The Strategy Unit
At NHS Midlands and Lancashire Commissioning Support Unit

COVID-19 Evidence Alert – 31st July 2020

Welcome

COVID-19 Evidence alert is a weekly update highlighting emerging evidence on the following key topics identified as useful in supporting Covid recovery planning:

1. Residential settings
2. Impacts of lifting restrictions
3. Long term rehabilitation needs
4. Screening and testing
5. Broader impacts on health outcomes
6. Impact on non-Covid care

This update follows on from a series of rapid evidence scans on these key topics, with corresponding evidence trackers providing details of relevant papers.

The evidence scans and corresponding evidence trackers can be found here: https://www.strategyunitwm.nhs.uk/covid19-and-coronavirus (see 'Evidence - Helping you to keep up to date').

We are also working on other key areas of interest such as impacts on inequalities and marginalised groups, which will be added to the alert once completed.

Please note that this week's alert excludes summaries of emerging evidence and rapid reviews and will instead present abstracts from these sources, due to the breadth and volume of evidence covered.

Analytical Collaboration for COVID-19

As previously described the collaboration is supporting ad hoc immediate questions raised by national bodies but are also using their expertise to focus on questions that the NHS may lack the immediate resources to look at, which may be more medium-term, cut across sectors, or benefit from independent analysis.

As part of the Analytical Collaboration on COVID-19 – and working with the NHSE/I Midlands region - the Strategy Unit has produced a model to support local systems working through the dynamics of elective recovery. The brief was to build a usable model that could be adopted and adapted locally, and that allowed the running of multiple scenarios to help inform local planning. We used a System Dynamics modelling approach to deliver this. The model was developed and tested with the NHSE/I Midlands region. The model is freely available for non-commercial use. Instructions on accessing the model and working with it are available here, alongside explanatory videos and supporting/related analyses on changes in activity patterns during COVID-19.

- **Modelling the impact of covid on waiting lists for planned care.** Wyatt S & Woodall M. The Strategy Unit. (published online July 2020).

Residential settings

Guidance

COVID-19 guide for drug and alcohol residential rehab and detox services. SCIE. (published online July 2020).

Emerging evidence

Preventing and managing COVID-19 across long-term care services: Policy brief, 24 July 2020. WHO Global. "The COVID-19 pandemic has affected older people disproportionately, especially those living in long-term care facilities. In many countries, evidence shows that more than 40% of COVID-19 related deaths have been linked to long-term care facilities, with figures being as high as 80% in some high-income countries. Concerted action is needed to mitigate the impact across all aspects of long-term care, including home- and community-based care, given that most users and providers of care are those who are vulnerable to severe COVID-19. This policy brief provides 11 policy objectives and key action points to prevent and manage COVID-19 across long-term care. Its intended audience is policy makers and authorities (national, subnational and local) involved in the COVID-19 pandemic. The brief builds on currently available evidence on the measures taken to prevent, prepare for and respond to the COVID-19 pandemic across long-term care services including care providers."

Care Homes and COVID-19: Results of an Online Survey in Germany. Rothgang H et al., International Long Term Care Policy Network. "About half of all COVID-19 deaths in Germany are of care home residents. This is similar to findings from other Western countries. Like in those countries, care homes are the most important hotspot for COVID-19 deaths. It is likely that the absolute number of deceased care home residents in Germany is lower than in other countries because COVID-19-related mortality is generally lower than in many other countries, not so much because there is better protection in care homes than elsewhere. 80 percent of all care homes do not have even one SARS-CoV-2 case among their residents. Of those that have cases, one third have eleven cases or more. Once the virus enters the facility, it seems to be difficult to prevent further spreading. At the beginning of the pandemic, care homes suffered from severe shortages of personal protective equipment and surface disinfectants. Since then, the situation has improved considerably but some shortages still persist. In order to protect their residents, care homes restricted all physical contact to persons outside the care home. Consequently, this restriction in itself has endangered the mental health of residents. These measures should be replaced by provisions that allow contact without significantly increasing the risk of infection. When the survey was conducted, residents and employees were only tested if they showed symptoms. As the results only return a few days later, most of the infections had happened by then. In order to restrict the spreading of the virus, it is therefore important to introduce regular serial testing of all care home employees, all visitors and those residents that move in or return from hospital."

COVID-19 and Long-Term Care Policy for Older People in Canada. Béland D & Marier P. Journal of Aging & Social Policy. "Older people are especially vulnerable to COVID-19, including and especially people living in long-term care facilities. In this Perspective, we discuss the impact of the COVID-19 pandemic on long-term care policy in Canada. More specifically, we use the example of recent developments in Quebec, where a tragedy in a specific facility is acting as a dramatic

"focusing event". It draws attention to the problems facing long-term care facilities, considering existing policy legacies and the opening of a "policy window" that may facilitate comprehensive reforms in the wake of the COVID-19 pandemic."

Risk Factors Associated With Mortality Among Residents With Coronavirus Disease 2019 (COVID-19) in Long-term Care Facilities in Ontario, Canada. Fisman DN et al., Infectious Diseases. "Objective: To better understand trends and risk factors associated with COVID-19 death in LTC facilities in Ontario, Canada. Design, Setting, and Participants: This cohort study of 627 LTC facilities included 269 total individuals who died of COVID-19 in Ontario to April 11, 2020, and 83 individuals who died of COVID-19 in Ontario LTC facilities to April 7, 2020. Because population denominators were not available for LTC residents, they were approximated as the total number of LTC facility beds in Ontario (79 498), assuming complete occupancy. Exposures: Confirmed or suspected COVID-19 outbreaks; confirmed COVID-19 infection among residents and staff, diagnosed by real-time polymerase chain reaction testing. Main Outcomes and Measures: COVID-19–specific mortality incidence rate ratios (IRRs) for LTC residents were calculated with community-living Ontarians older than 69 years as the comparator group. Count-based regression methods were used to model temporal trends and to identify associations of infection risk among staff and residents with subsequent LTC resident death. Model-derived IRRs for COVID-19–specific mortality were generated through bootstrap resampling (1000 replicates) to generate median and 95% credible intervals for IRR over time. Results: Of 627 LTC facilities, 272 (43.4%) reported COVID-19 infection in residents or staff. Of 1 731 315 total individuals older than 69 years living in Ontario during the study period, 229 (<0.1%) died; of 79 498 potential residents in LTC facilities, 83 (0.1%) died. The IRR for COVID-19–related death in LTC residents was 13.1 (95% CI, 9.9-17.3) compared with community-living adults older than 69 years. The IRR increased sharply over time and was 87.3 (95% credible interval, 6.4-769.8) by April 11, 2020. Infection among LTC staff was associated with death among residents with a 6-day lag (eg, adjusted IRR for death per infected staff member, 1.17; 95% CI, 1.11-1.26). Conclusions and Relevance: In this cohort study of COVID-19–related deaths during the pandemic in Ontario, Canada, mortality risk was concentrated in LTC residents and increased during a short period. Early identification of risk requires a focus on testing, providing personal protective equipment to staff, and restructuring the LTC workforce to prevent the movement of COVID-19 between facilities."

Social Distancing and Incarceration: Policy and Management Strategies to Reduce COVID-19 Transmission and Promote Health Equity Through Decarceration. Henry BF. Health Education & Behavior. "Incarcerated people are at disproportionately high risk of contracting COVID-19. Prisons are epicenters for COVID-19 transmission, including to the community. High rates of preexisting health conditions, limited access to quality health care, and inability to social distance make it impossible to reduce the impact of COVID-19 in prisons. Due to a history of compounded social determinants, incarcerated populations are disproportionately composed of people of color and people with stigmatized behavioral health disorders. Rapid decarceration is needed to promote health equity. Historical mass decarceration events demonstrate feasibility to rapidly release large groups of people while maintaining public safety. Iran and Ireland have released substantial portions of their prison populations by transitioning people to home confinement. In the United States and Uganda, some jurisdictions have reduced new incarcerations through policies that decrease arrests. These policies must be globally expanded to contain the epidemic, and its potential health consequences, while addressing health equity."

Prisons and COVID-19: A Desperate Call for Gerontological Expertise in Correctional Healthcare. **Prost SG et al., The Gerontologist.** "The large and continued growth of the older adult population within United States (US) prisons affects not only criminal justice policy and correctional health practice, but also gerontology. Amidst the unfolding COVID-19 crisis, associated knowledge and skills surrounding older adulthood will be critical to assuring the needs of older adults incarcerated in prisons are met during their detention, while undergoing off-site intervention in community settings, and when preparing for release. We outline several key areas for which gerontologists and associated practitioners are especially well-suited in the effort to curtail morbidity and mortality driven by the disease caused by the novel coronavirus. Critical gerontological knowledge and skills needed in prison healthcare include awareness regarding the unusual clinical presentations of COVID-19 among older adults, deconditioning among older adults due to immobility, challenges in prognostication, and advance care planning with older adults. Specific, targeted opportunities for gerontologists are identified to reduce growing risks for older adults incarcerated in prisons."

