



UK Health
Security
Agency

COVID-19 Literature Digest – 14/01/2022

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 The reports include both preprints, which should be treated with caution as they are NOT peer-reviewed and may be subject to change, and also research that has been subject to peer review and wider scrutiny.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Report for 14.01.2022 (please note that papers that have **NOT been peer-reviewed** are highlighted in red).

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Serology and immunology

Publication Date	Title/URL	Journal / Article type	Digest
10.01.2022	Cross-reactive memory T cells associate with protection against SARS-CoV-2 infection in COVID-19 contacts	Nat Commun / Article	<ul style="list-style-type: none">• Authors assessed 52 COVID-19 household contacts to capture immune responses at the earliest timepoints after SARS-CoV-2 exposure.• Higher frequencies of cross-reactive ($p = 0.0139$), and nucleocapsid-specific ($p = 0.0355$) IL-2-secreting memory T cells were observed in contacts who remained PCR-negative despite exposure ($n = 26$), compared with those who convert to PCR-positive ($n = 26$).• No significant difference in the frequency of responses to spike was observed, suggesting a limited protective function of spike-cross-reactive T cells.
31.12.2021	Activity of convalescent and vaccine serum against SARS-CoV-2 Omicron	Nature / Article	<ul style="list-style-type: none">• Examines neutralising and binding activity of sera from convalescent, mRNA double vaccinated, mRNA boosted, convalescent double vaccinated, and convalescent boosted individuals against wild type, Beta and Omicron.• Neutralising activity in convalescent and double vaccinated participants was undetectable to very low against Omicron.• Neutralising activity of individuals exposed to spike three or four times was maintained, albeit at significantly reduced levels.• Binding to Omicron RBD and NTD was reduced in convalescent unvaccinated individuals, but mostly retained in vaccinated individuals.
14.01.2022	Comparison of Natural and BNT162b2 Vaccine-induced Immunity, with and without an Enhancer or Booster Dose, on the Risk of COVID-19-Related Hospitalization in Israel	SSRN (non-peer reviewed) / Article	<ul style="list-style-type: none">• Compares COVID-19-related hospitalisation incidence rate ratios in 2,412,755 individuals in Israel across four exposures: two BNT162b2 doses, 5+ months prior ("non-recent vaccine immunity"); three BNT162b2 doses ("boosted vaccine immunity"); previous COVID-19, with or without a subsequent BNT162b2 dose ("natural immunity" and "enhanced natural immunity" respectively).• Adjusted COVID-19-related hospitalisation incidence rate ratios (compared with non-recent vaccine immunity): 11% for boosted vaccine immunity; 34% for natural immunity; 25% for enhanced natural immunity.

			<ul style="list-style-type: none"> • Suggests natural immunity (enhanced or not) provides better protection against hospitalisation than non-recent vaccine immunity, but less protection than booster.
23.12.2021	Striking Antibody Evasion Manifested by the Omicron Variant of SARS-CoV-2	Nature / Article	<ul style="list-style-type: none"> • Study found Omicron variant markedly resistant to neutralisation by serum from convalescent patients and individuals vaccinated with one of four widely used COVID-19 vaccines (Pfizer-BioNTech, Moderna, Janssen and Oxford-AstraZeneca). • The activity of 17 of 19 monoclonal antibodies tested were either abolished or impaired, including ones currently authorised or approved for use in patients. • Four spike mutations (S371L, N440K, G446S, and Q493R) that confer greater antibody resistance to Omicron were identified.
28.12.2021	Vaccination-infection interval determines cross-neutralization potency to SARS-CoV-2 Omicron after breakthrough infection by other variants	medRxiv (non-peer reviewed) / Article	<ul style="list-style-type: none"> • Neutralisation susceptibility of ancestor and variants assessed using plasma/serum from individuals with divergent immune histories. • Omicron highly resistant to neutralization in BNT162b2 [Pfizer] fully vaccinated individuals with no history of breakthrough infections. • In contrast, sera from individuals with vaccine breakthrough infection cases by Alpha or Delta showed robust cross-neutralising potency against Omicron. • Time interval between vaccination and infection, rather than variant type, significantly correlated with magnitude/potency of Omicron-neutralising antibodies. • i.e. longer intervals between vaccination and non-Omicron breakthrough infection improved cross-neutralising potency against Omicron. • Associated news: https://www.nature.com/articles/d41586-022-00004-x
10.01.2022	Infectious viral load in unvaccinated and vaccinated patients infected with SARS-CoV-2 WT, Delta and Omicron	medRxiv (non-peer reviewed) / Article	<ul style="list-style-type: none"> • Swiss authors assessed nasopharyngeal swabs of 384 COVID-19 patients for quantitative infectious viral titres (IVT) during first 5 symptomatic days. • Unvaccinated individuals infected with wild SARS-CoV-2 (n= 118) or Delta (n= 127); vaccine breakthrough infections with Delta (n= 121) or Omicron (n=18). • Correlation between RNA copy number and IVT was low for all groups. • Higher RNA genome copies in wild SARS-CoV-2 versus Delta, but significantly higher IVTs in Delta infected individuals. • Omicron breakthrough infections did not show elevated IVTs compared to Delta, suggesting other mechanisms than increase viral load contribute to high infectiousness of Omicron.
10.01.2022	Robust and durable serological response following pediatric SARS-CoV-2 infection	Nat Commun / Article	<ul style="list-style-type: none"> • Serological study of 328 households (548 children and 717 adults) with at least one member with previous SARS-CoV-2 infection, assessed 3-4 months and 11-12 months after infection. • Compared to adults, children are five times more likely to be asymptomatic, and have higher specific antibody levels which persist longer (96.2% versus 82.9% still seropositive 11-12 months post infection). • Symptomatic and asymptomatic infections induce similar humoral responses in all age groups.

