations (18 nonsynonymous) and one deletion (21765-21770) concerned the spike S glycoprotein.</li> <li>• An average of 7.8 mutational events (+/- 1.7 SD) and a median of 8 (range, 7-9) were reported per viral isolate.</li> <li>• Comparative analyses and clustering of specific mutational signatures in 309 genomes disclose several divisions in groups and subgroups combining their geographical and phylogenetic origin.</li> </ul>
01.09.2020	<a href="#">SARS-CoV-2 phylogeny during the early outbreak in the Basel area, Switzerland: import and spread dominated by a single B.1 lineage variant (C15324T)</a>	medRxiv (non-peer reviewed) / Article	<ul style="list-style-type: none"> <li>• A phylogenetic cross-sectional study explored viral introduction and evolution during the exponential early phase of a COVID-19 outbreak in Basel, Switzerland, from Feb 26th until March 23rd.</li> <li>• Sequenced SARS-CoV-2 samples from naso-oropharyngeal swabs and generated 468 high quality genomes.</li> </ul>

		<ul style="list-style-type: none"> <li>• Samples exhibit low lineage diversity compared to neighbouring countries.</li> <li>• Lineage B.1 (82.7%), detected from March 2nd, dominated infections in Basel.</li> <li>• A large clade within B.1 contains 69.1% of the samples, all of which carry the SNP C15324T, suggesting local transmission in spreading events.</li> <li>• Geographic origin and dissemination are discussed.</li> </ul>
--	--	---

### Epidemiology and clinical – children and pregnancy

Publication Date	Title / URL	Journal / Article type	Digest
04.09.2020	<a href="#">COVID-19 surveillance in school KIDs (sKIDs): pre and primary schools</a>	Gov.uk / Report	<ul style="list-style-type: none"> <li>• Prospective active national surveillance of preschools and primary schools for SARS-CoV-2 infection and transmission in England, June 2020.</li> <li>• Found very few infections and transmission events in 131 educational settings during the 4-6 week summer half-term from 1 June to mid-July 2020. Where a SARS-CoV-2 positive case was identified, they did not find any additional cases within the household, class bubble or wider education setting when tested.</li> <li>• SARS-CoV-2 infection rate was: 3.9 /100,000/week in students and 11.3/100,000/week in staff</li> <li>• SARS-CoV-2 antibody positivity was 10.6% (86/814; 95%CI, 8.5-12.9%) in students and 12.7% (167/1316; 95%CI, 10.9-14.6%) in staff (p=0.14).</li> <li>• Non-white ethnicity and having a history of COVID-19 like symptoms were significantly associated with seropositivity in both students and staff, but not school attendance or time spent in school during lockdown.</li> </ul>
05.09.2020	<a href="#">A Possible Case of Vertical Transmission of SARS-CoV-2 in a Newborn with Positive Placental In Situ Hybridization of SARS-CoV-2 RNA</a>	J Pediatric Infect Dis Soc / Article	<ul style="list-style-type: none"> <li>• Report an infant born to a mother with COVID-19, who tested positive for SARS-CoV-2 via qRT-PCR at 24, 48 hours of life (HOL) and on day 7. Moreover, placental in situ hybridization (ISH) revealed the presence of SARS-CoV-2 RNA.</li> </ul>

## Infection control

Publication Date	Title / URL	Journal / Article type	Digest
15.08.2020	<a href="#">Toilets dominate environmental detection of severe acute respiratory syndrome coronavirus 2 in a hospital</a>	Sci Total Environ / Article	<ul style="list-style-type: none"><li>• 107 surface samples, 46 air samples, two exhaled condensate samples, two expired air samples were collected within and beyond four hospital three-bed isolation rooms.</li><li>• All SARS-CoV-2-positive surface samples were associated with patients' toilets.</li><li>• Only one of 46 air samples was weakly positive for SARS-CoV-2.</li><li>• All four exhaled condensate or expired air samples were negative for SARS-CoV-2.</li><li>• Faecal-derived aerosols in patients' toilets contained most of the detected SARS-CoV-2, highlighting the importance of surface and hand hygiene for intervention.</li></ul>

## Treatment

Publication Date	Title / URL	Journal / Article type	Digest
04.09.2020	<a href="#">Azithromycin in addition to standard of care versus standard of care alone in the treatment of patients admitted to the hospital with severe COVID-19 in Brazil (COALITION II): a randomised clinical trial</a>	The Lancet / Article	<ul style="list-style-type: none"><li>• An open-label, randomised clinical trial at 57 centres in Brazil which assessed whether adding azithromycin to standard of care, which included hydroxychloroquine, would improve clinical outcomes of patients admitted to the hospital with severe COVID-19.</li><li>• Found that in patients with severe COVID-19, adding azithromycin to standard of care treatment (which included hydroxychloroquine) did not improve clinical outcomes.</li><li>• Findings do not support the routine use of azithromycin in combination with hydroxychloroquine in patients with severe COVID-19.</li></ul>

## Guidance and consensus statements

Publication Date	Title / URL	Journal / Article type
04.09.2020	<a href="#">Aerosol and Droplet Generation from Singing, Wind Instruments (SWI) and Performance Activities SWI Working Group Consensus Statement</a>	Gov.uk / Research and analysis
04.09.2020	<a href="#">Principles for managing SARS-CoV-2 transmission associated with further education, 3 September 2020</a>	Gov.uk / Research and analysis
04.09.2020	<a href="#">Principles for managing SARS-CoV-2 transmission associated with higher education, 3 September 2020</a>	Gov.uk / Research and analysis
04.09.2020	<a href="#">TFMS: Consensus statement on mass testing, 27 August 2020</a>	Gov.uk / Research and analysis

## Overviews, comments and editorials

Publication Date	Title / URL	Journal / Article type
04.09.2020	<a href="#">COVID-19 vaccines: early success and remaining challenges</a>	The Lancet / Comment
04.09.2020	<a href="#">COVID-19 vaccine trials in Africa</a>	The Lancet Respiratory Medicine / News
04.09.2020	<a href="#">The Russian vaccine for COVID-19</a>	The Lancet Respiratory Medicine / News
04.09.2020	<a href="#">Accumulating evidence suggests anti-TNF therapy needs to be given trial priority in COVID-19 treatment</a>	The Lancet Rheumatology / Comment
04.09.2020	<a href="#">Azithromycin for severe COVID-19</a>	The Lancet / Comment

## Produced by the PHE COVID-19 Literature Digest Team

To sign-up, email [COVID.LitDigest@phe.gov.uk](mailto:COVID.LitDigest@phe.gov.uk)

A selection of previous digests [can be found here](#)