"We are Alone in This Battle": A Framework for a Coordinated Response to COVID-19 in Nursing Homes. **Behrens LL et al., Journal of Aging & Social Policy.** "As of May 2020, nursing home residents account for a staggering one-third of the more than 80,000 deaths due to COVID-19 in the U.S. This pandemic has resulted in unprecedented threats to achieving and sustaining care quality even in the best nursing homes, requiring active engagement of nursing home leaders in developing solutions responsive to the unprecedented threats to quality standards of care delivery during the pandemic. This perspective offers a framework, designed with the input of nursing home leaders, to facilitate internal and external decision-making and collective action to address these threats. Policy options focus on assuring a shared understanding among nursing home leaders and government agencies of changes in the operational status of nursing homes throughout the crisis, improving access to additional essential resources needed to mitigate the crisis' impact, and promoting shared accountability for consistently achieving accepted standards in core quality domains."

Mitigation of a COVID-19 Outbreak in a Nursing Home Through Serial Testing of Residents and Staff. **Escobar DJ et al., Clinical Infectious Diseases.** "Nursing homes and long-term care facilities represent highly vulnerable environments for respiratory disease outbreaks, such as COVID-19. We describe a COVID-19 outbreak in a nursing home that was rapidly contained by using a universal testing strategy of all residents and nursing home staff."

Nursing Home Staff Networks and COVID-19. **Chen MK et al., ArXiv. (pre-print).** "Nursing homes and other long term-care facilities account for a disproportionate share of COVID-19 cases and fatalities worldwide. Outbreaks in U.S. nursing homes have persisted despite nationwide visitor restrictions beginning in mid-March. An early report issued by the Centers for Disease Control and Prevention identified staff members working in multiple nursing homes as a likely source of spread from the Life Care Center in Kirkland, Washington to other skilled nursing facilities. The full extent of staff connections between nursing homes—and the crucial role these connections serve in spreading a highly contagious respiratory infection—is currently unknown given the lack of centralized data on cross-facility nursing home employment. In this paper, we perform the first large-scale analysis of nursing home connections via shared staff using device-level geolocation data from 30 million smartphones, and find that 7 percent of smartphones appearing in a nursing home also appeared in at least one other facility—even after visitor restrictions were imposed. We construct network

measures of nursing home connectedness and estimate that nursing homes have, on average, connections with 15 other facilities. Controlling for demographic and other factors, a home's staff-network connections and its centrality within the greater network strongly predict COVID-19 cases. Traditional federal regulatory metrics of nursing home quality are unimportant in predicting outbreaks, consistent with recent research. Results suggest that eliminating staff linkages between nursing homes could reduce COVID-19 infections in nursing homes by 44 percent."

Commentaries

Nursing Home Care in Crisis in the Wake of COVID-19. Davidson PM & Szanton SL. J Clin Nurs.

COVID-19-related deaths in long-term care: The moral failure to care and prepare. Faghanipour S et al., Nursing Ethics. (published 24/7/20).

COVID-19: digital equivalence of health care in English prisons. Edge C et al., Lancet Digital health. (published online 23/7/20)

Impacts of lifting restrictions

Commentary from the collaboration

As we face potential future waves of COVID-19, we must urgently understand how the UK differs from its neighbours and why. Tallack C. (published 30/7/20).

Guidance

Guidance for conducting a country COVID-19 intra-action review (IAR). WHO. (published online 23/7/20).

Emerging evidence

From "Coffin Dodger" to "Boomer Remover:" Outbreaks of Ageism in Three Countries with Divergent Approaches to Coronavirus Control. **Lichtenstein B. The Journals of Gerontology, gbaa102.** "Objectives: This article compares responses to coronavirus control in Australia, the United Kingdom, and the United States, three countries in which public ageism erupted over the social and economic costs of protecting older adults from the disease. Methods: Thirty-five (35) newspapers, media websites, and current affairs magazines were sourced for the study: 8 for Australia, 12 for the UK, and 15 for the United States. Searches were conducted daily from April-June 2020, using key words to identify age-related themes on pandemic control. Results. Despite divergent policies in the three countries, ageism took similar forms. Public responses to lockdowns and other measures cast older adults as a problem to be ignored or solved through segregation. Name-calling, blame, and "so-be-it" reactions towards age vulnerability were commonplace. Policies banning visits to aged care homes angered many relatives and older adults. Indefinite isolation for older adults was widely accepted, especially as a vehicle to end public lockdowns and economic crises. Discussion: Older adults have and will continue to bear the brunt of Covid-19 in terms of social burdens and body counts as the pandemic continues to affect people around the globe. The rhetoric of disposability underscores age discrimination on a broader scale, with blame towards an age cohort considered to have lived past its usefulness for society and to have enriched itself at the expense of future generations.

Willingness to receive a COVID-19 vaccine among adults at high-risk of COVID-19: a UK-wide survey. Thornelo R et al., PsyArXiv (pre-print). "Purpose Willingness of adults at high-risk of COVID-19to receive a COVID-19 vaccine is unknown. There are key disparities in the risk and outcomes from COVID-19 by socio-demographic factors, including age, sex, level of deprivation, and ethnicity. ACOVID-19 vaccination programme could inadvertently exacerbate these inequalities if it is not readily received by different population groups. In this UK-wide cross-sectional survey, we examined willingness to receive a COVID-19 vaccine in the general population and evaluated socio-demographic and clinical factors associated with willingness. Methods: Between April and June 2020, individuals in the general population were invited to complete an online survey; 2568 provided informed consent. Willingness to receive a COVID-19 vaccine was reported by2152 (83.8%).Results: In total, 76.9% (1654/2152) reported being willing to receive a COVID-19 vaccine. One in five individuals at increased risk of COVID-19, as defined by UK government guidelines, were unwilling to receive a COVID-19 vaccine (119/589; 20.2%). Individuals from white ethnic group were more likely to be willing to receive a COVID-19 vaccine compared with those from BAME groups (79.9% vs. 55.9%, respectively), OR 2.84, 96% CI = 1.93 –4.18, p ≤ 0.001. Willingness did not vary among adults at increased risk of COVID-19compared with those not at increased risk. Conclusion: A significant proportion of individuals in the general population are unwilling to receive a COVID-19 vaccine, including those at increased risk of COVID-19 morbidity and mortality. There are socio-demographic differences in willingness, especially by ethnic group. Success of a vaccination programme for COVID-19 depends not only on the efficacy of the vaccine but also on its uptake. Research is urgently needed to establish the most effective policy and communications to encourage maximal uptake of the vaccination."

Cross-country comparison of public awareness, rumours, and behavioural responses to the COVID-19 epidemic: An internet surveillance study. Hou Z et al., J Med Internet Res. "Background: Understanding the public's behavioural response to COVID-19 and accompanied infodemic is crucial to control an epidemic. Objective: To assess real-time public awareness and behavioural responses to the COVID-19 epidemic across 12 selected countries .Methods: Internet surveillance was used to collect real-time data from the general public to assess public awareness and rumours (China: Baidu; Worldwide: Google Trends) and behaviour response (China: Ali; Worldwide: Google Shopping). These indices measured the daily number of searching or purchasing, and were compared with daily COVID-19 cases. The trend comparisons across selected countries were observed from December 2019 (pre-pandemic baseline) to 11 April 2020 (when the lockdown lifted in Wuhan, China). Results: We identified the squandered windows of opportunity for early epidemic control in 12 countries, when public awareness was very low despite the emerging epidemic. China's epidemic and the declaration of a public health emergency of international concern did not prompt a worldwide public reaction to adopt public health protective measures; instead, most only responded to the epidemic after case counts mounted in their own country/region. Rumours and misinformation led to a surge of sales in herbal remedies in China and antimalarial drugs worldwide, and timely clarification of rumours mitigated the rush to buy unproven remedies. Conclusions: Our comparative study highlighted the urgency of international coordination to promote mutual learning on epidemic characteristics as well as effective control measures, and to trigger early and timely response in individual countries. The early release of official guidelines and timely clarification of rumours led by government are necessary to guide the public to take rational actions."

How Fear Appeal Approaches in COVID-19 Health Communication May Be Harming the Global Community. **Stowlow JA et al., Health Education & Behavior. "**As health professionals develop health communication for coronavirus disease 2019 (COVID-19), we implore that these communication approaches do not include fear appeals. Fear appeals, also known as scare tactics, have been widely used to promote recommended preventive behaviors. We contend that unintended negative outcomes can result from fear appeals that intensify the already complex pandemic and efforts to contain it. We encourage public health professionals to reevaluate their desire to use fear appeals in COVID-19 health communication and recommend that evidence-based health communication be utilized to address the needs of a specific community, help people understand what they are being asked to do, explain step-by-step how to complete preventative behaviors, and consider external factors needed to support the uptake of behaviors. To aid health professionals in redirecting away from the use of fear appeals, we offer a phased approach to creating health communication messages during the COVID-19 crisis."

