The Daily COVID-19 Literature Surveillance Summary

July 31, 2020

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COVID-19 Daily Literature Surveillance

COVID19LST

Bringing you real time, distilled information for guiding best practices during the COVID-19 pandemic

LEVEL OF EVIDENCE

Oxford Centre for Evidence-Based Medicine 2011 Levels of Evidence

Question	Step 1 (Level 1*)	Step 2 (Level 2*)	Step 3 (Level 3*)	Step 4 (Level 4*)	Step 5 (Level 5)
How common is the problem?	Local and current random sample surveys (or censuses)	Systematic review of surveys that allow matching to local circumstances**	Local non-random sample**	Case-series**	n/a
Is this diagnostic or monitoring test accurate? (Diagnosis)	Systematic review of cross sectional studies with consistently applied reference standard and blinding	Individual cross sectional studies with consistently applied reference standard and blinding	Non-consecutive studies, or studies without consistently applied reference standards**	Case-control studies, or "poor or non-independent reference standard**	Mechanism-based reasoning
What will happen if we do not add a therapy? (Prognosis)	Systematic review of inception cohort studies	Inception cohort studies	Cohort study or control arm of randomized trial*	Case-series or case-control studies, or poor quality prognostic cohort study**	n/a
Does this intervention help? (Treatment Benefits)	Systematic review of randomized trials or *n*-of-1 trials	Randomized trial or observational study with dramatic effect	Non-randomized controlled cohort/follow-up study**	Case-series, case-control studies, or historically controlled studies**	Mechanism-based reasoning
What are the COMMON harms? (Treatment Harms)	Systematic review of randomized trials, systematic review of nested case-control studies, *n*-of-1 trial with the patient you are raising the question about, or observational study with dramatic effect	Individual randomized trial or (exceptionally) observational study with dramatic effect	Non-randomized controlled cohort/follow-up study (post-marketing surveillance) provided there are sufficient numbers to rule out a common harm. (For long-term harms the duration of follow-up must be sufficient.)**	Case-series, case-control, or historically controlled studies**	Mechanism-based reasoning
What are the RARE harms? (Treatment Harms)	Systematic review of randomized trials or *n*-of-1 trial	Randomized trial or (exceptionally) observational study with dramatic effect			
Is this (early detection) test worthwhile? (Screening)	Systematic review of randomized trials	Randomized trial	Non -randomized controlled cohort/follow-up study**	Case-series, case-control, or historically controlled studies**	Mechanism-based reasoning

*** Level may be graded down on the basis of study quality, imprecision, indirectness (study PICO does not match questions PICO), because of inconsistency between studies, or because the absolute effect size is very small; Level may be graded up if there is a large or very large effect size.**

**** As always, a systematic review is generally better than an individual study.**

How to cite the Levels of Evidence Table

OCEBM Levels of Evidence Working Group*. "The Oxford 2011 Levels of Evidence".
Oxford Centre for Evidence-Based Medicine. http://www.cebm.net/index.aspx?o=5653

** OCEBM Table of Evidence Working Group = Jeremy Howick, Iain Chalmers (James Lind Library), Paul Glasziou, Trish Greenhalgh, Carl Heneghan, Alessandro Liberati, Ivan Moschetti, Bob Phillips, Hazel Thornton, Olive Goddard and Mary Hodgkinson*

EXECUTIVE SUMMARY

CLIMATE:

- Recent United States healthcare policy updates related to COVID-19 include:
  - The Supreme Court will be hearing California versus Texas to determine if the Affordable Care Act (ACA) is invalid due to the potential unconstitutionality of its "individual mandate" that implements a fine for citizens that do not have health insurance and opt out of coverage; this is a move that Democrats say poses extra risk during COVID-19 due to the potential for individuals to lose healthcare coverage
  - The House passed the Health and Economic Recovery Omnibus Emergency Solutions Act, which includes a special enrollment period for both ACA coverage and Medicare, broader vaccine coverage, and increased federal Medicaid matching
  - The House passed the Patient Protection and Affordable Care Enhancement Act, which will make ACA and marketplace subsidies more generous and expand Medicaid coverage for pediatric and postpartum care

EPIDEMIOLOGY:

- A surveillance study of 696 participants in Atlanta, Georgia from 28 April to 3 May 2020 (during statewide shelter in place mandate) by the Center for Disease Control and Prevention COVID-19 Response Team found 2.7% (n=19) were positive for SARS-CoV-2 antibodies, 13/19 had a COVID-19 compatible illness (based on clinical criteria in the Council of State and Territorial Epidemiologists COVID-19 case definition) and just 5 had been tested for SARS-CoV-2. Authors suggest case-based/syndromic surveillance alone could lead to missed SARS-CoV-2 detection thus community level seroprevalence estimates may be useful in understanding population based transmission.
- A cross sectional study of 169 countries found that higher COVID-19 mortality rate was positively associated with an increased aged 65+ population (p-value<0.001) and transport infrastructure quality score (p-value = 0.002). Mortality rate was also negatively associated with government effectiveness score (p-value = 0.017), COVID-19 test number per 100 people (p-value = 0.001), and number of hospital beds (p-value < 0.001). This study suggests that these factors may increase risk for higher COVID-19 mortality rates in certain countries.

