Public Health England

COVID-19 Literature Digest – 07/05/2021

Dear all,

Please find today's report below.

PHE'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 The reports include both preprints, which should be treated with caution as they are NOT peer-reviewed and may be subject to change, and also research that has been subject to peer review and wider scrutiny.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 PHE. We do not accept responsibility for the availability, reliability or content of the items included in this resource.

To join our email distribution list 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 PHE Behavioural Sciences Weekly Report.

Best wishes,

Emma Farrow, James Robinson, Kester Savage
On behalf of the PHE COVID-19 Literature Digest Team

Report for 07.05.2021 (please note that papers that have **NOT been peer-reviewed** are highlighted in red).

Sections:

Modelling
Guidance and consensus statements (no digest)
Overviews, comments and editorials (no digest)

Serology and immunology

Publication Date	Title/URL	Journal / Article type	Digest
30.04.2021	Prior SARS-CoV-2 infection rescues B and T cell responses to variants after first vaccine dose	Science / Report	• UK longitudinal cohort study whether single dose BNT162b2 (Pfizer) vaccination, with or without prior infection, confers cross protective immunity to variants. • T and B cell responses after first dose analysed in healthcare workers individuals with prior infection showed enhanced T cell immunity, antibody secreting memory B cell response to spike and neutralizing antibodies effective against B.1.1.7 and B.1.351. By comparison, HCW receiving one vaccine dose without prior infection showed reduced immunity against variants. B.1.1.7 and B.1.351 spike mutations resulted in increased, abrogated or unchanged T cell responses depending on human leukocyte antigen (HLA) polymorphisms. • Single dose vaccination with BNT162b2 in context of prior infection with a heterologous variant substantially enhances neutralizing antibody responses against variants.
10.03.2021	Incidence of SARS-CoV-2 infection according to baseline antibody status in staff and residents of 100 Long Term Care Facilities (VIVALDI study)	medRxiv (non-peer reviewed) / Article	• Prospective cohort study of infection in staff (n=1429) and residents (n=682) in 100 Long Term Care Facilities (LTCFs) in England, October 2020 to February 2021. • Findings suggest the presence of IgG antibodies to nucleocapsid was associated with substantially reduced risk of reinfection in staff and residents for up to 10 months after primary infection.
05.05.2021	Delayed production of neutralizing antibodies correlates with fatal COVID-19	Nature Medicine / Article	• Longitudinal assessment of humoral immune responses of 32 COVID-19 convalescent patients up to 8 months post-symptom onset; evaluate the presence of SARS-CoV-2-specific memory B cells. • Demonstrate that COVID-19 patients generate RBD-specific memory B cells and IgG+ B memory cells that persist for over 8 months. • Data suggest that loss of protective role of antibodies in lethal disease is due to their late onset. NAb responses developed within 14 d of symptom onset correlated with recovery, whereas those induced at later time points appear to lose this protective effect.

06.05.2021	Case series of four re-infections with a SARS-CoV-2 B.1.351 variant, Luxembourg, February 2021	Eurosurveillance / Rapid communication	• Authors describe cases of four French healthcare workers (HCWs) re-infected with a B.1.351 (South Africa) variant in 2021, having been previously infected in 2020 before detection of the variant in Europe. • All work in a hospital unit where a B1.351 cluster affected patients and HCWs. HCWs had used surgical masks as per recommendations before the cluster; FFP2 masks used after cluster onset.
29.04.2021	Seroprevalence of SARS-CoV-2 Antibodies in University Students: cross-sectional study, December 2020, England	J Infect / Article	• Serosurvey of 2,905 students aged ≤ 25 years across five universities in England, 02-11 Dec 2020: seroprevalence was 17.8%, ranging between 7.6% and 29.7% across the five universities. • Seropositivity associated with being younger (aOR 3.2), living in halls of residence (aOR 2.1), sharing a kitchen with an increasing number of students (shared with 4-7 individuals, aOR 1.43; shared with 8 or more individuals, aOR 1.53). • Seropositivity was 49% in students living in halls of residence that reported high SARS-CoV-2 infection rates (>8%) during the autumn term. • Preprint previously included.

