UK Health Security Agency

COVID-19 Literature Digest – 17/12/2021

OFFICIAL

The COVID-19 Literature Digest will be taking a break for the UK Christmas and New Year holidays. The next issue will be published on **7 January 2022**.

We wish you all the best for the festive season.

Dear all,

Please find today's report below.

UKHSA's COVID-19 Literature Digest has been produced since February 2020. A selection of our previous Digests can be found here. This resource aims to highlight a small selection of recent COVID-19 papers that are relevant to UK settings, contain new data, insights or emerging trends. The Digest Team generate a report once per week (Fri). The reports include both preprints, which should be treated with caution as they are NOT peer-reviewed and may be subject to change, and also research that has been subject to peer review and wider scrutiny. The Digest is very rapidly produced and does not claim to be a perfect product; the inclusion or omission of a publication should not be viewed as an endorsement or rejection by UKHSA. We do not accept responsibility for the availability, reliability or content of the items included in this resource.

To join our email distribution list, or to be removed, please send a request to COVID.LitDigest@phe.gov.uk. If you are interested in papers relating to behaviour and social science please contact COVID19.behaviouralscience@phe.gov.uk to sign up to receive the Behavioural Sciences Weekly Report.

Best wishes,

Emma Farrow, James Robinson
On behalf of the UKHSA COVID-19 Literature Digest Team

Report for 17.12.2021 (please note that papers that have **NOT been peer-reviewed** are highlighted in red).

Sections:

Serology and immunology

Publication Date	Title/URL	Journal / Article type	Digest
14.12.2021	Global epidemiology of SARS-CoV-2 infection: a systematic review and meta-analysis of standardized population-based seroprevalence studies, Jan 2020-Oct 2021	medRxiv (non-peer reviewed) / Systematic Review	• Systematic review (01.01.2020 - 29.10.2021), searching databases/preprints/grey literature for SARS-CoV-2 seroprevalence studies aligned with WHO UNITY protocol. • Standardized seroprevalence studies meta-analyzed to estimate global and regional seroprevalence. • 396 full texts (355 low / moderate risk of bias) reporting 736 distinct seroprevalence studies (41% LMIC - low & middle income countries). • By April 2021, global SARS-CoV-2 seroprevalence 26.1%. • In 2021 Q1, median seroprevalence to case ratios: 1.9:1 in HICs (high income countries) / 61.9:1 in LMICs. • Global seroprevalence has risen considerably over time / with regional variation. True infections far exceed reported COVID-19 cases.
10.12.2021	Serological responses and vaccine effectiveness for extended COVID-19 vaccine schedules in England	Nat Commun / Article	• UK based observational study, comparing serological responses after BNT162b2 [Pfizer] / AZD1222 [AstraZeneca] vaccines in 750 participants aged 50-89 with varying dose intervals. • Evaluated against real-world national vaccine effectiveness (VE) estimates against COVID-19 in England.

			• Findings include antibody levels 14–35 days after dose two are higher in BNT162b2 recipients with an extended vaccine interval (65–84 days) compared with those vaccinated with a standard (19–29 days) interval. • For both vaccines, VE was higher across all age-groups from 14 days after dose two compared to one dose, but the magnitude varied with dose interval.
13.12.2021	Omicron SARS-CoV-2 variant: Unique features and their impact on pre-existing antibodies	J Autoimmun / Article	Omicron • Analyses the mutation distribution in Omicron variant, evolutionary relationship with previous variants, and probable structural impact of mutations on antibody binding. • A total of 46 high prevalent mutations were identified; 23 are localised within the spike protein. • Phylogenetic analysis suggests Omicron is closely related to Gamma (P.1) variant. • Several mutations are at the antibody binding surface of S protein
08.12.2021	SARS-CoV-2 B.1.1.529 variant (Omicron) evades neutralization by sera from vaccinated and convalescent individuals	medRxiv (non-peer reviewed) / Article	Omicron • Authors analyse titers of neutralising antibodies of sera from convalescent or vaccinated individuals against B.1.1.529 [Omicron]. Compared with titers against B.1.1.7 [Alpha], B.1.351 [Beta], B.1617.2 [Delta]. • Vaccinated individuals sera neutralised Omicron to a much lesser extent than any other variant analysed, as did the sera from those previously infected – though this was with some variation • All sera from individuals infected then vaccinated with BNT162b2 (Pfizer) or vaccinated then infected were able to neutralise B.1.1.529, although to a lesser degree than B.1.617.2.
09.12.2021	Reduced Antibody and Cellular Immune Responses Following Dual COVID-19 Vaccination Within Infection-Naïve Residents of Long-Term Care Facilities	SSRN (non-peer reviewed) / Article	• Serological study [Vivaldi 3] included 202 staff and 286 residents of UK long-term care facilities (LTCF) between December 2020 and June 2021; evidence of prior natural SARS-CoV-2 infection in 50% and 51% of each group, respectively. • Antibody responses following dual vaccination in both staff and residents with previous infection were strong and similar across all age groups. • Among those without prior infection, care home residents had 2.6-fold lower antibody response compared to younger staff.