- Children and adults have similar neutralisation responses, but both demonstrate reduced neutralisation against Delta VOC.

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Vaccines

Publication Date	Title/URL	Journal / Article type	Digest
07.01.2022	Effectiveness of 3 doses of COVID-19 vaccines against symptomatic COVID-19 and hospitalisation in adults aged 65 years and older	UKHSA (non-peer reviewed) / Report	<ul style="list-style-type: none"> • Test negative case control design to estimate vaccine effectiveness (VE) against symptomatic COVID-19 with Omicron variant compared to Delta variant in adults aged ≥ 65 years. • Minimal or no effect against mild disease with the Omicron variant from 20 weeks after second dose of either a ChAdOx1-S (AstraZeneca) or BNT162b2 (Pfizer) primary course. • Overall VE against hospitalisation among symptomatic Omicron cases was 94% at 2-9 weeks post booster dose and 89% at 10 weeks post booster dose in those aged ≥ 65 years. • Limitations include low numbers and differences in vaccine coverage and Omicron exposure in different population groups.
03.01.2022	Pfizer-BioNTech and Oxford AstraZeneca COVID-19 vaccine effectiveness and immune response among individuals in clinical risk groups	J Infect / Article	<ul style="list-style-type: none"> • COVID-19 vaccine antibody response and effectiveness was evaluated among clinical risk groups in a cohort of 712 general practices in England • No reduction in S-antibody positivity found in most clinical risk groups, although reduced S-antibody positivity and response was significant in immunosuppressed group. • Reduced vaccine effectiveness against clinical disease also noted in immunosuppressed group; after a second dose, effectiveness was moderate (Pfizer: 59.6%; AstraZeneca 60.0%).
06.01.2022	COVID-19 vaccination uptake amongst ethnic minority communities in England: a linked study exploring the drivers of differential vaccination rates	J Public Health (Oxf) / Article	<ul style="list-style-type: none"> • Data from the National Immunisation Management System (NIMS) was linked to the 2011 UK Census and individual health records for subjects aged ≥ 40 years ($n = 24,094,186$). • All minority ethnic groups had lower age-standardised rates of vaccination compared with the white British population (of whom 94% received at least one dose). • Lowest rates among black African (75%) and black Caribbean Britons (66%) • Drivers partly explained by sociodemographic differences, although modelled estimates found significant differences remained for all minority ethnic groups.