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Vaccines

Publication Date	Title/URL	Journal / Article type	Digest
30.04.2021	ISARIC4C and CO-CIN: Hospitalised patients stratified by vaccination tier in second wave, 22 April 2021	Gov.uk (non-peer reviewed) / Research and analysis	• This brief report describes first analysis of early data on the impact of vaccination on hospitalised patients with SARS-CoV-2 infection during the latter part of the second wave in the CO-CIN / ISARIC4C cohort. • The proportion of admissions of people in vaccination tiers 2 and 3 has decreased [moderate confidence]. • There has been a small gradual reduction of in-hospital mortality in vaccination tiers 2, 3 and 4 [moderate confidence]. • BMJ comment: https://www.bmj.com/content/373/bmj.n1127
30.04.2021	ISARIC4C and CO-CIN: Hospitalised vaccinated patients during the second wave - update April 2021, 22 April 2021	Gov.uk (non-peer reviewed) / Research and analysis	• Investigates hospitalised vaccinated patients during the second wave of the UK COVID-19 outbreak using the ISARIC4C / CO-CIN data set (up to 10 April 2021). • 1 in 14 patients hospitalised since 8 December 2020 have received at least one vaccine dose (previously 1 in 25). • Most vaccinated hospitalised patients were infected shortly before or around the time of vaccination, and others after vaccination but before immunity had developed [high confidence]

			• As the period of follow-up has increased, there has been a rise in the proportion of SARS-CoV-2 positive people admitted >21 days after vaccination [moderate confidence]. • Mortality appears to remain high for people in high-risk vaccination tiers who are admitted to hospital with symptomatic COVID-19 despite vaccination 21 day or more previously [low confidence].
05.05.2021	Effectiveness of the BNT162b2 Covid-19 Vaccine against the B.1.1.7 and B.1.351 Variants	N Engl J Med / Correspondence	• National Qatar study. As of 31 March 2021, total of 385,853 persons had received at least one vaccine dose of BNT162b2 (Pfizer–BioNTech) and 265,410 had completed the two doses. • Effectiveness estimated to be 87.0% against B.1.1.7 variant (identified in UK) and 72.1% against B.1.351 variant (identified in South Africa).
05.05.2021	Impact and effectiveness of mRNA BNT162b2 vaccine against SARS-CoV-2 infections and COVID-19 cases, hospitalisations, and deaths following a nationwide vaccination campaign in Israel: an observational study using national surveillance data	The Lancet / Article	• Analysis of nationwide surveillance data, when variant B.1.1.7 dominant strain; real-world estimates of effectiveness of two doses of BNT162b2 (Pfizer) against infection, hospitalisation and death. • Declines in incident cases of SARS-CoV-2 for each age group corresponded with achieving high vaccine coverage in that age group rather than initiation of the nationwide lockdown. • 95% of 8472 tested specimens showed an spike gene target failure (SGTF), associated with B.1.1.7, providing evidence that BNT162b2 is effective against B.1.1.7. • Associated comment: https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(21)01018-7/fulltext ¦ BMJ news: https://www.bmj.com/content/373/bmj.n1164
07.05.2021	Attitudes towards vaccines and intention to vaccinate against COVID-19: Implications for public health communications	Lancet Reg Health Eur / Research paper	• 32,361 adults in the University College London COVID-19 Social Study. • Distrustful attitudes towards vaccination higher amongst: ethnic minority backgrounds, lower levels of education, lower annual income, poor COVID-19 knowledge, poor compliance with government COVID-19 guidelines. • Largest predictors of both vaccine uncertainty and refusal: low-income groups (< £16,000, a year), not received a flu vaccine last year, poor adherence to COVID-19 government guidelines, female gender, and living with children.
05.05.2021	Arterial events, venous thromboembolism, thrombocytopenia, and bleeding after vaccination with Oxford-AstraZeneca ChAdOx1-S in Denmark and Norway: population based cohort study	BMJ / Research	• Cohort study: cardiovascular and haemostatic events in first 28 days after ChAdOx1-S (AstraZeneca) vaccine in Denmark (n=148 792) and Norway (n=132 472) compared to general population. • Increased rate of venous thromboembolic events, corresponding to 11 excess per 100 000 vaccinations, including cerebral venous thrombosis with 7 observed events versus 0.3 expected events (excess of 2.5 per 100 000 vaccinations, or one in 40 000 vaccine recipients).