Collectively Coping with Coronavirus: Local Community Identification Predicts Giving Support and Lockdown Adherence During the COVID-19 Pandemic. **Stevenson C et al., OSF Preprints. (pre-print).** "The role of shared identity in predicting both ingroup helping behaviour and adherence to protective norms during COVID-19 has been extensively theorized, but remains yet under-investigated. We build upon previous Social Identity research into community resilience by testing the role of pre existing local community (or 'neighbourhood') identity as a likely predictor of these outcomes, via the mediator of perceived social support, in the form of a longitudinal pre/post lockdown survey to explore these unfolding dynamics. Community residents in the UK completed a longitudinal online survey four months before lockdown (T1; N = 253), one month before lockdown (T2; N = 217), and two months into lockdown (T3; N = 149). Analyses of their responses indicated that T1 community identification positively predicted T3 giving and receiving of pandemic-related emotional support via T2 perceived community support. Moreover, T1 community identification positively predicted self-reported adherence to T3 lockdown norms of behaviour, and this relationship occurred via T2 perceived community support and T3 giving of pandemic-related emotional support. Our findings point to the pivotal role played by community identity in effective behavioural responses to the current pandemic, and the need to support and foster community development to facilitate local community resilience as the crisis continues to unfold."

Collaborating During Coronavirus: The Impact of COVID-19 on the Nature of Work. **DeFilippis E et al., Harvard Business School. "**We explore the impact of COVID-19 on employee's digital communication patterns through an event study of lockdowns in 16 large metropolitan areas in North America, Europe and the Middle East. Using deidentified, aggregated meeting and email meta-data from 3,143,270 users, we find, compared to prepandemic levels, increases in the number of meetings per person (+12.9 percent) and the number of attendees per meeting (+13.5 percent), but decreases in the average length of meetings (-20.1 percent). Collectively, the net effect is that people spent less time in meetings per day (-11.5 percent) in the postlockdown period. We also find significant and durable increases in length of the average workday (+8.2 percent, or +48.5 minutes), along with short-term increases in email activity. These findings provide insight from a novel dataset into how the nature of work has changed for a large sample of knowledge workers. We discuss these changes in light of the ongoing challenges faced by organizations and workers struggling to adapt and perform in the face of a global pandemic."

Simulating the effect of school closure during COVID-19 outbreaks in Ontario, Canada. **Abdollahi E et al., BMC Medicine.** "Background: The province of Ontario, Canada, has instituted indefinite school closures (SC) as well as other social distancing measures to mitigate the impact of the novel coronavirus disease 2019 (COVID-19) pandemic. We sought to evaluate the effect of SC on reducing attack rate and the need for critical care during COVID-19 outbreaks, while considering scenarios with concurrent implementation of self-isolation (SI) of symptomatic cases. Methods: We developed an age-structured agent-based simulation model and parameterized it with the demographics of Ontario stratified by age and the latest estimates of COVID-19 epidemiologic characteristics. Disease transmission was simulated within and between different age groups by considering inter- and intra-group contact patterns. The effect of SC of varying durations on the overall attack rate, magnitude and peak time of the outbreak, and requirement for intensive care unit (ICU) admission in the population was estimated. Secondly, the effect of concurrent community-based voluntary SI of symptomatic COVID-19 cases was assessed. Results: SC reduced attack rates in the range of 7.2–12.7% when the duration of SC increased from 3 to 16 weeks, when contacts among school children were restricted by 60–80%, and in the absence of SI by mildly symptomatic persons. Depending on the scenario, the overall reduction in ICU admissions attributed to SC throughout the outbreak ranged from 3.3 to 6.7%. When SI of mildly symptomatic persons was included and practiced by 20%, the reduction of attack rate and ICU admissions exceeded 6.3% and 9.1% (on average), respectively, in the corresponding scenarios. Conclusion: Our results indicate that SC may have limited impact on reducing the burden of COVID-19 without measures to interrupt the chain of transmission during both pre-symptomatic and symptomatic stages. While highlighting the importance of SI, our findings indicate the need for better understanding of the epidemiologic characteristics of emerging diseases on the effectiveness of social distancing measures."

When and How to Lift the Lockdown? Global COVID-19 Scenario Analysis and Policy Assessment using Compartmental Gaussian Processes. **Qian Z et al., ArXiv.** "The coronavirus disease 2019 (COVID-19) global pandemic has led many countries to impose unprecedented lockdown measures in order to slow down the outbreak. Questions on whether governments have acted promptly enough, and whether lockdown measures can be lifted soon have since been central in public discourse. Data-driven models that predict COVID-19 fatalities under different lockdown policy scenarios are essential for addressing these questions and informing governments on future policy directions. To this end, this paper develops a Bayesian model for predicting the effects of COVID-19 lockdown policies in a global context -- we treat each country as a distinct data point, and exploit variations of policies across countries to learn country-specific policy effects. Our model utilizes a two-layer Gaussian process (GP) prior -- the lower layer uses a compartmental SEIR (Susceptible, Exposed, Infected, Recovered) model as a prior mean function with "country-and-policy-specific" parameters that capture fatality curves under "counterfactual" policies within each country, whereas the upper layer is shared across all countries, and learns lower-layer SEIR parameters as a function of a country's features and its policy indicators. Our model combines the solid mechanistic foundations of SEIR models (Bayesian priors) with the flexible data-driven modeling and gradient-based optimization routines of machine learning (Bayesian posteriors) -- i.e., the entire model is trained end-to-end via stochastic variational inference. We compare the projections of COVID-19 fatalities by our model with other models listed by the Center for Disease Control (CDC), and provide scenario analyses for various lockdown and reopening strategies highlighting their impact on COVID-19 fatalities."

Strategies to reduce the risk of SARS-CoV-2 re-introduction from international travellers. **Clifford S et al., MedRxiv (pre-print). (published online 25/7/20).** "To mitigate SARS-CoV-2 transmission risks from international travellers, many countries currently use a combination of up to 14 days of self-quarantine on arrival and testing for active infection. We used a simulation model of air travellers arriving to the UK from the EU or the USA and the timing of their stages of infection to evaluate the ability of these strategies to reduce the risk of seeding community transmission. We find that a quarantine period of 8 days on arrival with a PCR test on day 7 (with a 1-day delay for test results) can reduce the number of infectious arrivals released into the community by a median 94% compared to a no quarantine, no test scenario. This reduction is similar to that achieved by a 14-day quarantine period (median 99% reduction). Shorter quarantine periods still can prevent a substantial amount of transmission; all strategies in which travellers spend at least 5 days (the mean incubation period) in quarantine and have at least one negative test before release are highly effective (e.g. a test on day 5 with release on day 6 results in a median 88% reduction in transmission potential). Without intervention, the current high prevalence in the US (40 per 10,000) results in a higher expected number of infectious arrivals per week (up to 23) compared to the EU (up to 12), despite an estimated 8 times lower volume of travel in July 2020. Requiring a 14-day quarantine period likely results in less than 1 infectious traveller each entering the UK per week from the EU and the USA (97.5th percentile). We also find that on arrival the transmission risk is highest from pre-symptomatic travellers; quarantine policies will shift this risk increasingly towards asymptomatic infections if eventually-symptomatic individuals self-isolate after the onset of symptoms. As passenger numbers recover, strategies to reduce the risk of re-introduction should be evaluated in the context of domestic SARS-CoV-2 incidence, preparedness to manage new outbreaks, and the economic and psychological impacts of quarantine."

The effectiveness of eight nonpharmaceutical interventions against COVID-19 in 41 countries. **Brauner JM et al., MedRxiv (pre-print). (published online 23/7/20**). "Background: Governments are attempting to control the COVID-19 pandemic with nonpharmaceutical interventions (NPIs). However, it is still largely unknown how effective different NPIs are at reducing transmission. Data-driven studies can estimate the effectiveness of NPIs while minimizing assumptions, but existing analyses lack sufficient data and validation to robustly distinguish the effects of individual NPIs. Methods: We collect chronological data on NPIs in 41 countries between January and May 2020, using independent double entry by researchers to ensure high data quality. We estimate NPI effectiveness with a Bayesian hierarchical model, by linking NPI implementation dates to national case and death counts. To our knowledge, this is the largest and most thoroughly validated data-driven study of NPI effectiveness to date. Results: We model each NPI's effect as a multiplicative (percentage) reduction in the reproduction number R. We estimate the mean reduction in R across the countries in our data for eight NPIs: mandating mask-wearing in (some) public spaces (2%; 95% CI: -14%-16%), limiting gatherings to 1000 people or less (2%; -20%-22%), to 100 people or less (21%; 1%-39%), to 10 people or less (36%; 16%-53%), closing some high-risk businesses (31%; 13%-46%), closing most nonessential businesses (40%; 22%-55%), closing schools and universities (39%; 21%-55%), and issuing stay-at-home orders (18%; 4%-31%). These results are supported by extensive empirical validation, including 15 sensitivity analyses. Conclusions: Our results suggest that, by implementing effective NPIs, many countries can reduce R below 1 without issuing a stay-at-home order. We find a surprisingly large role for school and university closures in reducing COVID-19 transmission, a contribution to the ongoing debate about the relevance of asymptomatic carriers in disease spread. Banning gatherings and closing high-risk businesses can be

highly effective in reducing transmission, but closing most businesses only has limited additional benefit."