04.01.2021	Persistent hesitancy for SARS-CoV-2 vaccines among healthcare workers in the United Kingdom: analysis of longitudinal data from the UK-REACH cohort study	Lancet Reg Health Eur / Correspondence	<ul style="list-style-type: none"> • Reports persistence of hesitancy for first/second vaccine doses among UK healthcare workers [UK-REACH study, followed up between 21.04.2021 and 28.06.2021], and the factors involved. • Trust in institutions (employer, healthcare organisations and the Government) remain important in determining whether hesitancy is likely to persist. • Having had family members advocate against vaccination increases risk of persistent SARS-CoV-2 vaccine hesitancy.
08.01.2022	Cross reactivity of spike glycoprotein induced antibody against Delta and Omicron variants before and after third SARS-CoV-2 vaccine dose in healthy and immunocompromised individuals	J Infect / Article	<ul style="list-style-type: none"> • Study utilised three cohorts: i) vaccinated healthcare workers at University Hospitals Birmingham [Pfizer-BioNTech (PFZ) primary and booster] (PPP cohort); ii) Clinically extremely vulnerable (CEV) individuals attending vaccination in Ulster [Oxford-AstraZeneca (AZ) primary and PFZ booster] (AAP cohort); and iii) individuals on haemodialysis under renal care at UHB [70.3% having AZ primary and PFZ booster] (HD cohort). • Evidence of suboptimal seropositivity 6 months post primary vaccination in all cohorts but particularly amongst HD and CEV. • Post third dose, HD cohort seropositivity was 98.8% against Wuhan, 97.6% against Delta and 100% against Omicron, while the PPP/AAP cohorts were 100% against all 3 strains.
23.12.2021	Omicron extensively but incompletely escapes Pfizer BNT162b2 neutralization	Nature / Article	<ul style="list-style-type: none"> • Live Omicron virus from an infected person in South Africa was used to compare plasma neutralisation relative to an ancestral SARS-CoV-2 strain. • Neutralisation of ancestral virus was much higher in infected and vaccinated versus vaccinated-only participants • However, both groups showed 22-fold escape from vaccine elicited neutralisation by the Omicron variant. • In the previously infected and vaccinated group, residual neutralisation levels re. Omicron were similar to levels of neutralisation of ancestral virus observed in the vaccination-only group.
07.01.2022	Comparison of Moderna Versus Pfizer-Biontech COVID-19 Vaccine Outcomes: A Target Trial Emulation Study In the U.S. Veterans Affairs Healthcare System.	SSRN (non-peer reviewed) / Article	<ul style="list-style-type: none"> • US observational study of matched BNT162b2 [Pfizer] versus mRNA-1273 [Moderna] vaccine recipients (902,235 in each group) for a mean of 192 days. • mRNA-1273 recipients had significantly lower risk of SARS-CoV-2 infection / related hospitalization; across all age groups, comorbidity burden categories. • With follow-up extending to 25.08.2021, mRNA-1273 recipients had a ~26% reduction in risk of SARS-CoV-2 infection / ~37% reduction in hospitalization risk. • Differences greater with longer follow-up time since vaccination; more pronounced under Delta.
07.01.2022	Effectiveness of mRNA-1273 against SARS-CoV-2 omicron and delta variants	medRxiv (non-peer reviewed) / Article	<ul style="list-style-type: none"> • US authors report vaccine effectiveness (VE) of 2-3 doses of mRNA-1273 (Moderna) against omicron and delta, including among immunocompromised. • 6657 test positive cases (44% delta, 56% omicron).

- 2-dose VE against omicron: 30.4% at 14-90 days after vaccination, declined quickly thereafter.
- 3-dose VE: 95.2% against delta / 62.5% against omicron, down to 11.5% among immunocompromised individuals.
- No 3-dose recipients were hospitalized for COVID-19.