			• Results were reassuring for most cardiovascular and haemostatic outcomes. 15 deaths were observed in the vaccine cohort compared with 44 expected. • Linked editorial: https://www.bmj.com/content/373/bmj.n1159 ¦ Opinion: https://blogs.bmj.com/bmj/2021/05/05/thrombosis-and-bleeding-after-the-oxford-astrazeneca-covid-19-vaccination/
04.05.2021	COVID-19 vaccine-associated cerebral venous thrombosis in Germany: a descriptive study	medRxiv (non-peer reviewed) / Article	• All Departments of Neurology of University and non-university hospitals in Germany were invited to report cases of cerebral venous thrombosis (CVT) and similar events within one month of COVID-19 vaccination • In total 62 events were detected; 53 after vaccination with ChAdOx1 (AstraZeneca), and 9 after BNT162b2 (Pfizer). • Overall incidence rate of CVT within one month of first dose was 6.5 per 100,000 person-years and 8.8 for any included cerebrovascular event. One-month incidence rate of CVT was higher among ChAdOx1 vaccinated persons (17.9). • Incidence rate ratio was calculated using statistics of 9 German States: 9.68 for ChAdOx1 compared to mRNA-based vaccines and 3.14 for women compared to non-women after adjusting for age group.
30.04.2021	US Case Reports of Cerebral Venous Sinus Thrombosis With Thrombocytopenia After Ad26.COV2.S Vaccination, March 2 to April 21, 2021	JAMA / Original Investigation	• Case series of first US patients reported to have cerebral venous sinus thrombosis (CVST) with thrombocytopenia following receipt of Ad26.COV2.S (Janssen/Johnson & Johnson) COVID-19 vaccine. • 12 patients, all women, younger than 60 years, with symptom onset ranging from 6 to 15 days after vaccination requiring hospitalization. • Associated editorial: https://jamanetwork.com/journals/jama/fullarticle/2779732
30.04.2021	Safety Monitoring of the Janssen (Johnson & Johnson) COVID-19 Vaccine — United States, March–April 2021	MMWR Morb Mortal Wkly Rep / Early release	• Nearly 8 million doses of the Janssen COVID-19 vaccine had been administered in the USA by 21 April 2021: a review of safety monitoring data found 97% of adverse reactions were non-serious, consistent with pre-authorisation clinical trials data. Seventeen thrombotic events with thrombocytopenia have been reported, including three non-CVST events.
05.05.2021	Efficacy of NVX-CoV2373 Covid-19 Vaccine against the B.1.351 Variant	N Engl J Med / Article	• Study with 6324 participants enrolled between 17.08.2020 and 25.11.2020, of which 1918 were excluded • Participants were healthy adults between the ages of 18 and 84 years without human immunodeficiency virus (HIV) infection or a subgroup of adults between the ages of 18 and 64 years with HIV infection whose condition was medically stable • NVX-CoV2373 vaccine was efficacious in preventing Covid-19, with higher vaccine efficacy observed among HIV-negative participants