Lessons from South Korea Regarding the Early Stage of the COVID-19 Outbreak. Chang MC et al., Healthcare, MDPI. (published online 24/7/20). "South Korea has experienced difficulty in controlling the spread of the novel coronavirus disease (COVID-19) during the early stages of the outbreak. South Korea remains passionately determined to protect Koreans against COVID-19 and through trial and error hopes to improve the strategies used to limit the outbreak. Here, we review how COVID-19 spread and what prevention strategies were implemented during the early stages of the outbreak in South Korea. We investigated online newspapers published in South Korea from 21 January 2020 to 20 March 2020, and reviewed academic medical articles related to COVID-19. Additionally, we acquired data on COVID-19 cases through the official website for COVID-19 in South Korea. To date, numerous measures have been applied by the government and the medical community during the early stages of the COVID-19 outbreak including the reporting of methods for diagnostic testing, patient classification, the introduction of drive-through screening centers, COVID-19 preventive measures, implementation of government policies for the shortage of face masks, and entry restrictions. Here, we present data from the early stages of the COVID-19 outbreak and measures to prevent its spread in South Korea. We believe that sharing the experience of South Korea during the COVID-19 outbreak can help other countries to implement strategies to prevent its rapid transmission."

Comparison of Face-Touching Behaviors Before and During the Coronavirus Disease 2019 Pandemic. Chen YJ et al., JAMA Network Open. "This cross-sectional study used videos recorded in public transportation stations, streets, and parks among the general population in China, Japan, South Korea, Western Europe (ie, England, France, Germany, Spain, and Italy), and the US to analyze maskwearing and face-touching behavior in public areas. Videos before the COVID-19 pandemic were defined as those recorded from January 2018 to October 2019, and those during the COVID-19 pandemic were defined as those recorded during February 2020 to March 2020 in China, Japan, and South Korea and during March 2020 in Western Europe and the US. Individuals who clearly displayed their face and face-touching behavior were included, and those whose behaviors were influenced by filming or public events were excluded. This study included 4699 individuals before the COVID-19 pandemic and 2887 individuals during the pandemic. During the periods studied, mask wearing increased in all regions except the US, from 20 of 1745 individuals (1.1%) to 1090 of 1097 individuals (99.4%) in mainland China (P < .001), 44 of 1422 individuals (3.1%) to 346 of 893 individuals (38.7%) in Japan (P < .001), 6 of 717 individuals (0.8%) to 277 of 324 individuals (85.5%) in South Korea (P < .001), 1 of 546 individuals (0.2%) to 6 of 379 individuals (1.6%) in Western Europe (P = .02), and 1 of 269 individuals (0.4%) to 4 of 194 individuals (2.1%) in the US (P = .17). Surgical masks were predominant in China (989 masks [89.1%]), and fabric masks were predominant in the other regions (Japan: 371 masks [95.1%]; South Korea: 240 masks [84.8%]; Western Europe: 6 masks [85.7%]; US: 5 masks [100%]). Face-touching behaviors decreased from before COVID-19 to during COVID-19 among individuals in China (72 incidences of 1745 observations [4.1%] to 12 incidences of 1097 observations [1.1%]; P < .001), South Korea (80 incidences of 717 observations [11.2%] to 7 incidences of 324 observations [2.2%]; P < .001), and Europe (62 incidences of 546 observations [11.4%] to 23 incidences of 379 observations [6.1%]; P = .01). Logistic regression found that mask wearing was associated with a reduction in face touching in China (odds ratio [OR], 3.91; 95% CI, 2.11-7.24) and South Korea (OR6.69; 95% CI, 2.69-16.69) and of touching the nose, mouth, and eyes

(China: OR, 8.60; 95% CI, 2.65- 27.86; South Korea: OR, 29.27; 95% CI, 1.79-478.22). This cross-sectional study found that mandatory mask-wearing policies increased the mask-wearing rate among the general population during the COVID-19 pandemic. Wearing either a medical or fabric mask was associated with reduced face-touching behaviors, which might prevent transmission of COVID-19 among the general population in public areas."

Commentaries

Five principles for pandemic preparedness: lessons from the Australian COVID-19 primary care response. Kidd MR. BJGP. (published online July 2020).

Can self-imposed prevention measures mitigate the COVID-19 epidemic? Zhang L et al., PLOS Medicine. (published online 21/7/20).

Policy responses to Covid-19: what worked, what didn't, and why? Mthiyane H et al., HSR UK. (published online July 2020).

Long term rehabilitation needs

Emerging evidence

Multi-Inflammatory Syndrome in Children related to SARS-CoV-2 in Spain. Moraleda C et al., Clinical Infectious Diseases."Some clusters of children with a multisystem inflammatory syndrome associated with SARS-CoV-2 infection (MIS-C) have been reported. We describe the epidemiological and clinical features of children with MIS-C in Spain. MIS-C is a potentially severe condition that presents in children with recent SARS-CoV-2 infection."

Symptom Duration and Risk Factors for Delayed Return to Usual Health Among Outpatients with COVID-19 in a Multistate Health Care Systems Network — United States, March–June 2020. CDC Morbidity and Mortality Weekly Report. "Relatively little is known about the clinical course of COVID-19 and return to baseline health for persons with milder, outpatient illness. In a multistate telephone survey of symptomatic adults who had a positive outpatient test result for SARS-CoV-2 infection, 35% had not returned to their usual state of health when interviewed 2–3 weeks after testing. Among persons aged 18–34 years with no chronic medical conditions, one in five had not returned to their usual state of health. COVID-19 can result in prolonged illness, even among young adults without underlying chronic medical conditions. Effective public health messaging targeting these groups is warranted."

Respiratory rehabilitation for post-COVID19 patients in spa centers: first steps from theory to practice. Antonelli M & Donelli D. International Journal of Biometeorology. "With this correspondence, we would like to briefly outline a practical perspective about a possible integrative and effective management in spa settings of COVID-19 long-term sequelae, with a keen focus on post-infective lung damage and fibrosis, which is expected to become epidemiologically relevant in the general population. In order to outline a standard/baseline model of care, we think that it can be useful to refer to already existing rehabilitative plans with a long-standing tradition in Italy, such as those ones prescribed for work-related respiratory diseases like pneumoconiosis, in which long-term outcomes share some clinical characteristics with post-infective lung fibrosis. Such programs include diagnostic procedures (spirometry, ECG, blood tests) and treatments like respiratory physio-

kinesiotherapy and postural drainage of the lungs; mechanical pulmonary ventilation for rehabilitative purposes, with or without drugs, along with standard medical and, when required, oxygen therapy; inhalation therapies with mineral waters; physical activity and psychological support. In conclusion, we believe that spa facilities can be a proper setting for respiratory rehabilitation and that already existing programs employed in occupational medicine can be a good starting point to plan rehabilitative strategies for post-COVID-19 patients. In particular, health spa centers can be useful not only to offer tailored programs of physical rehabilitation but also to provide patients with a psychologically supportive and health promoting environment. Further studies on the topic are advised to properly assess and quantify with adequate outcome measurements the beneficial effect of a spa-based rehabilitative program in post-COVID-19 patients."

Outcomes of Cardiovascular Magnetic Resonance Imaging in Patients Recently Recovered From Coronavirus Disease 2019 (COVID-19). Puntmann VO et al., JAMA Cardiology. "Question: What are the cardiovascular effects in unselected patients with recent coronavirus disease 2019 (COVID-19)? Findings: In this cohort study including 100 patients recently recovered from COVID-19 identified from a COVID-19 test center, cardiac magnetic resonance imaging revealed cardiac involvement in 78 patients (78%) and ongoing myocardial inflammation in 60 patients (60%), which was independent of pre-existing conditions, severity and overall course of the acute illness, and the time from the original diagnosis. Meaning: These findings indicate the need for ongoing investigation of the long-term cardiovascular consequences of COVID-19."

Commentaries

Patients with COVID-19 Face Prolonged Neurocognitive Recovery After Ventilation. Hurley D. Neurology Today. (published online 23/7/20).

Covid-19 Long Haulers: Meaning, Symptoms, Support Groups. Conte Jr. RL. COVID.US.ORG. (published online 12/7/20).

Cardiac rehabilitation in the time of COVID19. Babu AS. Global Heart. (published online 14/7/20).

Characteristics of ischaemic stroke associated with COVID-19. Beyrouti R et al., J Neurosurg Psychiatry.

Screening and testing

Rapid reviews

COVID-19 screening in patients without defined COVID-19 symptoms, admitted through emergency departments in three AHS hospitals: Final report of a pilot project. Ravani P et al., Alberta Health Services, COVID-19 Scientific Advisory Group. "SARS-CoV-2, the virus responsible for COVID-19, is thought to be primarily transmitted from symptomatic patients, through respiratory droplet and close contact spread. While seemingly less common, transmission of SARS-CoV-2 is possible from people without classic respiratory symptoms (e.g., asymptomatic / presymptomatic / pauci-symptomatic), although mostly this has been documented in close quarters (e.g., within households). If patients who are asymptomatic / pre-symptomatic and unknowingly positive for

SARS-CoV-2 are admitted to hospital, there is concern of transmission to healthcare workers (HCW) and/or other patients. In the general population, the proportion with asymptomatic carriage ranges from an estimated 0.35% in Iceland to 1.5% in Northern Italy. In Alberta, the Boyle McCauley Health Centre undertook asymptomatic testing from May 11th to 27th outside the Expo Day Drop-in Centre. Symptoms were carefully assessed. Of 251 asymptomatic people tested, none tested positive (internal report). In a report of 16749 hospitalized COVID-19 patients in the UK, 7% of hospitalized patients would not meet an influenza-like illness (ILI) case definition, though the quality of the symptom assessment is uncertain and varies slightly from our case definition below. There have been examples of inpatient outbreaks of COVID-19, including one at the Montreal Neurological Hospital which resulted in temporary hospital closure. As a result, the McGill University Health Centre has adopted a policy of testing all patients admitted to hospital through the emergency department, including asymptomatic patients, for COVID-19. It is unclear whether COVID-19 reverse-transcription polymerase chain reaction (RT-PCR) screening of asymptomatic people at hospital admission would contribute to reducing risk of in-hospital transmission of SARS-CoV-2 under current conditions in Alberta."