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Diagnostics and genomics

Publication Date	Title/URL	Journal / Article type	Digest
06.01.2022	VarLOCK - sequencing independent, rapid detection of SARS-CoV-2 variants of concern for point-of-care testing, qPCR pipelines and national wastewater surveillance	medRxiv (non-peer reviewed) / Article	<ul style="list-style-type: none"> • UK authors expand SARS-CoV-2 CRISPR-Cas detection technology (SHERLOCK) to allow rapid and sensitive discrimination of variants of concern (VOCs) • Technology useable at point of care and/or implemented in pipelines of testing facilities. Able to determine proportion of VOCs in pooled population-level wastewater samples. • Demonstrate VarLOCK assays (Variant-specific SHERLOCK) for multiple specific mutations in S gene of SARS-CoV-2; applicability of VarLOCK to national wastewater surveillance of SARS-CoV-2 variants.
11.01.2022	Screening for SARS-CoV-2 persistence in Long COVID patients using sniffer dogs and scents from axillary sweats samples	medRxiv (non-peer reviewed) / Article	<ul style="list-style-type: none"> • French study of sniffer dogs ability to identify volatile organic compounds (VOCs), triggered by SARS-CoV-2 infection, in sweat from Long COVID patients versus COVID-19 negative, asymptomatic individuals • 45 Long COVID patients (mean age 45, 73.3% female) with prolonged symptoms evolving for a mean of 15.2 months (5-22) were tested. • Dogs discriminated in a positive way 23/45 (51.1%) Long COVID patients versus 0/188 (0%) control individuals. • Results suggests the persistence of a viral infection in some Long COVID patients

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Epidemiology and clinical - children and pregnancy

Publication Date	Title/URL	Journal / Article type	Digest
10.01.2022	SARS-CoV-2 in pediatric cancer: a systematic review	Eur J Pediatr / Systematic Review	<ul style="list-style-type: none"> • Systematic review: paediatric (<18 years) cancer patients with SARS-CoV-2 infection; search until 07.10.2021, 45 reports included (1003 patients).

			<ul style="list-style-type: none"> • Mild SARS-CoV-2 infection in most (23.9% asymptomatic / 41.7% mild or moderate); but attributable mortality ≥ 10 times higher compared to reports on hospitalized children without comorbidities. • 19% of patients with different underlying malignancies received chemotherapy during SARS-CoV-2 infection; no associated severe COVID-19 complications. • 25 patients died, potentially related to COVID-19.
11.01.2022	Immunologic Response, Efficacy, and Safety of Vaccines Against COVID-19 in Children and Adolescents Aged 2 - 21 Years Old: A Systematic Review	medRxiv (non-peer reviewed) / Systematic Review	<ul style="list-style-type: none"> • Systematic review: immune response, effectiveness, and safety of Covid-19 vaccines for 2-21 year olds. • 22 published studies (50,148 participants) / two ongoing clinical trials (5,279 participants) included. • Vaccines: BNT162b2 (Pfizer), mRNA-1273 (Moderna), JNJ-78436735 (Johnson and Johnson), CoronaVac (Sinovac), BBIBP-CorV (Sinopharm), adenovirus type-5-vectored vaccine, ZyCov-D, and BBV152 (Covaxin). • Immune response and efficacy 96% - 100% in healthy children and adolescents; acceptable in those with underlying disease and suppressed immune system. • Adverse reactions such as myocarditis and myopericarditis were transient and resolved entirely.
13.01.2022	SARS-CoV-2 infection and COVID-19 vaccination rates in pregnant women in Scotland	Nat Med / Article	<ul style="list-style-type: none"> • Between 08.12.2020 - 31.10.2021: 25,917 COVID-19 vaccinations of 18,457 pregnant women in Scotland. • Lower than general female population of 18-44 years: 32.3% of women giving birth in October 2021 had two vaccine doses Vs. 77.4% in all women. • Extended perinatal mortality rate for women giving birth within 28 d of COVID-19 diagnosis: 22.6 per 1,000 births. • 77.4% (3,833/4,950) of SARS-CoV-2 infections, 90.9% (748/823) associated hospital admissions, 98% (102/104) associated critical care admissions, and all baby deaths, occurred in pregnant women unvaccinated at time of COVID-19 diagnosis.
13.01.2022	The effect of maternal SARS-CoV-2 infection timing on birth outcomes: a retrospective multicentre cohort study	Lancet Digit Health / Article	<ul style="list-style-type: none"> • Retrospective cohort study (05.03.2020 - 04.07.2021): impact of maternal SARS-CoV-2 infection on birth outcomes . • 882 in SARS-CoV-2 positive (positive test during pregnancy and unvaccinated) cohort [85 first trimester, 226 second trimester, 571 third trimester] matched with 19 769 SARS-CoV-2 negative cohort (≥ 1 negative test, no positive test during pregnancy). • Gestational age at SARS-CoV-2 infection was correlated with gestational age at delivery. • SARS-CoV-2 infection indicated increased risk of preterm delivery and stillbirth, primarily by first and second trimester SARS-CoV-2 infections. • Linked comment, with limitations: https://doi.org/10.1016/S2589-7500(21)00277-6