03.05.2021	Women's views on accepting COVID-19 vaccination during and after pregnancy, and for their babies: A multi-methods study in the UK	medRxiv (non-peer reviewed) / Article	• In an online survey (n=1,181) and semi-structured interviews (n=10) with pregnant women, a majority (81.2%) would 'definitely' or were 'leaning towards' accepting COVID-19 vaccine when not pregnant; acceptance was significantly lower during pregnancy (62.1%) and for their babies (69.9%). • Women from ethnic minorities were twice as likely to reject vaccine for themselves/baby compared to women from White ethnic groups. • Women from lower-income households, aged under 25-years, and from some geographic regions were more likely to reject vaccine for themselves/baby. • Multivariate analysis revealed income and ethnicity as the main drivers of the observed age and regional differences. • Safety concerns about COVID-19 vaccines were common though wider mistrust in vaccines was also expressed; trust in vaccines and the health system were reasons for accepting COVID-19 vaccines.
30.04.2021	Estimating the early impact of immunization against COVID-19 on deaths among elderly people in Brazil: analyses of secondary data on vaccine coverage and mortality	medRxiv (non-peer reviewed) / Article	• In a setting where the P.1 variant predominates, rapid scaling up of vaccination coverage among Brazilians over 80 years old (49.1% in weeks 5-6 and over 90% after week 9, 2021) was associated with an important decline in relative mortality compared to people aged 0-79: from 13 times higher up to week 6, to 6.9 times higher in weeks 13-14.
06.05.2021	Preliminary Analysis of Safety and Immunogenicity of a SARS-CoV-2 Variant Vaccine Booster	medRxiv (non-peer reviewed) / Article	• Preliminary analysis of previously vaccinated clinical trial participants given a single booster dose of mRNA-1273 (Moderna; n=20) or a modified version, mRNA-1273.351 (n=20). • Both booster vaccines increased neutralising titers against SARS-CoV-2 and two variants of concern (B.1.351 and P.1); mRNA-1273.351 achieved higher titers against B.1.351 than a booster dose of mRNA-1273. • Evaluation of a multivalent vaccine booster candidate, mRNA-1273.211, is ongoing. • Associated press release: https://investors.modernatx.com/news-releases/news-release-details/moderna-announces-positive-initial-booster-data-against-sars-cov
01.05.2021	A megastudy of text-based nudges encouraging patients to get vaccinated at an upcoming doctor's appointment	Proc Natl Acad Sci U S A / Brief report	• US study with data from 47,306 patients • Findings suggest that text messages sent prior to a primary care visit can boost vaccination rates by an average of 5% • The best-performing intervention reminded patients twice to get their flu shot at their upcoming doctor's appointment and indicated it was reserved for them. This successful script could be used as a template for campaigns to encourage the adoption of life-saving vaccines, including against COVID-19

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Diagnostics and genomics

Publication Date	Title/URL	Journal / Article type	Digest
29.04.2021	Household clustering of SARS-CoV-2 variant of concern B.1.1.7 (VOC-202012-01) in England	J Infect / Correspondence	• Comparative analysis of household clustering, providing rapid assessment of variant B1.1.7 (VOC-2020-12-01, "UK variant") transmissibility against other sequenced cases. • Variant cases were more likely (OR = 2.13) to give rise to household clusters compared with wild type cases, reduced to 88% higher odds (OR = 1.88) when adjusted for other factors. • Household clustering was more likely in households with an index case of Asian ethnicity and less likely if the index case was of Black ethnicity, compared with index cases of white ethnicity. • Findings are consistent with modelling which indicated that the variant increased the reproduction number by 73–81%.
03.05.2021	Detection of SARS-CoV-2 infection in gargle, spit and sputum specimens	medRxiv (non-peer reviewed) / Article	• Forty concomitant nasopharyngeal and gargle specimens were collected from 40 participants, as well as 40 gargle, 22 spit and 16 sputum specimens on the next day. • Gargle specimens had a sensitivity of 0.97, whether collected concomitantly to NPS or next morning. Next morning spit and sputum specimens showed sensitivity of 1.00 and 0.94, respectively. • Gargle specimens had significantly higher mean Ct values, 29.89 and 29.25 when collected concomitantly and next morning compared to NPS (22.07). Ct value obtained with spit (23.51) and sputum (25.82) specimens were close to NPS.
30.04.2021	N440K variant of SARS-CoV-2 has Higher Infectious Fitness	bioRxiv (non-peer reviewed) / Article	• Authors analyse prevalence of N440K variants within the sequences submitted from India and identify a rising trend of its spread across various clusters. • N440K produced ten times higher infectious viral titers than a prevalent A2a strain, and over 1000 folds higher titers than a much less prevalent A3i strain prototype in Caco2 cells. Similar results were detected in Calu-3 cells, suggesting increased potency.