What is known about using wastewater surveillance to monitor the COVID-19 pandemic in the community? National Collaborating Centre for Methods and Tools. (updated 29/7/20). "More single studies have found that the virus that causes COVID-19 has been found in untreated wastewater in numerous jurisdictions. The findings are consistent, although not every sample detects the virus. Some of the added studies found that the concentration of viral RNA was correlated with the number of cases in surrounding areas. The findings are consistent."

Emerging evidence

What does RCGP surveillance tell us about COVID-19 in the community? Heneghan C & Jefferson T. Oxford CEBM. (updated 31/7/20). "The current community transmission of COVID is low and not at epidemic levels. The rates are less than that of confirmed cases in the UK. This could be explained by asymptomatic people or those with mild infections not seeking out testing in primary care. The observed reductions in URTIs and LRTIs suggest that most of the effect on rates of transmission occurred through the encouragement of social distancing."

Nosocomial spread of COVID-19: lessons learned from an audit on a stroke/neurology ward in a UK district general hospital. Jewkes SV et al., Clinical Medicine. "We describe the details of a COVID-19 outbreak in a 25-bedded Birmingham neurology/stroke ward in the early phase of the pandemic (March to May 2020). Twenty-one of 133 admissions (16%) tested positive for COVID-19 and of those, 8 (6% of all admissions to the ward) were determined to be nosocomial. Thus 38% (8/21) of COVID-19 infections were hospital-acquired. Ten of the patients that contracted COVID-19 died; of these three were hospital-acquired cases. Five of the 21 patients had negative swabs prior to receiving a positive test result. This study highlights the importance of appropriate use of personal protective equipment (PPE) with high-risk patients (including those with stroke and complex brain injury with tracheostomies) and the difficulties of COVID-19 management in a high-risk patient population."

Effective Contact Tracing for COVID-19: A Systematic Review. Juneau CE et al., MedRxiv (pre-print). (published online 25/7/20). "Background: Contact tracing is commonly recommended to control outbreaks of COVID-19, but its effectiveness is unclear. This systematic review aimed to

examine contact tracing effectiveness in the context of COVID-19. Methods: Following PRISMA guidelines, MEDLINE, Embase, Global Health, and All EBM Reviews were searched using a range of terms related to contact tracing for COVID-19. Articles were included if they reported on the ability of contact tracing to slow or stop the spread of COVID-19 or on characteristics of effective tracing efforts. Two investigators screened all studies. Results: A total of 32 articles were found. All were observational or modelling studies, so the quality of the evidence was low. Observational studies (n=14) all reported that contact tracing (alone or in combination with other interventions) was associated with better control of COVID-19. Results of modelling studies (n=18) depended on their assumptions. Under assumptions of prompt and thorough tracing with no further transmission, they found that contact tracing could stop an outbreak (e.g. by reducing the reproduction number from 2.2 to 0.57) or that it could reduce infections (e.g. by 24%-71% with a mobile tracing app). Under assumptions of slower, less efficient tracing, modelling studies suggested that tracing could slow, but not stop COVID-19. Conclusions: Observational and modelling studies suggest that contact tracing is associated with better control of COVID-19. Its effectiveness likely depends on a number of factors, including how many and how fast contacts are traced and quarantined, and how effective quarantines are at preventing further transmission. A cautious interpretation suggests that to stop the spread of COVID-19, public health practitioners have 2-3 days from the time a new case develops symptoms to isolate the case and quarantine at least 80% of its contacts, and that once isolated, cases and contacts should infect zero new cases. Less efficient tracing may slow, but not stop, the spread of COVID-19. Inefficient tracing (with delays of 4-5+ days or less than 60% of contacts quarantined with no further transmission) may not contribute meaningfully to control of COVID-19."

Point-of-care serological assays for delayed SARS-CoV-2 case identification among health-care workers in the UK: a prospective multicentre cohort study. Pallett SJC et al., The Lancet Respiratory Medicine. "Health-care workers constitute a high-risk population for acquisition of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection. Capacity for acute diagnosis via PCR testing was limited for individuals with mild to moderate SARS-CoV-2 infection in the early phase of the COVID-19 pandemic and a substantial proportion of health-care workers with suspected infection were not tested. We aimed to investigate the performance of point-of-care and laboratory serology assays and their utility in late case identification, and to estimate SARS-CoV-2 seroprevalence. We did a prospective multicentre cohort study between April 8 and June 12, 2020, in two phases. Symptomatic health-care workers with mild to moderate symptoms were eligible to participate 14 days after onset of COVID-19 symptoms, as per the Public Health England (PHE) case definition. Health-care workers were recruited to the asymptomatic cohort if they had not developed PHE-defined COVID-19 symptoms since Dec 1, 2019. In phase 1, two point-of-care lateral flow serological assays, the Onsite CTK Biotech COVID-19 split IgG/IgM Rapid Test (CTK Bitotech, Poway, CA, USA) and the Encode SARS-CoV-2 split IgM/IgG One Step Rapid Test Device (Zhuhai Encode Medical Engineering, Zhuhai, China), were evaluated for performance against a laboratory immunoassay (EDI Novel Coronavirus COVID-19 IgG ELISA kit [Epitope Diagnostics, San Diego, CA, USA]) in 300 samples from health-care workers and 100 pre-COVID-19 negative control samples. In phase 2 (n=6440), serosurveillance was done among 1299 (93·4%) of 1391 health-care workers reporting symptoms, and in a subset of asymptomatic health-care workers (405 [8·0%] of 5049). There was variation in test performance between the lateral flow serological assays; however, the Encode assay displayed reasonable IgG sensitivity (127 of 136; 93·4% [95% CI 87·8–96·9]) and specificity (99 of 100; 99·0% [94·6–100·0]) among PCR-proven cases and good agreement (282 of 300; 94·0% [91·3–96·7]) with the laboratory immunoassay. By contrast, the Onsite assay had

reduced sensitivity (120 of 136; 88·2% [95% CI 81·6–93·1]) and specificity (94 of 100; 94·0% [87·4–97·8]) and agreement (254 of 300; 84·7% [80·6–88·7]). Five (7%) of 70 PCR-positive cases were negative across all assays. Late changes in lateral flow serological assay bands were recorded in 74 (9·3%) of 800 cassettes (35 [8·8%] of 400 Encode assays; 39 [9·8%] of 400 Onsite assays), but only seven (all Onsite assays) of these changes were concordant with the laboratory immunoassay. In phase 2, seroprevalence among the workforce was estimated to be 10·6% (95% CI 7·6–13·6) in asymptomatic health-care workers and 44·7% (42·0–47·4) in symptomatic health-care workers. Seroprevalence across the entire workforce was estimated at 18·0% (95% CI 17·0–18·9). Although a good positive predictive value was observed with both lateral flow serological assays and ELISA, this agreement only occurred if the pre-test probability was modified by a strict clinical case definition. Late development of lateral flow serological assay bands would preclude postal strategies and potentially home testing. Identification of false-negative results among health-care workers across all assays suggest caution in interpretation of IgG results at this stage; for now, testing is perhaps best delivered in a clinical setting, supported by government advice about physical distancing."

COVID-19 screening strategies that permit the safe re-opening of college campuses. Patiel AD et al., MedRxiv (preprint). "Importance: The COVID-19 pandemic poses an existential threat to many US residential colleges: either they open their doors to students in September or they risk serious financial consequences. Objective: To define SARS-CoV-2 screening performance standards that would permit the safe return of students to campus for the Fall 2020 semester. Design: Decision and cost-effectiveness analysis linked to a compartmental epidemic model to evaluate campus screening using tests of varying frequency (daily-weekly), sensitivity (70%-99%), specificity (98%-99.7%), and cost ($10-$50/test). Reproductive numbers Rt = {1.5, 2.5, 3.5} defined three epidemic scenarios, with additional infections imported via exogenous shocks. We generally adhered to US government guidance for parameterization data. Participants: A hypothetical cohort of 5000 college-age, uninfected students. Main Outcome(s) and Measure(s): Cumulative tests, infections, and costs; daily isolation dormitory census; incremental cost-effectiveness; and budget impact. All measured over an 80-day, abbreviated semester. Results: With Rt = 2.5, daily screening with a 70% sensitive, 98% specific test produces 85 cumulative student infections and isolation dormitory daily census averaging 108 (88% false positives). Screening every 2 (7) days nets 135 (3662) cumulative infections and daily isolation census 66 (252) with 73% (4%) false positives. Across all scenarios, test frequency exerts more influence on outcomes than test sensitivity. Cost-effectiveness analysis selects screening every {2, 1, 7} days with a 70% sensitive test as the preferred strategy for Rt = {2.5, 3.5, 1.5}, implying a screening cost of {$470, $920, $120} per student per semester. Conclusions & Relevance: Rapid, inexpensive and frequently conducted screening (even if only 70% sensitive) would be cost-effective and produce a modest number of COVID-19 infections. While the optimal screening frequency hinges on the success of behavioral interventions to reduce the base severity of transmission (Rt), this could permit the safe return of student to campus."