05.01.2022	Durability and cross-reactivity of SARS-CoV-2 mRNA vaccine in adolescent children	medRxiv (not peer reviewed) / Article	<ul style="list-style-type: none"> • US authors tested durability of vaccine-induced antibodies, plus those specifically targeting Omicron, in younger adolescent children. • 19 provided blood samples: pre-vaccination, 2-3 weeks after 1st dose, 2-4 weeks after 2nd, 6 months later. • Robust antibody response after second dose; most displaying equal sensitivity for Omicron and wildtype RBD. • Some maintained high levels of anti-Spike or anti-RBD antibodies at six months, most dropped to first dose level. • Generated immune responses displayed sufficient cross-coverage of Omicron, with stronger immune responses than have been reported in adults • Adolescent children exhibit waning antibody immune responses six months post-mRNA vaccine.
12.01.2022	Effectiveness of BNT162b2 Vaccine against Critical Covid-19 in Adolescents	N Engl J Med / Article	<ul style="list-style-type: none"> • US case-control study: vaccine effectiveness (VE) against hospitalisation, ICU admission, life support or death in adolescents aged 12-18 years (01.07.2021 - 25.10.2021). • 445 COVID-19 patients and 777 controls ('test-negative' but COVID-19 like symptoms / 'syndrome-negative' without Covid-19-like symptoms). • 17 COVID-19 patients (4%) and 282 controls (36%) were fully vaccinated. • 180 (40%) COVID-19 patients admitted to ICU, 127 (29%) required life support; only 2 patients in ICU had been fully vaccinated. • Overall VE: (i) against hospitalisation 94% (95% among test-negative controls / 94% among syndrome-negative controls); (ii) against ICU admission 98%; (iii) against receipt of life support 98%. • All 7 deaths occurred in unvaccinated patients. • Associated editorial: https://www.nejm.org/doi/full/10.1056/NEJMe2118471

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Epidemiology and clinical - long-term complications / sequelae

Publication Date	Title/URL	Journal / Article type	Digest
07.01.2022	Mild respiratory SARS-CoV-2 infection can cause multi-lineage cellular dysregulation and myelin loss in the brain	bioRxiv (non-peer reviewed) / Article	<ul style="list-style-type: none"> • Long-COVID cognitive syndrome closely resembles syndrome of cancer therapy-related cognitive impairment (CRCI), “chemo-brain”. • Authors explored neuroinflammation caused by mild respiratory SARS-CoV-2 infection and its effects via mouse model and brain tissue from 9 individuals with COVID-19 or SARS-CoV-2.

			<ul style="list-style-type: none"> • Identify similarities between neuropathophysiology after cancer therapy / after SARS-CoV-2 infection; cellular deficits that may contribute to lasting neurological symptoms following even mild SARS-CoV-2 infection.
13.01.2022	Immunological dysfunction persists for 8 months following initial mild-to-moderate SARS-CoV-2 infection	Nat Immunol / Letter	<ul style="list-style-type: none"> • Australian cohort study: 31 individuals with long COVID (LC) age-/gender-matched to 31 recovered individuals without LC. • 46 unexposed healthy controls / 25 individuals with other coronaviruses also studied. • Patients with LC had highly activated innate immune cells, lacked naive T and B cells, showed elevated expression of type I IFN / type III IFN that remained persistently high at 8 months after infection. • Data indicate ongoing, sustained inflammatory response following even mild-to-moderate acute COVID-19.
12.01.2022	Assessment of Functional Mobility After COVID-19 in Adults Aged 50 Years or Older in the Canadian Longitudinal Study on Aging	JAMA Netw Open / Article	<ul style="list-style-type: none"> • Population-based cohort study using data from the Canadian Longitudinal Study on Aging (CLSA) COVID-19 study (launched 15.04.2020), comprising 51,338 adults aged ≥50 years with exit questionnaires completed September to December 2020. • Participants with confirmed or probable COVID-19 (n=2748) had higher odds of worsening mobility such as ability to engage in household activity (odds ratio [OR], 1.89), physical activity (OR, 1.91), and standing up after sitting in a chair (OR, 2.33) compared with adults without COVID-19 during the same period.