13.12.2021	Epitope profiling using computational structural modelling demonstrated on coronavirus-binding antibodies	PLoS Comput Biol / Article	• A novel computational method demonstrates that sequence dissimilar but functionally similar antibodies can be found across the Coronavirus Antibody Database, with high accuracy (92% of antibodies in multiple-occupancy structural clusters bind to consistent domains). • Findings indicate greater convergence in the immune responses to coronaviruses than is suggested by sequence-based approaches.

Back to menu

Vaccines

Publication Date	Title/URL	Journal / Article type	Digest
14.12.2021	Effectiveness of COVID-19 vaccines against the Omicron (B.1.1.529) variant of concern	medRxiv (non-peer reviewed) / Article	Omicron • Test-negative case-control design used to measure vaccine effectiveness (VE) against Omicron in England. • Between 27.11.2021 - 06.12.2021: 581 Omicron / 56,439 Delta cases; 130,867 eligible test-negative controls. • Two BNT162b2 [Pfizer] or ChAdOx1 [AstraZeneca] doses provided limited or no protection against Omicron; VE against symptomatic disease significantly lower than with Delta. • From two weeks after a BNT162b2 booster, VE increased to 71.4% for ChAdOx1 primary course recipients; 75.5% for BNT162b2 primary course recipients. • Too early to determine VE against severe disease.
10.12.2021	Adolescent vaccination with BNT162b2 (Comirnaty, Pfizer-BioNTech) vaccine and effectiveness of the first dose against COVID-19: national test-negative case-control study, England	medRxiv (non-peer reviewed) / Article	• National testing, vaccination, hospitalisation data used to estimate vaccine effectiveness (VE) of first mRNA dose against symptomatic disease in adolescents in UK. • VE increased to 80% within two weeks of first BNT162b2 [Pfizer] dose (higher than in adults aged 18-64 years); declines rapidly to 40% within 8 weeks (similar to adults). • Data highlights importance of second vaccine dose for protection against symptomatic COVID-19.
15.12.2021	Booster of mRNA-1273 Vaccine Reduces SARS-CoV-2 Omicron Escape from Neutralizing Antibodies	medRxiv (non-peer reviewed) / Article	Omicron • US study: mRNA-1273 [Moderna] serum samples from vaccine recipients tested for neutralising activity against Omicron;