Detection of COVID-19: A review of the current literature and future perspectives. Ji T et al., Biosens Bioelectron. "The rapid spread of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) has led to the coronavirus disease 2019 (COVID-19) worldwide pandemic. This unprecedented situation has garnered worldwide attention. An effective strategy for controlling the COVID-19 pandemic is to develop highly accurate methods for the rapid identification and isolation of SARS-CoV-2 infected patients. Many companies and institutes are therefore striving to develop effective methods for the rapid detection of SARS-CoV-2 ribonucleic acid (RNA), antibodies, antigens,

and the virus. In this review, we summarize the structure of the SARS-CoV-2 virus, its genome and gene expression characteristics, and the current progression of SARS-CoV-2 RNA, antibodies, antigens, and virus detection. Further, we discuss the reasons for the observed false-negative and false-positive RNA and antibody detection results in practical clinical applications. Finally, we provide a review of the biosensors which hold promising potential for point-of-care detection of COVID-19 patients. This review thereby provides general guidelines for both scientists in the biosensing research community and for those in the biosensor industry to develop a highly sensitive and accurate point-of-care COVID-19 detection system, which would be of enormous benefit for controlling the current COVID-19 pandemic."

Drive-thru pharmacy services: a way forward to combat COVID-19 pandemic. Huassain R et al., Res in Soc & Admin Pharma. "Countries around the globe have responded to pandemic preparedness and developed strategies to cope with the COVID-19 crisis. In this context, the role of healthcare professionals is of paramount importance. Pharmacists are playing a vital role in dealing, preparedness, prevention, protection, promoting access to medicines and to improve health outcomes during this crisis. In this context, "Drive-thru" pharmacy services improve access to medicines while ensuring the preventive measures suggested by the World Health Organization. This commentary provides an overview of opportunities and challenges related to the implementation of "drive-thru pharmacy services" and their role in improving public health during this crisis."

Fecal Shedding of SARS-CoV-2 and its Potential Role in Person-To-Person Transmission and the Environment-Based Spread of COVID-19. Jones DL et al., Pre-prints.org. (pre-print). "The recent detection of SARS-CoV-2 RNA in feces has led to speculation that it can be transmitted via the fecal-oral/ocular route. This review aims to critically evaluate the incidence of gastrointestinal (GI) symptoms, the quantity and infectivity of SARS-CoV-2 in feces and urine, and whether these pose an infection risk in sanitary settings, sewage networks, wastewater treatment plants, and the wider environment (e.g. rivers, lakes and marine waters). Overall, severe GI dysfunction is only evident in a small number of COVID-19 cases, with 11 ± 2% exhibiting diarrhea and 12 ± 3% exhibiting vomiting and nausea. In addition to these cases, SARS-CoV-2 RNA can be detected in feces from some asymptomatic, mildly- and pre-symptomatic individuals. Fecal shedding of the virus peaks in the symptomatic period and can persist for several weeks, but with declining abundances in the post-symptomatic phase. SARS-CoV-2 RNA is occasionally detected in urine, but reports in fecal samples are more frequent. The abundance of the virus genetic material in both urine (ca. 102 -105 gc/ml) and feces (ca. 102 -107 gc/ml) is much lower than in nasopharyngeal fluids (ca. 105 -1011 gc/ml). There is strong evidence of multiplication of SARSCoV-2 in the GI tract and infectious virus has occasionally been recovered from both urine and stool samples. The level and infectious capability of SARS-CoV-2 in vomit remain unknown. In comparison to enteric viruses transmitted via the fecal-oral route (e.g. norovirus, adenovirus), the likelihood of SARS-CoV-2 being transmitted via feces or urine appears lower due to the lower relative amounts of virus present in feces/urine. The biggest risk of transmission will occur in clinical and care home settings where secondary handling of people and urine/fecal matter occurs. In addition, while SARS-CoV-2 RNA genetic material can be detected by in wastewater, this signal is greatly reduced by conventional treatment. Our analysis also suggests the likelihood of infection due to contact with sewage-contaminated water (e.g. swimming, surfing, angling) or food (e.g. salads, shellfish) is extremely low or negligible based on very low predicted abundances and limited environmental survival of SARS-CoV-2. These conclusions are corroborated

by the fact that over eight million global cases of COVID-19 have occurred, but exposure to feces or wastewater has never been implicated as a transmission vector."

Commentaries

The atypical presentation of COVID-19 as gastrointestinal disease: key points for primary care. Ong J & Low JG. BJGP.

Universal Testing-Based Response to COVID-19 Outbreak by a Long-Term Care and Post-Acute Care Facility. Bakaev I et al., Journal of the American Geriatrics Society.

Rapid Scaling Up of Covid-19 Diagnostic Testing in the United States — The NIH RADx Initiative. Tromberg BJ et al., New England Journal of Medicine. (published online 22/7/20).

Broader impacts on health outcomes

Commentary from the collaboration

Living in poverty was bad for your health long before COVID-19. Tinson A. The Health Foundation. (published online 25/7/20).

Communicating about long-term health during the pandemic. Hawkins N. The Health Foundation. (published online 29/7/20).

Emerging evidence

Mental health- General public

Impact of COVID-19 Pandemic on Mental Health of the General Population, Students, and Health Care Workers: A Review. Sankhi S Marasine NR. (pre-prints.org). (published online 25/7/20). "Objective: The COVID-19 among humans is spreading heavily and is largely impacting the mental health of the general population, students, and health care workers worldwide. Hence, this review aims to summarize the literatures addressing the impact of the COVID-19 pandemic on the mental health of the general population, students, and health care workers.Methods: Published articles concerning mental health of the general population, students, and health care workers related to the COVID-19 outbreak have been considered and reviewed. Results and discussion: Mental health symptoms of stress, anxiety, and depression are common psychological reactions to the COVID-19 pandemic in the general population, students, and health care workers. This collectively influences daily behavior, economy, prevention strategies and decision making from policy makers and health organizations, weakening the strategies of COVID-19 control leading to more morbidity and mental health needs at the global level. Conclusion: There is a need for more evidence-based research from other affected countries, particularly in vulnerable populations such as children and adolescents, people of lower socioeconomic status, and those residing in rural areas, so that valid strategies can be developed and COVID-19 and outbreaks of similar types in the near future can be prevented."

Healthcare workers

Physical and mental health impacts of COVID-19 on healthcare workers: a scoping review. Shaukat N et al., Int J Emerg Med. "Coronavirus disease (COVID-19) pandemic has spread to 198

countries, with approximately 2.4 million confirmed cases and 150,000 deaths globally as of April 18. Frontline healthcare workers (HCWs) face a substantially higher risk of infection and death due to excessive COVID-19 exposure. This review aimed at summarizing the evidence of the physical and mental health impacts of COVID-19 pandemic on health-care workers (HCWs). We used the Arksey O'Malley framework to conduct a scoping review. A systematic literature search was conducted using two databases: PubMed and Google Scholar. We found 154 studies, and out of which 10 met our criteria. We collected information on the date of publication, first author's country, the title of the article, study design, study population, intervention and outcome, and key findings, and divided all research articles into two domains: physical and mental health impact. We reviewed a total of 154 articles from PubMed (126) and Google Scholar (28), of which 58 were found to be duplicate articles and were excluded. Of the remaining 96 articles, 82 were excluded after screening for eligibility, and 4 articles did not have available full texts. Ten full-text articles were reviewed and included in this study. Our findings identified the following risk factors for COVID-19-related health impact: working in a high-risk department, diagnosed family member, inadequate hand hygiene, suboptimal hand hygiene before and after contact with patients, improper PPE use, close contact with patients (≥ 12 times/day), long daily contact hours (≥ 15 h), and unprotected exposure. The most common symptoms identified amongst HCWs were fever (85%), cough (70%), and weakness (70%). Prolonged PPE usage led to cutaneous manifestations and skin damage (97%), with the nasal bridge (83%) most commonly affected site. HCWs experienced high levels of depression, anxiety, insomnia, and distress. Female HCWs and nurses were disproportionately affected. The frontline healthcare workers are at risk of physical and mental consequences directly as the result of providing care to patients with COVID-19. Even though there are few intervention studies, early data suggest implementation strategies to reduce the chances of infections, shorter shift lengths, and mechanisms for mental health support could reduce the morbidity and mortality amongst HCWs."