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Epidemiology and clinical – risk factors

Publication Date	Title/URL	Journal / Article type	Digest
11.01.2021	COVID-19 and chronic kidney disease: an updated overview of reviews	J Nephrol / Systematic Review	<ul style="list-style-type: none"> • Updated overview of systematic reviews (n=69 up to 05.01.2021) also includes 66 primary studies (01.09.2020 to 10.01.2021). • Prevalence of Chronic Kidney Disease (CKD) among patients with COVID-19 ranged from 0.4 to 49.0% (28 reviews). • One systematic review showed increased risk of hospitalisation in CKD patients with COVID-19 (RR = 1.63) (Moderate certainty) and primary studies also showed significant increase in hospitalisation. • 37 systematic reviews assessed mortality risk in CKD patients with COVID-19. • Pooled estimates for mortality in CKD patients with COVID-19 from primary studies: HR 1.48 (Moderate certainty); OR 1.77 (Moderate certainty); and RR 1.6 (Low certainty).

10.01.2022	Mortality among Care Home Residents in England during the first and second waves of the COVID-19 pandemic: an observational study of 4.3 million adults over the age of 65	Lancet Reg Health Eur / Article	<ul style="list-style-type: none"> • Analysis of data for 4,340,648 people aged 65+ in England, 2.2% resided in a care or nursing home. • First UK COVID-19 wave had disproportionate impact on care home residents. • Age-standardised mortality risks approximately 10-fold higher among care home residents compared to non-residents in February 2019 (Comparative Mortality Figure [CMF] = 10.59 among women, CMF = 10.87 among men). • By April 2020 (peak of first wave) CMF increased nearly 18-fold (17.57 among women / 18.17 among men). • During second wave, mortality risks increased to same proportional degree among care home residents and residents of private homes. • Preprint previously included.
13.01.2022	Risk of serious COVID-19 outcomes among adults with asthma in Scotland: a national incident cohort study	Lancet Respir Med / Article	<ul style="list-style-type: none"> • National incident cohort study of all adults in Scotland aged 18 years and older, 01.03.2020 - 27.07.2021. • 561 279 (12.7%) had clinician-diagnosed-and-recorded-asthma. • Adults with asthma requiring \geq two courses of oral corticosteroids in previous 2 years (as a marker for history of an asthma attack) or hospital admission for asthma before 01.03.2020, are at increased risk of both COVID-19 hospitalisation and ICU admission or death. • Patients with a recent asthma attack are priority group for booster COVID-19 vaccines.
10.01.2022	Characteristics and outcomes of COVID-19 patients with and without asthma from the United States, South Korea, and Europe	J Asthma / Article	<ul style="list-style-type: none"> • Two cohorts of COVID-19 patients ('diagnosed' n=666,933, and 'hospitalised' n=159,552) were identified from 9 databases covering January-June 2020 in several countries (US, South Korea, Spain, UK, Netherlands). • Asthma prevalence: 6.2% to 18.5% in diagnosed cohort; 5.2% to 20.5% in hospitalised cohort. • Asthma patients with COVID-19 had high prevalence of comorbidity (hypertension, heart disease, diabetes or obesity). • Mortality in asthma patients ranged from 2.1% to 16.9%, similar or lower compared to COVID-19 patients without asthma (possibly confounded by differences in clinical characteristics). • 15%-30% of hospitalised COVID-19 asthma patients experienced acute respiratory distress syndrome.

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Epidemiology and clinical – other