			compared to neutralisation titers against (i) D614G, (ii) Beta in a pseudovirus assay in two laboratories. • Omicron (i) 49-84-fold less sensitive to neutralisation than D614G, (ii) 5.3-6.2-fold less sensitive than Beta, when assayed with serum samples obtained 4 weeks after 2 standard (100 µg) mRNA-1273 vaccinations. • A 50 µg boost increased Omicron neutralisation titers and may substantially reduce risk of symptomatic vaccine breakthrough infections.
14.12.2021	mRNA-based COVID-19 vaccine boosters induce neutralizing immunity against SARS-CoV-2 Omicron variant	medRxiv (non-peer reviewed) / Article	Omicron • Study using sera from 88 mRNA-1273 [Moderna], 111 BNT162b [Pfizer], 40 Ad26.COV2.S [Johnson & Johnson] vaccine recipients against wild type, Delta, Omicron. • Neutralisation of Omicron undetectable in most vaccinated individuals. • With mRNA booster, Omicron neutralisation only 4-6-fold lower than wild type, suggesting boosters enhance cross-reactivity of neutralising antibody responses.
04.12.2021	Prior COVID-19 infection is associated with increased Adverse Events (AEs) after the first, but not the second, dose of the BNT162b2/Pfizer vaccine	Vaccine / Article	• Among 1238 healthcare workers (HCWs) in North East England, post-dose adverse events (AEs [for Pfizer-BioNTech]) were worse in those with prior COVID-19 after the first, but not second dose. • Second dose AEs were greater in frequency/severity and more systemic, regardless of COVID-19 history. • Women and younger HCW were more likely to report AEs after both doses; dosing interval had no effect on AEs; most AEs were self-limiting and short-lived (<48 h). • Ongoing Symptomatic COVID-19 was associated with greater frequency/severity of AEs after dose two, but not dose one. • Findings have implications for vaccine hesitancy and dosing protocols.
06.12.2021	Laboratory confirmed vaccine-induced immune thrombotic thrombocytopenia: Retrospective analysis of reported cases after vaccination with ChAdOx-1 nCoV-19 in Germany	Lancet Reg Health Eur / Article	• Describes characteristics of German patients reported for Thrombosis and Thrombocytopenia Syndrome (TTS) following ChAdOx1 nCoV-19 vaccination from 01.02.2021 to 21.05.2021 (n=69 patients). • Overall, findings suggest vaccine-induced immune thrombotic thrombocytopenia (VITT) is associated with high mortality, especially at low platelet counts <30,000/µL, and can present with isolated thrombocytopenia, severe headache, and bleeding.

			• Demonstration of platelet activating anti-PF4 IgG has high sensitivity for TTS and captures wider spectrum of clinically relevant VITT than current Brighton Collaboration case definition. • Associated commentary: https://doi.org/10.1016/j.lanepe.2021.100274
10.12.2021	Tolerability and impact of SARS-CoV-2 vaccination in elite athletes	Lancet Respir Med / Article	• Study including 127 elite UK Olympic/Paralympic athletes found Pfizer-BioNTech vaccination was well tolerated and associated with few significant side-effects. • Any side effects were short-lived and did not affect sporting participation. • No difference in side-effect profiles between Paralympic/non-Paralympic athletes, or between male/female athletes; the small sample is a limitation.

Back to menu

Diagnostics and genomics

Publication Date	Title/URL	Journal / Article type	Digest
15.12.2021	Omicron and Delta Variant of SARS-CoV-2: A Comparative Computational Study of Spike Protein	J Med Virol / Article	Omicron • Computational studies found Omicron variant had a higher affinity for human ACE2 than Delta variant due to a significant number of mutations in the RBD, indicating higher potential for transmission. • Docking studies suggest Q493R, N501Y, S371L, S373P, S375F, Q498R, and T478K mutations contribute significantly to high binding affinity. • Compared to Delta, both the entire spike protein and the RBD in Omicron include a high proportion of hydrophobic amino acids such as leucine and phenylalanine. • A disorder-order transition was observed in the Omicron variant between spike protein RBD regions 468-473.
10.12.2021	SARS-CoV-2 variants of concern and variants under investigation in England: Technical briefing 31	Gov.uk (non-peer reviewed) / Research and analysis	Omicron • Includes an update on the Omicron (B.1.1.529) variant with several preliminary findings [interpret with caution] • Omicron has transmission advantage compared to Delta; analysis may be affected by increased ascertainment of Omicron cases, although this analysis predates enhanced Omicron contact tracing

			• Secondary attack rates (SAR) in households were higher for Omicron vs Delta but observed SAR similar for non-household contacts. Adjusted odds ratio of a close contact becoming a case for confirmed Omicron vs Delta index cases was 2.09. • Currently no indication of increase in overall reinfection rates
28.12.2021	SARS-CoV-2 expresses a microRNA-like small RNA able to selectively repress host genes	Proc Natl Acad Sci U S A	• Finds that SARS-CoV-2 expresses a small viral noncoding RNA, named CoV2-miR-O7a which associates with the cellular RNA interference machinery and has the potential to regulate host transcripts, likely via target slicing. • Production of CoV2-miR-O7a relies on cellular machinery (independent of Drosha protein) and formation of a strong hairpin within ORF7a sequences. • CoV2-miR-O7a may contribute to SARS-CoV-2 pathogenesis and be a target for therapeutic intervention.