Public health

Challenges posed by COVID-19 to people who inject drugs and lessons from other outbreaks. Vasylyeva T et al., J Int AIDS Soc. "In light of the COVID-19 pandemic, considerable effort is going into identifying and protecting those at risk. Criminalization, stigmatization and the psychological, physical, behavioural and economic consequences of substance use make people who inject drugs (PWID) extremely vulnerable to many infectious diseases. While relationships between drug use and blood-borne and sexually transmitted infections are well studied, less attention has been paid to other infectious disease outbreaks among PWID. COVID-19 is likely to disproportionally affect PWID due to a high prevalence of comorbidities that make the disease more severe, unsanitary and overcrowded living conditions, stigmatization, common incarceration, homelessness and difficulties in adhering to quarantine, social distancing or self-isolation mandates. The COVID-19 pandemic also jeopardizes essential for PWID services, such as needle exchange or substitution therapy programmes, which can be affected both in a short- and a long-term perspective. Importantly, there is substantial evidence of other infectious disease outbreaks in PWID that were associated with factors that enable COVID-19 transmission, such as poor hygiene, overcrowded living conditions and communal ways of using drugs. The COVID-19 crisis might increase risks of homelessnes, overdoses and unsafe injecting and sexual practices for PWID. In order to address existing inequalities, consultations with PWID advocacy groups are vital when designing inclusive health response to the COVID-19 pandemic."

A global survey on changes in the supply, price and use of illicit drugs and alcohol, and related complications during the 2020 COVID-19 pandemic. **Farhoudian A et al., MedRxiv (pre-print). (published online 24/7/20).** "Background and aims: COVID-19 has infected more than 13 million people worldwide and impacted the lives of many more, with a particularly devastating impact on vulnerable populations, including people with substance use disorders (SUDs). Quarantines, travel bans, regulatory changes, social distancing and 'lockdown' measures have affected drug and alcohol supply chains and subsequently their availability, price and use patterns, with possible downstream effects on presentations of SUDs and demand for treatment. Given the lack of multicentric epidemiologic studies, we conducted a rapid global survey within the International Society of Addiction Medicine (ISAM) network in order to understand the status of substance-use patterns during the current pandemic. Design: Cross-sectional survey. Setting: Worldwide. Participants: Starting on April 4th, 2020 during a 5-week period, the survey received 185 responses from 77 countries. Measurements: To assess addiction medicine professionals' perceived changes in drug and alcohol supply, price, use pattern and related complications during the COVID-19 pandemic. Findings: Participants reported (among who answered "decreased" or "increased", percentage of those who were in majority is reported in the parenthesis) a decrease in drug supply (69.0%), and at the same time an increase in price (95.3%) globally. With respect to changes in use patterns, an increase in alcohol (71.7%), cannabis (63.0%), prescription opioids (70.9%), and sedative/hypnotics (84.6%) use was reported while the use of amphetamines (59.7%), cocaine (67.5%), and opiates (58.2%) was reported to decrease overall. Conclusions: The global report on changes in the availability, use patterns and complications of alcohol and drugs during the COVID-19 pandemic should be considered in making new policies and in developing mitigating measures and guidelines during the current pandemic (and probable future ones) in order to minimize risks to SUDs. Key words: COVID-19, pandemic, alcohol, drug, substance use disorder, supply, price."

Mistakes from the HIV pandemic should inform the COVID-19 response for maternal and newborn care. **Gribble K et al., International Breastfeeding Journal.** "In an effort to prevent infants being infected with SARS-CoV-2, some governments, professional organisations, and health facilities are instituting policies that isolate newborns from their mothers and otherwise prevent or impede breastfeeding. Such policies are risky as was shown in the early response to the HIV pandemic where efforts to prevent mother to child transmission by replacing breastfeeding with infant formula feeding ultimately resulted in more infant deaths. In the COVID-19 pandemic, the risk of maternal SARS-CoV-2 transmission needs to be weighed against the protection skin-to-skin contact, maternal proximity, and breastfeeding affords infants. Policy makers and practitioners need to learn from the mistakes of the HIV pandemic and not undermine breastfeeding in the COVID-19 pandemic. It is clear that in order to maximise infant health and wellbeing, COVID-19 policies should support skin-to-skin contact, maternal proximity, and breastfeeding."

Commentaries

Public health

Metabolic health and COVID-19: a call for greater medical nutrition education. Burridge J et al., The Lancet.

Family violence and COVID-19: Increased vulnerability and reduced options for support. Usher K et al., Int J Mental Health Nursing.

Sex workers must not be forgotten in the COVID-19 response. Platt L et al., The Lancet.

Covid-19: Male disadvantage highlights the importance of sex disaggregated data. Womersley K et al., BMJ, 370:2870.

Mental health

The COVID-19 pandemic and perinatal mental health. Caparros-Gonzalez RA & Alderdice F. Journal of Reproductive and Infant Psychology. (published online 2/7/20).

COVID-19 social distancing: A snippet view of the autistic social world. Simmons AL. Disability & Society.

Coping, fostering resilience, and driving care innovation for autistic people and their families during the COVID-19 pandemic and beyond. Ameis SH et al., Molecular Autism. (published online 22/7/20).

Societal pandemic burnout: A COVID legacy. Queen D & Harding K. Int Wound J.

Healthcare workers

Covid-19: Supporting nurses' psychological and mental health. Maben J et al., J Clin Nursing.

Mental health issues impacting pharmacists during COVID-19. Elbeddini A et al., Journal of Pharmaceutical Policy and Practice. (published online July 2020).

Useful resources

Techniques, Methods, and Dissemination of Community-Based Psychological Support Strategies in Times of the COVID-19 Pandemic. Bernecke AV et al., J Prim Care Community Health. (published online 19/7/20).

Coping with social anxiety as lockdown eases. Young Minds. (published online 24/7/20).

Impact on non-Covid care

Commentary from the collaboration

Adult social care and COVID-19: Assessing the policy response in England so far. Dunn P et al., The Health Foundation. (published online July 2020).

Adult social care and COVID-19: Assessing the impact on social care users and staff in England so far. Hodgson K et al., The Health Foundation. (published online July 2020).

Guidance

COVID-19 rapid guideline: arranging planned care in hospitals and diagnostic services. NICE. NG179. (published online 27/7/20).

Digital adaptations to supervision and observations. British Psychological Society. Division of Clinical Psychology. (published online July 2020).

Emerging evidence

Primary care

Relevance and paucity of evidence: a dental perspective on personal protective equipment during the COVID-19 pandemic. Gallagher JE et al., British Dental Journal. "The global COVID-19 pandemic, caused by the SARS-CoV-2 virus, has highlighted the importance of personal protective equipment (PPE) for health and social care personnel. This is a really important issue for dentistry, where we place great emphasis on infection control and universal precautions, given the nature of care provided. Cochrane have recently updated their review of PPE for preventing highly infectious diseases due to exposure to contaminated body fluids in healthcare staff. It examined evidence on which type of full body PPE and which method of donning (putting on) or doffing (removing) are most effective, while having the least risk of contamination or infection for healthcare workers, as well as which training methods increase compliance with PPE protocols. The objective of this paper is to raise awareness of the above review of PPE, its findings and their relevance to dentistry as outlined in the Cochrane Oral Health website. The available evidence comes from healthcare generally, mostly involving simulation exercises, and is of low or very low certainty. None of the evidence specifically comes from dentistry. The findings in relation to the nature of PPE, methods of donning and doffing, and the importance of training are all of practical relevance to dentistry. Research is critically important to provide evidence for future decision making in support of patients and staff."

Social care

COVID-19: Implications for the Support of People with Social Care Needs in England. Comas-Herrera A et al., Journal of Ageing and Social Policy. "This perspective examines the challenge posed by COVID-19 for social care services in England and describes responses to this challenge. People with social care needs experience increased risks of death and deteriorating physical and mental health with COVID-19. Social isolation introduced to reduce COVID-19 transmission may adversely affect well-being. While the need for social care rises, the ability of families and social care staff to provide support is reduced by illness and quarantine, implying reductions in staffing levels. Consequently, COVID-19 could seriously threaten care availability and quality. The government has sought volunteers to work in health and social care to help address the threat posed by staff shortages at a time of rising need, and the call has achieved an excellent response. The government has also removed some barriers to effective coordination between health and social care, while introducing measures to promote the financial viability of care providers. The pandemic presents unprecedented challenges that require well-co-coordinated responses across central and local government, health services, and non-government sectors."