Publication Date	Title/URL	Journal / Article type	Digest
06.01.2022	Penetration and impact of COVID-19 in long term care facilities in England: population surveillance study	Int J Epidemiol / Article	<ul style="list-style-type: none"> • Of 1,936,315 COVID-19 cases notified to Public Health England [now UKHSA] from 01.01.2020 to 25.10.2020, 81,275 (4.2%) and 10,050 (0.52%) were identified as resident or staff in a long-term care facility (LTCF). • LTCF residents accounted for 31.3% of all COVID-19 associated deaths (n=20,544). • Cases were identified in 69.5% of LTCFs in England, with 33.1% experiencing multiple outbreaks. • LTCF residents had 67% increased odds of death in residents [aOR: 1.67], compared with non-residents. • Among 10,321 outbreaks identified at LTCFs, 8.2% identified a staff member as the first case.
04.01.2022	Increased mortality in COVID-19 patients with fungal co- and secondary infections admitted to intensive care or high dependency units in NHS hospitals in England	J Infect / Letter	<ul style="list-style-type: none"> • Authors estimate the impact of fungal infections on outcomes in COVID ICU patients in England using linked datasets. • Pulmonary aspergillosis and candidemia independently increase COVID-19-associated mortality • Additionally, both fungal infections extended length-of-stay in COVID-19 patients.
11.01.2022	Shift of lung macrophage composition is associated with COVID-19 disease severity and recovery	bioRxiv (non-peer reviewed) / Article	<ul style="list-style-type: none"> • Mount Sinai COVID-19 Biobank data (~600 hospitalized patients followed longitudinally) used to identify drivers of disease severity and death. • In severe COVID-19 patients, lung tissue resident alveolar macrophages (AM) were severely depleted, with an altered Ag presentation signature, and replaced by inflammatory monocytes and monocyte-derived macrophages (MoMφ). • Size of AM pool correlated with recovery or death; AM loss and functionality restored in recovered patients. • Suggests that local and systemic myeloid cell dysregulation is a driver of COVID-19 severity.

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Infection control / non-pharmaceutical interventions

Publication Date	Title/URL	Journal / Article type	Digest
27.11.2021	Learning about COVID-19 across borders: public health information and adherence among international travellers to the UK	Public Health / Article	<ul style="list-style-type: none"> • UK study seeking to understand individual risk assessment processes, decision making, and adherence to official advice among international travellers, via semi-structured interviews.

- Findings suggest that in addition to differences in official information and regulations on COVID-19 across national borders, factors including information consistency, sociocultural norms, perceived risks and benefits, and availability of support from both official and unofficial sources all affect people's adherence to official public health advice
- Preprint previously included.

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Transmission

Publication Date	Title/URL	Journal / Article type	Digest
07.01.2022	Virus Watch Study: Non-household activities COVID risk, 20 December 2021	Gov.uk (non-peer reviewed) / Research and analysis	<ul style="list-style-type: none"> • Examines risk of COVID-19 infections in UK adults associated with non-household activities during two periods: October 2020-April 2021 (intense control measures in place) and September-November 2021 (no restrictions) • Weekly shopping accounted for highest proportion of infections acquired outside the home in both periods (Restrictions = AOR 1.69; No restrictions = 2.18) • Going to work and public transport use were also important predictors. • During no restrictions there was evidence of increased risk for eating at a restaurant/café (AOR 1.29) going to a pub/bar/club (more than once per week, 1.28), going to a party (1.27), going to the gym or indoor sports (1.27), or playing a sport outdoors (1.36; may relate to associated social activities). • Limitations: September-October analyses are preliminary and younger adults are underrepresented in Virus Watch cohort.
08.01.2022	The Dynamics of SARS-CoV-2 Infectivity with Changes in Aerosol Microenvironment	medRxiv (non-peer reviewed) / Article	<ul style="list-style-type: none"> • UK authors present measurements of SARS-CoV-2 stability in aerosol droplets (~5-10µm equilibrated radius) over timescales from 5 seconds to 20 minutes. • Decrease in infectivity to ~10 % of starting value over 20 minutes; large proportion of loss within first 5 minutes after aerosolisation. • Initial infectivity loss correlates with physical transformation of droplet; linked to relative humidity. • Combined approach considers both the aerosol microphysics and biological processes in tandem.