Back to menu

Epidemiology and clinical - children and pregnancy

Publication Date	Title/URL	Journal / Article type	Digest
14.12.2021	Transmission of SARS-CoV-2 by children and young people in households and schools: a meta-analysis of population-based and contact-tracing studies	medRxiv (non-peer reviewed) / Systematic Review	• Systematic review (on 28.07.2021): contact-tracing / population-based studies about SARS-CoV-2 transmission from 0-19 year olds in household /educational settings. • 37 included studies (16 contact-tracing; 19 population studies; 2 mixed studies). Any at high risk of bias excluded. • Meta-analyses of secondary attack rates (SAR: contact-tracing studies) and school infection prevalence. • Relative transmissibility of children and young people (CYP) vs adults: 0.92 in household studies. • No difference in SAR from CYP to child or adult contacts. • SAR markedly lower in school vs. household settings, suggesting household transmission is more important. • School population studies showed some evidence of clustering in classes within schools.
10.12.2021	Risk of SARS-CoV-2 reinfections in children: prospective national surveillance, January 2020 to July 2021, England	medRxiv (non-peer reviewed) / Article	• National testing data used to estimate reinfection risk >90 days after primary infection, 01.01.2020 - 31.07.2021 (Alpha and Delta waves in England).

			• Reinfection rates closely followed community infection rates. • Children had lower risk reinfection than adults; these were not associated with more severe disease or fatal outcomes.
17.12.2021	Child mortality in England during the COVID-19 pandemic	Arch Dis Child / Original research	• National Child Mortality Database (NCMD) used to investigate characteristics of paediatric COVID-19 deaths / changes in rate of childhood mortality during pandemic. • Apparent higher frequency of SARS-CoV-2-positive tests among children from black, Asian and minority ethnic groups is consistent with findings in adults. • All-cause mortality rates similar during lockdown to period before lockdown in 2020 and similar period in 2019. • Children who died and had a positive result for SARS-CoV-2 were more likely to be older and from ethnic minority groups. • Little found to suggest an over-representation of children with underlying health conditions.
16.12.2021	COVID-19 trends and severity among symptomatic children aged 0–17 years in 10 European Union countries, 3 August 2020 to 3 October 2021	Eurosurveillance / Rapid communication	• Authors estimated severe outcome risk in 820,404 symptomatic paediatric COVID-19 cases reported by 10 EU countries August 2020 - October 2021. • Case and hospitalisation rates rose as transmission increased, but severe outcomes were rare: 9,611 (1.2%) were hospitalised, 640 (0.08%) required intensive care and 84 (0.01%) died. • For every 10,000 symptomatic paediatric cases reported during study period, ca 117 were hospitalised and eight required ICU admission or respiratory support. • Elevated risk of hospitalisation for children younger than 2 years may reflect lower thresholds for admission.

Back to menu

Epidemiology and clinical - long-term complications / sequelae

Publication Date	Title/URL	Journal / Article type	Digest
09.12.2021	Proposed subtypes of post-COVID-19 syndrome (or long-COVID) and their respective potential therapies	Rev Med Virol / Review	• The authors propose and characterise six subtypes of post-COVID-19 syndrome (PCS) based on existing literature. • The subtypes are non-severe COVID-19 multi-organ sequelae (NSC-MOS), pulmonary fibrosis sequelae (PFS), myalgic encephalomyelitis or chronic fatigue syndrome (ME/CFS), postural

			orthostatic tachycardia syndrome (POTS), post-intensive care syndrome (PICS) and medical or clinical sequelae (MCS). • This proposed subtyping proposed may provide better clarity on current understanding of PCS.
13.12.2021	Clinical characteristics with inflammation profiling of Long-COVID and association with one-year recovery following hospitalisation in the UK: a prospective observational study	medRxiv (non-peer reviewed) / Article	• Longitudinal cohort study (PHOSP-COVID) of UK adults post-hospital admission with COVID-19 second report. • 2320 participants assessed after 5 months; 807 again at 1 year. Proportion reporting full recovery unchanged between 5 months (25.6%) / 1 year (28.9%). • Female sex, obesity, received invasive mechanical ventilation (IMV) associated with being less likely to feel fully recovered at one year. • Elevation of inflammatory mediators of tissue damage and repair in both very severe and moderate/cognitive clusters compared to the mild cluster. including interleukin-6 which was elevated in both comparisons. • Associated comment: https://doi.org/10.1136/bmj.n3092