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Epidemiology and clinical - children and pregnancy

Publication Date	Title/URL	Journal / Article type	Digest
04.05.2021	COVID-19 Schools Infection Survey Round 4, England: March 2021	Office for National Statistics / COVID-19 Infection Survey	• Round 4 of study (15-31 Mar2021) shortly after schools in England reopened after third lockdown; 137 schools (57 primary/80 secondary) in 15 local authorities. 15,187 participants tested. • Results suggest current infection lower amongst secondary school staff and pupils compared with results from Nov -Dec 2020 study. • Number of positive test results for primary schools is too small to present because of statistical disclosure criteria.
26.04.2021	Increased viral variants in children and young adults with impaired humoral immunity and persistent SARS-CoV-2 infection: A consecutive case series	EBioMedicine / Article	• Prolonged infection for up to 162 days in three immunocompromised young patients. Whole-genome sequencing / serological studies measure viral evolution and evidence of immune escape. • Two patients acquired several mutations in the gene encoding the spike protein at specific residues that may be important for antibody binding. • Results highlight potential need to reassess infection control precautions in management and care of immunocompromised patients.
30.04.2021	Prevalence of thrombotic complications in children with SARS-CoV-2	Arch Dis Child / Short report	• In a multicentre national cohort of 537 Spanish children with SARS-CoV-2, four children developed a thrombotic complication. The authors describe their characteristics and review other published paediatric cases. • In this cohort, D-dimer value was not specific enough to predict thrombotic complications; adolescence and previous thrombotic risk factors may be considered when initiating anticoagulant prophylaxis on children with COVID-19.
05.05.2021	The incidence, characteristics and outcomes of pregnant women hospitalized with symptomatic and asymptomatic SARS-CoV-2 infection in the UK from March to September 2020: A national cohort study using the UK Obstetric Surveillance System (UKOSS)	PLoS One / Article	• UK study of all hospitalised pregnant women with confirmed SARS-CoV-2 from 01.03.2020 to 31.08.2020 identifying factors that increase the risk of symptomatic and asymptomatic SARS-CoV-2 in pregnancy • 1148 hospitalised women had confirmed SARS-CoV-2 in pregnancy, 63% of which were symptomatic • Hospitalised pregnant women with symptomatic SARS-CoV-2 were more likely to be admitted to intensive care but the absolute risk of poor outcomes was low • Majority of women do not experience severe complications of SARS-CoV-2 in pregnancy

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Epidemiology and clinical - long-term complications / sequelae

Publication Date	Title/URL	Journal / Article type	Digest
04.05.2021	Persistent neuropsychiatric symptoms after COVID-19: a systematic review and meta-analysis	medRxiv (non-peer reviewed) / Article	• Systematic review and meta-analysis included 51 studies (n=18,917 patients); study quality was generally moderate. • Mean follow up after COVID-19 was 77 days. The most frequent neuropsychiatric symptom was sleep disturbance (pooled prevalence=27.4%), followed by fatigue (24.4%), objective cognitive impairment (20.2%), anxiety (19.1%), and post-traumatic stress (15.7%). Only two studies reported symptoms in control groups, both reporting higher frequencies in Covid-19 survivors versus controls. • Between-study heterogeneity was high. There was little or no evidence of differential symptom prevalence based on hospitalisation status, severity, or follow-up duration.

