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Monkeypox Literature Digest – 03-10 November 2022

Dear all

Welcome to the UKHSA monkey pox (MPX) Literature Digest. This edition contains selected papers from 3 November 2022 – 10 November 2022.

This resource aims to highlight a small selection of recent MPX papers that are relevant to UK settings, contain new data, insights or emerging trends. The Digest includes both preprints, which should be treated with caution as they are NOT peer-reviewed and may be subject to change, and also research that has been subject to peer review and wider scrutiny.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.

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Best wishes,

Nicola Pearce-Smith and Michael Cook

Publication Date	Title/URL	Journal / Article Type	Digest
08.11.2022	Contact Tracing and Exposure Investigation in Response to the First Case of Monkeypox Virus Infection in the United States During the 2022 Global Monkeypox Outbreak	Annals of Internal Medicine / Article	<ul style="list-style-type: none">• This investigation describes the contact tracing, exposure identification, risk stratification, administration of postexposure prophylaxis (PEP) and exposure period monitoring for contacts of the first MPX index patient in Massachusetts, US in May 2022• There were 37 community and 129 health care contacts identified, with 4 at high risk, 49 at intermediate risk, and 113 at low or uncertain risk; 15 health care contacts developed symptoms during the monitoring period• No transmissions were identified at the conclusion of the 21-day

			monitoring period, despite the delay in recognition of MPX in the index patient
10.11.2022	Evaluation of 11 commercially available PCR kits for the detection of monkeypox virus DNA, Berlin, July to September 2022	Eurosurveillance / Article	<ul style="list-style-type: none"> • A study evaluating 11 commercially available PCR kits for the detection of monkeypox virus DNA. • The results show that the 11 evaluated kits showed comparable and high sensitivity to detect Clade I and Clade II monkeypox virus DNA though poor sampling may impact the test accuracy
14.10.2022	Mutations in the monkeypox virus replication complex: Potential contributing factors to the 2022 outbreak	Journal of Autoimmunity / Article	<ul style="list-style-type: none"> • This temporal analysis aimed to identify the specific mutations in the MPXV that contribute to its continued infectiousness during the 2022 MPX outbreak • Two mutations in F8L (RC catalytic subunit), and two in G9R (a processivity factor) were almost 100% prevalent in the 2022 sequences • The evolution of resistance mutations remains possible since critical functional pathways have already been susceptible to functional mutations within the viral proteins
11.10.2022	Global Differences in natural transmission rates of Monkeypox virus	Journal of Infection / Correspondence	<ul style="list-style-type: none"> • This study aims to quantify the transmissibility of MPX for regions and provide evidence to explain the transmission characteristics and regional heterogeneity of MPX, by estimating region-wise R0 and time-dependent reproduction number (Rt) • The global median R0 was 2.44, with R0 values of 3.54, 3.46 and 2.38 for the United States, Brazil, and Spain, respectively; the global mean value of median Rt is 1.29, and the mean value of median Rt value of 1.31, 1.33 and 1.11 for the United States, Brazil, and Spain • Even if the transmission of MPX is unlikely to reach the same scale as COVID-19, the R0 and Rt values derived from our study suggest an effective alert on the spread of MPX in high-risk population communities
07.11.2022	Immunological signature in human cases of monkeypox infection in 2022 outbreak: an observational study	The Lancet Infectious Diseases / Article	<ul style="list-style-type: none"> • This study aimed to describe kinetics of T-cell response, inflammatory profile, and pox-specific T-cell induction in patients with laboratory-confirmed MPX • The data showed that the immunological signature of MPXV infection, characterised by an early expansion of activated effector CD4+ and CD8+ T cells, persisted over time; almost all participants, regardless of HIV infection, developed a strong poxvirus-specific Th1 cell response