Back to menu

Epidemiology and clinical – risk factors

Publication Date	Title/URL	Journal / Article type	Digest
09.12.2021	Outcomes and mortality associated with atrial arrhythmias among patients hospitalized with COVID-19: A systematic review and meta-analysis	Cardiol J / Systematic Review	• Systematic review (up to 10.10.2021) examined impact of atrial fibrillation / atrial flutter (AF/AFL) on COVID-19 mortality, as well as individual complications; nineteen studies included (33,296 patients). • Findings suggest AF/AFL is associated with increased in-hospital mortality and worse outcomes in patients with COVID-19. • Patients with AF/AFL are at higher risk of hospitalisation in ICU, and higher risk of complications, such as bleeding, acute kidney injury and heart failure.
13.12.2021	Increased risk of COVID-19-related admissions in patients with active solid organ cancer in the West Midlands region of the UK: a retrospective cohort study	BMJ Open / Original research	• Retrospective UK cohort study: 526 COVID-19 admissions without an active cancer diagnosis were compared with 87 COVID-19 admissions with an active cancer diagnosis • Odds Ratio (OR) of being hospitalised with COVID-19 if having cancer was 2.942671.

			• Reduced survival at 90 days was observed in patients with cancer with COVID-19. • Multivariate analysis showed increases in age (OR 1.039), urea (OR 1.005) and C reactive protein (CRP) (OR 1.065) were associated with greater 30-day and 90-day mortality. • Machine learning algorithm identified transplant patients, age, male gender and diabetes mellitus as predictors of greater 90-day mortality.
05.12.2021	Impact of mass vaccination on SARS-CoV-2 infections among multiple sclerosis patients taking immunomodulatory disease-modifying therapies in England	Mult Scler Relat Disord / Article	• Retrospective analysis of national data: 41,208 patients received immunomodulatory disease-modifying therapies (DMT) for multiple sclerosis (MS) in England during each month from March 2020 to August 2021. • The incidence rate ratios (IRR) of SARS-CoV-2 infection in patients taking ocrelizumab or fingolimod versus the general population increased from 1.13 and 0.87 during the pre-vaccination period to 1.79 and 1.40 during the post-vaccination period, respectively; no significant changes for patients on other MS DMTs.
15.12.2021	Combination therapy of infliximab and thiopurines, but not monotherapy with infliximab or vedolizumab, is associated with attenuated IgA and neutralisation responses to SARS-CoV-2 in inflammatory bowel disease	Gut / Letter	• Extended analysis of serological responses to SARS-CoV-2 infection in patients with seropositive IBD treated with either (i) infliximab or vedolizumab monotherapy, or (ii)infliximab/thiopurine combination therapy • For all treatments: significantly reduced IgG antibody responses compared with healthy controls for all SARS-CoV-2 antigens. • Greatest reduction in IgG response observed in infliximab/thiopurine combination therapy group; also for IgA responses. • IgG responses significantly reduced in infliximab or vedolizumab monotherapy groups, but not IgA and neutralising antibody responses. • This may explain observation that individuals with combination therapy were at greater risk of severe COVID-19 outcomes than patients on monotherapy.

Back to menu

Epidemiology and clinical – other

Publication Date	Title/URL	Journal / Article type	Digest
14.12.2021	The mystery of COVID-19 reinfections: A global systematic review and meta-analysis	Ann Med Surg (Lond) / Systematic Review	• Systematic Review for PCR confirmed infection and reinfection cases, up to 16.03.2021. • 81 studies reporting 577 cases included (45 case reports / 36 case series). 72/81 of good quality. 28/81 from China,11 USA, 3 UK. • During first infection and reinfection, fever most common symptom; anti-viral therapy most common treatment regimen. • Comparable odds of symptomatic presentation and management were reported for the two infections. • Higher ICU admission rate observed in reinfection compared to first infection.
11.12.2021	Emergence of the Delta Variant and risk of SARS-CoV-2 infection in secondary school students and staff: prospective surveillance in 18 schools, England	medRxiv (non-peer reviewed) / Article	• UK prospective surveillance study investigating SARS-CoV-2 infection, seroprevalence and seroconversions rates in secondary schools. • 2134 participants (1277 students, 1037 staff) had 4 rounds (i) nasal swabs for SARS-CoV-2 RT-PCR; (ii) blood sampling for SARS-CoV-2 Nucleoprotein and Spike protein antibodies, across 2020-21 academic year. • Infection and transmission in secondary schools remained low when community infection rates were low because of national lockdown, even after emergence of Delta variant.
14.12.2021	REACT-1 round 15 final report: Increased breakthrough SARS-CoV-2 infections among adults who had received two doses of vaccine, but booster doses and first doses in children are providing important protection	medRxiv (non-peer reviewed) / Article	• Round 15 of REACT-1 study (19.10.2021 - 05.11.2021) looked at swab tests from over 100,000 people across England. • Weighted prevalence was 1.57% compared to 0.83% in September 2021 (round 14). • School-aged children had the highest weighted prevalence of infection [4.95% in 5-12 years-olds and 5.21% in 13-17 years-olds]. • Age, sex, key worker status and presence of one or more children in home were associated with swab positivity. • Vaccine effectiveness against infection in children estimated at 56.2% in rounds 13, 14 and 15 combined. • Adults who received a third dose of vaccine were less likely to test positive compared to those who received only two vaccine doses (adjusted OR=0.38).