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Epidemiology and clinical – risk factors

Publication Date	Title/URL	Journal / Article type	Digest
02.05.2021	Aspirin and NSAID use and the risk of COVID-19	medRxiv (non-peer reviewed) / Article	• Users of the COVID Symptom Study app (n=2,736,091) reported use of aspirin and other non-steroidal anti-inflammatory drugs (NSAIDs) between 24 March and 8 May 2020. • Non-aspirin NSAID use was associated with a modest risk for testing COVID-19 positive (HR 1.23), but no significant association was observed among aspirin users (HR 1.13). • After adjustment for lifestyle factors, comorbidities and baseline symptoms, any NSAID use was not associated with risk (HR 1.02). • These results do not support an association of NSAID use, including aspirin, with COVID-19 infection. Previous reports of potential association may be due to higher rates of comorbidities or use of NSAIDs to treat symptoms associated with COVID-19.
05.05.2021	Prolonged SARS-CoV-2 RNA virus shedding and lymphopenia are hallmarks of COVID-19 in cancer patients with poor prognosis	medRxiv (non-peer reviewed) / Article	• Study of 1063 patients (58% with cancer, 89% COVID-19+) suggests cancer therapies may exacerbate the association between lymphopenia and COVID-19-related immunopathology. Prevention of COVID-19-induced lymphocyte loss may reduce cancer-associated death.

30.04.2021	Ethnic differences in SARS-CoV-2 infection and COVID-19-related hospitalisation, intensive care unit admission, and death in 17 million adults in England: an observational cohort study using the OpenSAFELY platform	Lancet / Article	• Observational cohort study of 17 288 532 adults (aged ≥18 years) registered with primary care practices in England, excluding care home residents. • Wave 2 risks of hospitalisation, ICU admission, and death relative to White group were increased in South Asian group but attenuated for Black group compared with these risks in wave 1. • Some minority ethnic populations in England have excess risks of testing positive/of adverse COVID-19 outcomes compared with White population, even after accounting for differences in sociodemographic, clinical, and household characteristics. • Associated comment: https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(21)00949-1/fulltext
03.05.2021	Interactions between SARS-CoV-2 and influenza, and the impact of coinfection on disease severity: a test-negative design	Int J Epidemiol / Article	• UK epidemiological study using national-level data on both positive and negative SARS-CoV-2 and influenza cases 20.01.2020 - 25.04.2020. • Influenza infection associated with lower risk of SARS-CoV-2 infection, suggesting pathogenic competition between these two viruses. • Coinfection with influenza and SARS-CoV-2 associated with increased risk of death (OR 5.92) and severe disease; beyond additive effect of the two viruses acting independently. • Findings emphasize the importance of influenza vaccination in at-risk groups and early administration of antivirals where coinfection is identified or suspected. • Preprint previously included
30.04.2021	Association between oral anticoagulants and COVID-19 related outcomes: two cohort studies	medRxiv (non-peer reviewed) / Article	• Study 1: among 70,464 people with atrial fibrillation (AF) and a CHA2DS2–VASc score of 2, those receiving oral anticoagulants (OACs) had a lower risk of positive COVID-19 test and severe COVID-19 outcomes than non-users; possible factors include causal effect of OACs or more cautious behaviours leading to reduced infection risk. • Study 2: no evidence of a higher risk of severe COVID-19 outcomes associated with warfarin versus direct oral anticoagulants (DOACs) in people with non-valvular AF regardless of CHA2DS2–VASc score.
06.05.2021	Risk Factors For Infection And Health Impacts Of The Covid-19 Pandemic In People With Autoimmune Diseases	Clin Infect Dis / Article	• Longitudinal cohort study with 4666 participants investigating risk factors including the use of immunomodulatory/suppressive medications. • Multiple sclerosis (MS), Sjogren's syndrome, and rheumatoid arthritis were the most common qualifying conditions represented, with 878, 741, and 545 individuals, respectively. • Glucocorticoid exposure may increase risk of COVID-19 in people with autoimmune or inflammatory conditions.