			<ul style="list-style-type: none"> • These results might have implications on the expected immunogenicity of monkeypox vaccination, suggesting that it might not be necessary to vaccinate people who have already been infected
10.11.2022	Epidemiological and clinical characteristics of patients with human monkeypox infection in Mexico: A nationwide observational study	The Lancet Regional Health – Americas / Article	<ul style="list-style-type: none"> • This country-wide study evaluated over 500 confirmed monkeypox cases in Mexico and is the first major epidemiologic study of monkeypox in Latin America • The 2022 monkeypox outbreak is occurring primarily among middle-aged MSM, more than half of which are living with HIV; close physical - particularly sexual-contact appears to be particularly relevant as a transmission mechanism • Findings are broadly consistent with those reported elsewhere in the current outbreak
05.11.2022	Real-time forecasting the trajectory of monkeypox outbreaks at the national and global levels, July – October 2022	medRxiv (non-peer reviewed) / Article	<ul style="list-style-type: none"> • This sub-epidemic modelling study generates 4-week ahead forecasts of MPX in near real-time at the global level and for Brazil, Canada, England, France, Germany, Spain and the United States • The forecasts continue to support an overall declining trend in the number of new cases of MPX at the global and country-specific levels • At the country level, the top-ranked model indicates that the highest number of new cases will be reported in the United States followed by Brazil and then Spain
04.11.2022	In silico identification of potential inhibitors of vital monkeypox virus proteins from FDA approved drugs	Molecular Diversity / Article	<ul style="list-style-type: none"> • This computational drug repurposing study aimed to identify the existing approved drugs which can be potential inhibitors of vital MPXV proteins, thymidylate kinase and D9 decapping enzyme • Four potential inhibitors were identified as candidates for repurposing against MPXV from a library of US FDA approved antiviral and antibiotic drugs: Tiplranavir, Cefiderocol, Doxorubicin, and Dolutegravir • Further experimental evaluations are needed to validate these 4 promising inhibitors of MPX proteins
25.08.2022	Monkeypox Virus Infection in Humans across 16 Countries - April-June 2022	New England Journal of Medicine / Article	<ul style="list-style-type: none"> • Collaborative international case series reporting 528 infections diagnosed between April 27 and June 24, 2022, at 43 sites in 16 countries. • 98% of population with infection were gay or bisexual men, 75% were White, and 41% had HIV the median age was 38 years. Transmission was suspected to have occurred through sexual activity in 95% of the persons

			<p>with infection.</p> <ul style="list-style-type: none"> • Presentation symptoms - 95% of the persons presented with a rash (with 64% having ≤ 10 lesions), 73% had anogenital lesions, and 41% had mucosal lesions
29.10.2022	Oral Manifestation of Monkeypox Virus: A systematic review and meta-analysis	Prospero / Protocol	<ul style="list-style-type: none"> • This is a protocol for a systematic review published in Prospero • The aim of this review is to ascertain the prevalence, risk factors, prognosis and time to onset of oral manifestations in monkeypox virus infection • The anticipated completion date is 31.12.2022
09.11.2022	Can the current monkeypox affect the heart? A Comprehensive Systematic Review	Research Gate (non-peer reviewed) / Systematic Review	<ul style="list-style-type: none"> • Systematic Review (search up until 27 Oct 2022) examining relationship between monkeypox infection and cardiac complications includes 7 cases over 5 relevant papers. • Authors claim this is first study to provide summary review about the cardiac complications of monkeypox infections. Findings indicate possibility of cardiac complications of monkeypox infection such as myocarditis, pericarditis, pericardial effusion and myopericarditis.
08.11.2022	Monkeypox outbreak: epidemiological overview, 8 November 2022	UKHSA / Data	<ul style="list-style-type: none"> • Up to 7 November 2022, there were 3,554 confirmed and 149 highly probable monkeypox cases detected in the UK: 3,703 in total. Of these, 94 were in Scotland, 34 were in Northern Ireland, 47 were in Wales and 3,528 were in England.
29.10.2022	ORF-Interrupting Mutations in Monkeypox Virus Genomes from Washington and Ohio, 2022	Viruses / Article	<ul style="list-style-type: none"> • This study identified 25 total clinical MPXV samples from Washington and Ohio with open reading frame (ORF)-disrupting mutations, using viral whole genome sequencing • Overall, greater than one-tenth of sequenced MPXV isolates had at least one gene inactivating mutation and these genes comprised greater than one-tenth of annotated MPXV genes • The findings highlight non-essential genes in MPXV that may be evolving as a result of selective pressure in humans, as well as the limitations of targeting them for therapeutics and diagnostic testing