16.12.2021	Outbreak caused by the SARS-CoV-2 Omicron variant in Norway, November to December 2021	Euro Surveill / Rapid communication	Omicron • Norwegian Omicron outbreak following party on 26.11.2021 (n = 117, most 30-50 years old). Attack rate 74%, as of 13.12.2021 no-one hospitalised. 96% fully vaccinated. • High attack rate with symptomatic infection likely exacerbated by context (indoor location, long exposure time, crowding, need to talk loudly). • Median incubation period 3 days (assuming infected at party) versus Delta / earlier non-Delta (4.3 / 5.0 days, respectively). • Almost all cases developed at least one symptom, more than half (54%) reported fever. • Preliminary results indicate Omicron highly transmissible among fully vaccinated young and middle-aged adults; specific context needs to be considered though.
16.12.2021	Epidemiological characterisation of the first 785 SARS-CoV-2 Omicron variant cases in Denmark, December 2021	Euro Surveill / Rapid communication	Omicron • First 785 Omicron cases registered in Denmark described. • 599 (76%) fully vaccinated; additional 56 (7.1%) had booster too. • Nine hospitalisations; one case needed intensive care. • Within 1.5 weeks of identifying first case, widespread community transmission despite extensive contact tracing efforts. • Note, earliest Omicron cases before South African announcement, travel history from Qatar / Netherlands,
09.12.2021	Increasing risk of breakthrough COVID-19 in outbreaks with high attack rates in European long-term care facilities, July to October 2021	Euro Surveill / Rapid Communication	• Presents data on 240 COVID-19 outbreaks (July-October 2021) in long-term care facilities with high vaccination coverage across 10 EU/EEA countries (Belgium, France, Greece, Ireland, Lithuania, Luxembourg, Norway, Portugal, Slovakia, Spain) • Among 17,268 residents, 3,832 (22.2%) COVID-19 cases were reported; Median attack rate was 18.9%. • Of COVID-19 cases, 17.4% were hospitalised and 10.2% died. • In fully vaccinated residents, adjusted relative risk for COVID-19 increased with outbreak attack rate.
10.12.2021	No difference in risk of hospitalisation between reported cases of the SARS-CoV-2 Delta variant and Alpha variant in Norway	Int J Infect Dis / Article	• Cohort study of COVID-19 cases in Norway, diagnosed between 03.05.2021 and 15.08.2021 identified 7,977 cases of Delta and 12,078 cases of Alpha, of which 347 (1.7%) were hospitalised • Analysis suggests no difference in risk of hospitalisation for Delta cases compared to Alpha cases (Adjusted Risk Ratio = 0.97). • Compared to unvaccinated cases, partially and fully vaccinated cases had 72% and 76% reduced risk of hospitalization, respectively.

14.12.2021	Randomized controlled trial transfusing convalescent plasma as post-exposure prophylaxis against SARS-CoV-2 infection	medRxiv (non-peer reviewed) / Article	• U.S randomised control trial comparing efficacy / safety of prophylactic high titer (≥1:320) SARS-CoV-2 convalescent plasma (CCP) with standard plasma for preventing infection in exposed, uninfected individuals • 180 participants (87 assigned CCP, 93 to control) aged over 18 with confirmed close contact exposure to a person with COVID-19 in previous 120 hours *and* negative COVID test within 24 hours. • Within trial settings, high titer CCP as post-exposure prophylaxis appeared safe, but did not prevent SARS-CoV-2 infection.