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Treatment

Publication Date	Title/URL	Journal / Article type	Digest
23.12.2021	Safety and Efficacy of Intermediate- and Therapeutic-Dose Anticoagulation for Hospitalised Patients with COVID-19: A Systematic Review and Meta-Analysis	J Clin Med / Systematic review	<ul style="list-style-type: none"> • Systematic review: comparing safety and efficacy of intermediate- or therapeutic-dose anticoagulation to standard thromboprophylaxis in hospitalised COVID-19 patients. • Eight randomised controlled trials (5580 patients) included. • Meta-analysis, including 773 hospitalised COVID-19 participants from two RCTs, showed no benefit of intermediate-dose anticoagulation compared to standard thromboprophylaxis. • Therapeutic-dose anticoagulation may decrease any thrombotic event or death in patients with moderate COVID-19, but the risk for bleeding is increased. It may have little or no effect in patients with severe disease. • Overall certainty of evidence for intensified thromboprophylaxis in hospitalised patients with COVID-19 remains low.
10.01.2021	Preclinical and randomized phase I studies of plitidepsin in adults hospitalized with COVID-19	Life Sci Alliance / Article	<ul style="list-style-type: none"> • Phase 1 trial of Plitidepsin conducted in 10 Spanish hospitals [May - November 2020]. • Hospitalised adult Covid-19 patients received 1.5 mg (n = 15), 2.0 mg (n = 16), or 2.5 mg (n = 15) Plitidepsin once daily for 3 days. • Overall, findings suggest a favourable safety profile. • Mean viral load reductions from baseline were 1.35, 2.35, 3.25, and 3.85 log(10) at days 4, 7, 15, and 31, respectively.

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Modelling

Publication Date	Title/URL	Journal / Article type	Digest
23.12.2022	Mitigating isolation: The use of rapid antigen testing to reduce the impact of self-isolation periods	medRxiv (non-peer reviewed) / Article	<ul style="list-style-type: none"> • UK authors model 500,000 infected individuals self-isolating under different scenarios, including use of high-specificity, rapid antigen testing. • Under 10-day isolation period, 5% are released whilst still infectious; reduces to 1% under 14-day isolation period. • Using testing technology to limit individual harm whilst maintaining protective effect of isolation: 10-day isolation with 2 rapid antigen test negative results from day 6. Excess isolation reduced from 142 hours to 82 hours, 6% of people are released infectious.

12.01.2022	Hybrid simulation modelling of networks of heterogeneous care homes and the inter-facility spread of Covid-19 by sharing staff	PLoS Comput Biol / Article	<ul style="list-style-type: none"> • UK modelling study: Covid-19 spread across multiple care homes via bank/agency staff, effectiveness of interventions targeting those staff. • Residents' risk of infection significantly higher in care homes using bank/agency staff (Relative risk [RR] 2.65). • Higher infection risk in staff working across several care homes Vs permanent staff in single care home. • RR of infection for residents negatively correlated to bank/agency staff's adherence to weekly PCR testing. • Using bank/agency staff had most impact on care homes with lower intra-facility transmission risks, higher staff-to-resident ratio, and smaller size. • Forming bubbles of care homes had no or limited impact on spread of Covid-19.
11.01.2022	Predicting the mutational drivers of future SARS-CoV-2 variants of concern	Sci Transl Med / Article	<ul style="list-style-type: none"> • Modelling suggests ACE2-mediated transmissibility and resistance to population-level host immunity has waxed and waned as a primary driver of SARS-CoV-2 evolution over time. • The model identifies, with high accuracy (AUROC=0.92-0.97) mutations that will spread, at up to four months in advance, across different phases of the pandemic. • Findings demonstrate it is possible to forecast driver mutations that could appear in emerging SARS-CoV-2 VOC; authors validate this result against Omicron.

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Overviews, comments and editorials

Publication Date	Title/URL	Journal / Article type
11.01.2022	'Killer' immune cells still recognize Omicron variant	Nature / News
13.01.2022	Omicron thwarts some of the world's most-used COVID vaccines	Nature / News
07.01.2022	Covid-19: Fourth vaccine doses-who needs them and why?	BMJ / News
12.01.2022	The French health pass holds lessons for mandatory COVID-19 vaccination	Nat Med / Comment
08.01.2022	Blood Filters in Children with COVID-19 and AKI: A Review	Ther Apher Dial / Review
12.02.2022	COVID vaccines safely protect pregnant people: the data are in	Nature / News
10.01.2022	Intensive Care Unit-Acquired Weakness and the COVID-19 Pandemic: A Clinical Review	PM&R / Narrative Review
07.01.2022	Skeletal muscle alterations in patients with acute Covid-19 and post-acute sequelae of Covid-19	J Cachexia Sarcopenia Muscle / Review
01.2022	COVID-19 self-isolation changes: scientific summary	UKHSA (non-peer reviewed) / Briefing

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