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Epidemiology and clinical – other

Publication Date	Title/URL	Journal / Article type	Digest
14.04.2021	Cerebral venous thrombosis: a retrospective cohort study of 513 284 confirmed COVID-19 cases and a comparison with 489,871 people receiving a COVID-19 mRNA vaccine	OSF Preprints (non-peer reviewed) / Article	• Retrospective cohort study based on primarily US electronic health records; patients with confirmed COVID-19 (N=537,913) were matched with cohorts with influenza (N=392,424) or receiving the mRNA vaccine (Pfizer or Moderna; N=366,869) • Incidence of cerebral venous thrombosis (CVT) within two weeks of COVID-19 diagnosis was 42.8 per million people; significantly higher than influenza (RR=3.83) and vaccine cohorts (RR=6.67) • Incidence of portal vein thrombosis (PVT) within two weeks of COVID-19 diagnosis was 392.3 per million people; significantly higher than influenza (RR=1.39) and vaccine cohorts (RR=7.40) • Mortality after CVT and PVT was 17.4% and 19.9% respectively; highlights importance of vaccination in context of relative risks. • Associated commentary: https://www.bmj.com/content/373/bmj.n1005
06.05.2021	Prevalence and outcomes of co-infection and superinfection with SARS-CoV-2 and other pathogens: A systematic review and meta-analysis	PLoS One / Systematic Review	• Systematic review of studies published 01.10.2019-08.02.2021; 118 articles included. • As many as 19% of patients with COVID-19 have co-infections and 24% have superinfections. Presence of either associated with poor outcomes, including increased mortality.
30.04.2021	LUCAS: A highly accurate yet simple risk calculator that predicts survival of COVID-19 patients using rapid routine tests	medRxiv (non-peer reviewed) / Article	• Decribes the LUCAS Mortality Score, a simplified prognostic tool derived from five objective parameters (lymphocyte count, urea, CRP, age, sex) which can be used to obtain valid predictions of mortality in patients within 60 days of SARS CoV-2 RT-PCR results. • LUCAS is available for free online and can be used to assist the triage of patients into low, moderate, high or very high risk of fatality.
01.05.2021	Consequences of the emergency response to COVID-19: a whole health care system review in a single city in the United Kingdom	BMC Emerg Med / Research	• Review of entire pathway of care of 522 patients whose death was registered in Salford during 8 weeks of first wave (primary care, secondary care, 111/999 calls) to create a single record of care. • An expert panel judged avoidability of death against the National Mortality Case Record Review Programme scale.

			• Initial emergency response had unforeseen consequences resulting in late presentation, sub-optimal assessments, and delays in receiving care. Death in more vulnerable groups was more likely to display avoidability themes.
28.04.2021	The 501Y.V2 SARS-CoV-2 variant has an intermediate viral load between the 501Y.V1 and the historical variants in nasopharyngeal samples from newly diagnosed COVID-19 patients	J Infect / Correspondence	• Analysis of 643 SARS-CoV-2 infected patients suggests that both 501Y.V1 and 501Y.V2 variants have statistically higher nasopharyngeal relative viral load (VL) at diagnosis than the historical lineages (3-10 times higher and 2 times higher respectively). • Higher VL at the first SARS-CoV-2 RT-PCR testing could be associated with a longer viral persistence of the virus, the contagious condition of patient and can be used as a predictive indicator of the severity of the disease

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Treatment

Publication Date	Title/URL	Journal / Article type	Digest
01.05.2021	Tocilizumab in patients admitted to hospital with COVID-19 (RECOVERY): a randomised, controlled, open-label, platform trial	Lancet / Article	• UK study of 4116 patients between 23.04.2020 and 24.01.2021 to evaluate the effects of Tocilizumab admitted to hospital with Covid-19 with both hypoxia and systemic inflammation. • In hospitalised COVID-19 patients with hypoxia and systemic inflammation, tocilizumab improved survival and other clinical outcomes. • Patients allocated to tocilizumab were more likely to be discharged from hospital within 28 days (57% vs 50%). • Among those not receiving invasive mechanical ventilation at baseline, patients allocated tocilizumab were less likely to reach composite endpoint of invasive mechanical ventilation or death (35% vs 42%). • Associated comment: https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(21)00712-1/fulltext • Previously included as a preprint
05.05.2021	Lenzilumab efficacy and safety in newly hospitalized Covid-19 subjects: results from the live-air phase 3 randomized double-blind placebo-controlled trial	medRxiv (non-peer reviewed) / Article	• Phase 3 trial: hospitalised adults with COVID-19 (n=520) not on invasive mechanical ventilation were randomised to receive lenzilumab (600 mg, n=261) or placebo (n=259). • Lenzilumab improved the likelihood of ventilator free survival by 54% in the mITT population (HR: 1.54) and by 90% in the ITT population (HR: 1.90) compared to placebo.