Back to menu

Infection control / non-pharmaceutical interventions

Publication Date	Title/URL	Journal / Article type	Digest
10.12.2021	Characteristics and determinants of population acceptance of COVID-19 digital contact tracing: a systematic review	Acta Biomed / Systematic Review	• Systematic review on population digital contact tracing (DCT) acceptance. • 41 articles reporting original qualitative or quantitative data on DCT acceptance were included. • Benchmarked against 14 core concepts including privacy, Government trust/surveillance, cybersecurity. • Early data on users: (i) early adopters, living in urban areas, with higher household income, more frequent public transport use; (ii) late adopters, usually part of disadvantaged, more fragile communities. • Limitations include heterogeneous diffusion of DCT apps.
10.12.2021	Feasibility and Acceptability of Community Coronavirus Disease 2019 Testing Strategies (FACTS) in a University Setting	Open Forum Infect Dis / Article	• Mixed-methods observational cohort study included 551 asymptomatic students and staff at University of Oxford, who performed SARS-CoV-2 antigen lateral flow self-testing; 447 participants (81%) completed at least 2 tests, and 340 (62%) completed at least 4. • Follow-up survey, completed by 214 participants (39%), found 98% were confident to self-test and believed self-testing to be beneficial, and 91% rated self-testing as acceptable or very acceptable.

			• Qualitative interviews (n=18) found participants valued regular testing but concerns about test accuracy impacted uptake and adherence.
01.12.2021	Assessment of a Hotel-Based Protective Housing Program for Incidence of SARS-CoV-2 Infection and Management of Chronic Illness Among Persons Experiencing Homelessness	JAMA Netw Open / Original investigation	• Cohort study of 259 homeless persons in Chicago, USA housed in individual hotel rooms to reduce risk of SARS-CoV-2 infection (02.04.2020 through 03.09.2020). • Reduced SARS-CoV-2 incidence observed in this cohort (54.7 per 1000 people) compared with citywide rates for homeless persons residing in shelters (137.1 per 1000 people).
10.12.2021	Age dependence of the natural history of infection with severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2): An analysis of Diamond Princess data	Int J Infect Dis / Article	• Analyses data for all passengers and crew members on the Diamond Princess cruise ship • Findings suggest inter-room SARS-CoV-2 transmission was successfully prevented by onboard quarantine: adjusted odds ratio (aOR) for infection on or after 12 February 2020 compared with before this date was 0.53. • Older age was associated with elevated odds of symptomatic illness (aOR 1.01), severe disease (aOR 1.08), and death (aOR 1.12) among infected persons.

Back to menu

Treatment

Publication Date	Title/URL	Journal / Article type	Digest
14.12.2021	Pfizer Announces Additional Phase 2/3 Study Results Confirming Robust Efficacy of Novel COVID-19 Oral Antiviral Treatment Candidate in Reducing Risk of Hospitalization or Death	Pfizer (non-peer reviewed) / News	• Pfizer announced final data of Phase 2/3 study of 2,246 non-hospitalised adult COVID-19 patients, at high risk of progressing to severe illness. • PAXLOVID™ (nirmatrelvir [PF-07321332] tablets and ritonavir tablets) reduced the risk of hospitalisation or death by 89% compared to placebo.
14.12.2021	Update Alert 3: Ventilation Techniques and Risk for Transmission of Coronavirus Disease, Including COVID-19	Ann Intern Med / Letter	• Third update of a living systematic review (to 21.06.2021) addressing ventilation techniques and risk for COVID-19 transmission • Update does not change initial conclusions that noninvasive ventilation (NIV) may have similar effects as invasive mechanical ventilation (IMV) on mortality in COVID-19 patients with acute