Elective care

Is it safe to restart elective day-case surgery? Lessons learned from upper limb ambulatory trauma during the COVID-19 pandemic. Trowbridge S et al., J Clin Ortho & Trauma. (published online 25/7/20). "Background: The COVID-19 pandemic has impacted on the provision of elective and trauma orthopaedic surgery worldwide with millions of operations cancelled. The risk of patients developing COVID-19 after undergoing ambulatory procedures in hospitals is unknown. This paper aims to investigate the risk of developing COVID-19 from day-case and overnight stay upper

limb procedures during the peak of the pandemic in London, and to discuss the implications for the safe management of elective hand and upper limb patients in the coming months. Methods: 56 patients underwent emergency trauma upper limb procedures as a day case or with a single overnight stay from 1st March to May 31, 2020 at two central London hospitals that were also key players in the pan-London COVID response. Data was collected retrospectively from clinical and theatre records. Patients were contacted post-operatively and answered a structured questionnaire, including whether patients had experienced any of the symptoms suggestive of COVID-19 in the 14 days prior or 30 days following surgery. Results: Of 56 patients, one patient reported COVID-19 symptoms, which were minor and did not require hospitalisation. Five patients experienced minor post-operative complications such as stiffness and scar hypersensitivity; one patient had a superficial wound infection. The mean age was 46 years (20–90) with 68% patients ASA I, 25% ASA II and 4% ASA III. 9% had LA, 30% a regional block and 61% had a GA. The most common operation was a distal radius open reduction and internal fixation. The average time spent in hospital was 11 h (3–34 h) and 12 patients required an overnight stay. The median length of face-to-face follow up was 38.5 days. Conclusion: Our study suggests that, with appropriate precautions, elective upper limb ambulatory surgery can be safely restarted with a low risk of contracting COVID-19 or its complications."

Secondary care

Disruption of paediatric orthopaedic hospital services due to the COVID-19 pandemic in a region with minimal COVID-19 illness. Wong FL et al., Journal of Children's Orthopaedics. "Purpose: This study was designed to evaluate the impact of the COVID-19 pandemic on paediatric orthopaedic services in a paediatric tertiary hospital in South Australia. Methods: A retrospective audit was conducted of orthopaedic activity at a major paediatric tertiary hospital with a Level 1 paediatric trauma centre, where no patients were admitted with COVID-19 illness. Orthopaedic Emergency Department (ED) presentations, outpatient clinics and hospital admissions for the period between 16 March 2020 to 26 April 2020 were studied and compared with the same period in 2019 (18 March 2019 to 28 April 2019). Chi-square tests were performed with $p < 0.05$ indicating statistical significance. Results: In total, 621 patients presented to the ED with orthopaedic complaints during the pandemic (versus 997 in 2019). However, there was minimal change in the number of ED presentations requiring admission (110 in 2020 versus 116 in 2019). Among patients discharged directly from ED, 27.3% received hospital outpatient referral (versus 39.1% in 2019), with the remaining patients referred to community health services or discharged directly. There was a 509.8% increase in telehealth (video and phone) outpatient consultations compared to 2019 and a 60.6% decline in face-to-face appointments. There was a total of 144 orthopaedic admissions (elective and emergency) compared to 184 in 2019. Admissions for children under seven remained unchanged (32.5% reduction in children aged seven and above). Conclusion: Despite an overall decline in all paediatric orthopaedic hospital activity, the number of emergency admissions for musculoskeletal conditions did not change. Elective surgery numbers for children aged under seven were also unchanged. Appropriate planning and hospital resources allocation are necessary to meet this service requirement in future pandemics."

The impact of the COVID-19 pandemic on orthopaedic services and training in the UK. Khan H et al., Eur J Ortho Surgery & Traumatology. "Introduction: The novel coronavirus disease 2019 (COVID-19) was declared a pandemic by the World Health Organisation on 11 March 2020. The aim of this study is to assess the impact of COVID-19 on orthopaedic practice and training in the UK.

Methods: Surgeons throughout UK hospitals were asked to complete an electronic survey relating to orthopaedic practice and training in their hospital. The nationwide survey was conducted during the frst peak of COVID-19 cases in the UK between 20 March 2020 and 20 April 2020. Results All 202 UK participants reported disruption to their daily practice. 91% reported all elective operating had been cancelled and trauma continued as normal in only 24% of cases. 70% reported disruption to trauma operating. Elective clinic capacity significantly reduced with no elective clinics running as normal. 55% reported their elective clinics completely cancelled, whilst 38% reported elective clinics running at a reduced capacity, with non-urgent appointments postponed. Only 9% of fracture clinics ran as normal, and 69% had a reduced service. 67% reported teaching and study leave cancelled. Significantly, 69% of participants felt the pandemic would result in a delay to completion of registrar training programmes. Conclusion This is the first nationwide survey assessing the impact of the coronavirus disease 2019 on UK orthopaedic practice and training, during the peak of the pandemic. It highlights the scale of the challenge ahead for the specialty, including during the recovery phase and post-recovery phase of the pandemic."

Cancer care

Effects of the COVID-19 Pandemic on Cancer-Related Patient Encounters. London JW et al., JCO Clinical Cancer Informatics. "While there are studies under way to characterize the direct effects of the COVID-19 pandemic on the care of patients with cancer, there have been few quantitative reports of the impact that efforts to control the pandemic have had on the normal course of cancer diagnosis and treatment encounters. We used the TriNetX platform to analyze 20 health care institutions that have relevant, up-to-date encounter data. Using this COVID and Cancer Research Network (CCRN), we compared cancer cohorts identified by querying encounter data pre-COVID (January 2019-April 2019) and current (January 2020-April 2020). Cohorts were generated for all patients with neoplasms (malignant, benign, in situ, and of unspecified behavior), with new incidence neoplasms (first encounter), with exclusively malignant neoplasms, and with new incidence malignant neoplasms. Data from a UK institution were similarly analyzed. Additional analyses were performed on patients with selected cancers, as well as on those having had cancer screening. Clear trends were identified that suggest a significant decline in all current cohorts explored, with April 2020 displaying the largest decrease in the number of patients with cancer having encounters. Of the cancer types analyzed, lung, colorectal, and hematologic cancer cohorts exhibited smaller decreases in size in April 2020 versus 2019 (−39.1%, −39.9%, −39.1%, respectively) compared with cohort size decreases for breast cancer, prostate cancer, and melanoma (−47.7%, −49.1%, −51.8%, respectively). In addition, cancer screenings declined drastically, with breast cancer screenings dropping by −89.2% and colorectal cancer screenings by −84.5%. Trends seen in the CCRN clearly suggest a significant decrease in all cancer-related patient encounters as a result of the pandemic. The steep decreases in cancer screening and patients with a new incidence of cancer suggest the possibility of a future increase in patients with later-stage cancer being seen initially as well as an increased demand for cancer screening procedures as delayed tests are rescheduled."

Tertiary care

A Cohort Study of Emergency Surgery Caseload and Regional Anaesthesia Provision at a Tertiary UK Hospital During the Initial COVID-19 Pandemic. Wade S et al., Cureus. "Analysis of emergency cases performed during initial coronavirus disease 2019 (COVID-19) pandemic and the proportion completed under regional anaesthesia (RA). The setting of the study was emergency

surgery theatres at Guy's and St Thomas' NHS Foundation Trust, London, UK. All patients requiring emergency surgery over the defined study period were reviewed with the exception of obstetric and paediatric populations. Surgical caseload for 2020 and 2019 cohorts established using the Galaxy IT system used to log all operations. All relevant anaesthetic charts for the 2020 cohort were subsequently reviewed to ascertain perioperative use of RA. A total of 338 emergency surgical cases were performed during the COVID-19 pandemic in 2020, compared to 603 cases over the corresponding period in 2019. This showed a 44% decrease in emergency surgical workload. There was a marked disparity in reduction of surgical caseload by surgical subspecialty. Trauma (137 vs 66 cases), a 52% decrease, and general surgery (193 vs 64 cases), a 66% decrease, were the most pronounced, and explanations for this are explored. RA was performed in 34% (26% as primary technique) of cases during the COVID-19 pandemic. The use of RA as the primary anaesthesia technique was noticeably higher than previous UK data (11%), and was prominent in specialties such as general surgery, gynaecology and urology, not traditionally completed under RA. Surgical RA (and general anaesthesia avoidance) has a significant role in the future to ensure high-quality perioperative care for patients whilst minimizing exposure to staff and utilization of scarce resources (PPE)".

Commentaries

Reflections from London's Level-1 Major Trauma Centres during the COVID crisis. Tahamassebi R et al., Eur J Ortho Surg Trauma.

The Response of the UK Clinical Oncology Community to the COVID-19 Pandemic. Lewis PJ & Roques TW. Clinical Oncology.

Implications for the future of Obstetrics and Gynaecology following the COVID-19 pandemic: A commentary. Kasaven LS et al., BJOG: an International Journal of Obstetrics & Gynaecology.

Covid-19: UK Obstetric Surveillance System (UKOSS) study in context. Magee LA et al., BMJ, 370:m2915.

A survey of UK cardiac surgeons' opinions during the coronavirus disease 2019 pandemic: A point and place in time. Andersen ND. Journal of Thoracic and Cardiovascular Surgery.

Useful resources

The NHS after COVID-19. The views of provider trust chief executives. Claridge F & Sogbetun T. NHS RESET & NHS Confederation. (published online July 2020).

Self-Care and Health: By All, For All- Learning From Covid-19. Duggan M. Victoria University & the Mitchell Institute. (published online July 2020).

This update forms part of a national evidence update service, provided by the Strategy Unit, as part of a collaboration to provide analytical support to the health and care system to help in the fight against COVID-19. For more information, visit: https://www.strategyunitwm.nhs.uk/covid19-and-coronavirus or contact our Covid Evidence team on: mlcsu.covidevidence@nhs.net