			• Survival was improved 2.17-fold in subjects with CRP<150 mg/L and age <85 years.

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Modelling

Publication Date	Title/URL	Journal / Article type	Digest
28.04.2021	Ahead of the Curve: Preventing a Third Wave of Covid-19	Tony Blair Institute for Global Change / Article	• Analysis of government policy in response to evidence from Imperial College London, and suggested actions to mitigate the risks of a third Covid-19 wave in the UK, including shifting the mix of vaccines, delaying the government's roadmap out of lockdown and expanding the vaccine programme to people aged 12 and upwards. • See also: Evaluating England's Roadmapout of Lockdown
05.05.2021	Modeling of Future COVID-19 Cases, Hospitalizations, and Deaths, by Vaccination Rates and Nonpharmaceutical Intervention Scenarios — United States, April–September 2021	MMWR Morb Mortal Wkly Rep / Article	• Data from six models indicate that with high vaccination coverage and moderate Non-pharmaceutical intervention (NPI) adherence, hospitalizations and deaths will likely remain low nationally, with a sharp decline in cases projected by July 2021. Lower NPI adherence could lead to substantial increases in severe COVID-19 outcomes, even with improved vaccination coverage. • US study including CDC COVID-19 Response Team
07.05.2021	Second waves, social distancing, and the spread of COVID-19 across America	Wellcome Open Res / Method Article	• This report describes an extension of a single region (epidemic) model; combined into a (pandemic) model of regions that collectively participate in a pandemic. • Focus on genesis of a second wave of new cases - and potential deaths - due to the loss of immunity within a regional population and the influx of people from other regions. • Applied to U.S statistics, treating each State as a separable region, to show possible predictions under a suitably configured model using state-of-the-art variational Bayesian model inversion and reduction.
03.05.2021	How detection ranges and usage stops impact digital contact tracing effectiveness for COVID-19	Sci Rep / Article	• Modelling the effectiveness of contact tracing (CT) apps with different proximity detection ranges (PDRs) and levels of usage • Discusses personal and cultural reasons for lack of use or discontinuation and suggests that choosing the right CT technology requires a compromise between factors such as effectiveness in controlling the epidemic, false positive quarantine, share of susceptible people, and privacy concerns

			• Findings confirm benefits of high adoption rates of CT apps but concludes that every participation can help to control the epidemic and increase the effectiveness of the CT itself

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Guidance and consensus statements

Publication Date	Title/URL	Journal / Article type
30.04.2021	EMG Transmission Group: Insights on transmission of COVID-19 with a focus on the hospitality, retail and leisure sector, 8 April 2021	Gov.uk (non-peer reviewed) / Research and analysis

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Overviews, comments and editorials

Publication Date	Title/URL	Journal / Article type
05.05.2021	Antibody Response to 2-Dose SARS-CoV-2 mRNA Vaccine Series in Solid Organ Transplant Recipients	JAMA / Research Letter
30.04.2021	NERVTAG: note on growth rate of SARS-CoV-2 B.1.1.7, 22 April 2021	Gov.uk (non-peer reviewed) / Research and analysis
03.05.2021	Considerations for the use of saliva as sample material for COVID-19 testing	European Centre for Disease Prevention and Control / Technical guidance
04.04.2021	Testing at scale during the COVID-19 pandemic	Nat Rev Genet / Review article
27.04.2021	COVID-19-associated coagulopathy and antithrombotic agents-lessons after 1 year	Lancet Haematol / Viewpoint

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