			hypoxemic respiratory failure and that high-flow oxygen by nasal cannula (HFNC) may reduce mortality [low certainty evidence].
15.12.2021	Real-World Effectiveness Of Remdesivir In Adults Hospitalized With Covid-19: A Retrospective, Multicenter Comparative Effectiveness Study	Clin Infect Dis / Accepted manuscript	• US retrospective comparative effectiveness study, hospitalized COVID-19 patients (23.02.2020 - 11.02.2021). • Of 96,859 COVID-19 patients, 42,473 (43.9%) received at least one remdesivir dose; matched to controls. • Remdesivir recipients significantly more likely to achieve clinical improvement by 28 days. • Remdesivir recipients on low-flow oxygen were significantly less likely to die than controls. • Results support use of remdesivir for hospitalized COVID-19 patients on no or low-flow oxygen. • Routine initiation of remdesivir in more severely ill patients is unlikely to be beneficial.
16.12.2021	Molnupiravir for Oral Treatment of Covid-19 in Nonhospitalized Patients	N Engl J Med / Article	• Phase 3 trial of 1433 non-hospitalised, unvaccinated adults with mild-to-moderate Covid-19 and at least one risk factor for severe Covid-19 illness. • Participants were randomised to receive molnupiravir (n=716) or placebo (n=717) within 5 days of symptom onset. • In full analysis, the percentage of participants who were hospitalised or died through day 29 was lower in molnupiravir group than in placebo group (6.8% vs. 9.7%; difference, −3.0 percentage points). • Subgroup analyses were largely consistent with these overall results.

Back to menu

Modelling

Publication Date	Title/URL	Journal / Article type	Digest
11.12.2021	Modelling the potential consequences of the Omicron SARS-CoV-2 variant in England	CMMID (London School of Hygiene & Tropical Medicine)	Omicron • Potential consequences of Omicron on transmission and health outcomes in England modelled. • Potential substantial surge in cases, hospital admissions and deaths in populations with high levels of immunity.

			• Reintroduction of additional non-pharmaceutical interventions may be required.
15.12.2021	Projected epidemiological consequences of the Omicron SARS-CoV-2 variant in England, December 2021 to April 2022	medRxiv (non-peer reviewed) / Article	Omicron • UK modelling of potential consequences of Omicron in England, using a deterministic compartmental model fitted to epidemiological data from March 2020 onwards. • Scenarios varying extent of Omicron's immune escape and effectiveness of COVID-19 booster vaccinations. • Strategies considered for re-introduction of control measures, scenarios varying uptake/speed of boosters • Omicron has potential to cause substantial surges in cases, hospital admissions and deaths in populations with high levels of immunity, including England.
10.12.2021	The epidemic volatility index, a novel early warning tool for identifying new waves in an epidemic	Sci Rep / Article	• Describes Epidemic Volatility Index (EVI) a novel early warning tool for oncoming epidemic waves based on volatility of newly reported cases per unit of time, ideally per day. • When EVI was applied to epidemic data for Italy (during 22.01.2020 to 13.04.2021), the overall sensitivity was 0.82 and the specificity was 0.91. • When applied to data for New York in the same period, the corresponding values were 0.55 and 0.88. • Suggests EVI gives consistent and stable performance in detecting new waves.

Back to menu

Guidance and consensus statements

Publication Date	Title/URL	Journal / Article type
07.12.2021	Expert opinion on COVID-19 vaccination and the use of cladribine tablets in clinical practice	Ther Adv Neurol Disord / Article

Back to menu

Overviews, comments and editorials

Publication Date	Title/URL	Journal / Article type
16.12.2021	How COVID vaccines shaped 2021 in eight powerful charts	Nature / News
14.12.2021	Covid-19: Omicron and the need for boosters	Bmj / News Analysis
15.12.2021	Universal Coronavirus Vaccines - An Urgent Need	N Engl J Med / Perspective
21.11.2021	COVID-19 as a trigger of irritable bowel syndrome: A review of potential mechanisms	World J Gastroenterol / Opinion Review
10.12.2021	Enhancing Readiness for Omicron (B.1.1.529): Technical Brief and Priority Actions for Member States	WHO / Overviews
03.12.2021	A review of epidemic investigation on cold-chain food-mediated SARS-CoV-2 transmission and food safety consideration during COVID-19 pandemic	J Food Saf / Invited Review
13.12.2021	Merck's COVID pill loses its lustre: what that means for the pandemic	Nature / News

Back to menu

UK Health Security Agency

COVID-19 Literature Digest Team
Public Health Advice, Guidance and Expertise (PHAGE)
UK Health Security Agency
COVID.LitDigest@phe.gov.uk

A selection of previous digests can be found here

https://www.gov.uk/UKHSA Follow us on Twitter @UKHSA

For our published rapid COVID-19 evidence reviews visit our page:
https://ukhsalibrary.koha-ptfs.co.uk/covid19rapidreviews/