MANAGEMENT:

- An opinion piece by the School of Nursing and Midwifery at Western Sydney University argues that health practitioners and policy makers should learn from the mistakes during the HIV epidemic, making a case for COVID-19 infected mothers to breastfeed their newborns (Figure 2) as opposed to bottle feeding during the COVID-19 pandemic. The authors believe infants will be more likely to thrive if COVID-19 infected mother and her child are allowed more skin-to-skin contact and close proximity (Figure 1), despite current SARS-CoV-2 status, suggesting practitioners and policy makers should support breastfeeding in new mothers.

ADJUSTING PRACTICE DURING COVID-19:

- The authors report a simple way to create a cover for the patient's mouth during esophagogastroduodenoscopy by using a piece of non-woven fabric that can be attached to a patient's mouthpiece with a band around the head (Figure 1, Video in primary article). This covering should help to reduce the spread of coarse respiratory droplets during esophagogastroduodenoscopy and similar procedures to minimize the transmission of COVID-19.

R&D: DIAGNOSIS AND TREATMENT:

- A cohort study of COVID-19 patients (confirmed n=129, suspected n=20) conducted at Tianjin Haihe Hospital, China found sensitivity and specificity of lateral flow immunochromatographic assay (LFIA) and magnetic chemiluminescence enzyme immunoassay (MCLIA) to IgM and IgG were >90% with no significant difference when compared to real-time reverse transcription polymerase chain reaction (RT-PCR; p>0.05), while blood lymphocyte subset measurements revealed significant lymphocytopenia in. Authors suggest strong antibody (IgM/IgM) response but weak T-cell response in those with COVID-19 may cause difficulty managing inflammation, but LFIA and MCLIA could be useful in early COVID-19 detection and risk assessment regarding vaccine immunization and reinfection.

CLIMATE

CONTRACEPTIVE MANDATE, ACA FINAL RULES, AND COVID-19

Keith K.. Health Aff (Millwood). 2020 Jul 20:101377hlthaff202001265. doi: 10.1377/hlthaff.2020.01265. Online ahead of print.
Level of Evidence: Other - Expert Opinion

BLUF

Recent United States healthcare policy updates related to COVID-19 include:
- The Supreme Court will be hearing California versus Texas to determine if the Affordable Care Act (ACA) is invalid due to the potential unconstitutionality of its "individual mandate" that implements a fine for citizens that do not have health insurance and opt out of coverage; this is a move that Democrats say poses extra risk during COVID-19 due to the potential for individuals to lose healthcare coverage
- The House passed the Health and Economic Recovery Omnibus Emergency Solutions Act, which includes a special enrollment period for both ACA coverage and Medicare, broader vaccine coverage, and increased federal Medicaid matching
- The House passed the Patient Protection and Affordable Care Enhancement Act, which will make ACA and marketplace subsidies more generous and expand Medicaid coverage for pediatric and postpartum care

ABSTRACT

The Supreme Court upheld broad exemptions to the Affordable Care Act contraceptive mandate; new ACA rules were finalized.

EPIDEMIOLOGY

ESTIMATED COMMUNITY SEROPREVALENCE OF SARS-COV-2 ANTIBODIES - TWO GEORGIA COUNTIES, APRIL 28-MAY 3, 2020

Biggs HM, Harris JB, Breakwell L, Dahlgren FS, Abedi GR, Szablewski CM, Drobeniuc J, Bustamante ND, Almendares O, Schnall AH, Gilani Z, Smith T, Gieraltowski L, Johnson JA, Bajema KL, McDavid K, Schafer IJ, Sullivan V, Punkova L, Tejada-Strop A, Amiling R, Mattison CP, Cortese MM, Ford SE, Paxton LA, Drenzek C, Tate JE; CDC Field Surveyor Team.. MMWR Morb Mortal Wkly Rep. 2020 Jul 24;69(29):965-970. doi: 10.15585/mmwr.mm6929e2.
Level of Evidence: 1 - Local and current random sample surveys (or censuses)

BLUF

A surveillance study of 696 participants in Atlanta, Georgia (Table 2) from 28 April to 3 May 2020 (during statewide shelter in place mandate) by the Center for Disease Control and Prevention (CDC) COVID-19 Response Team found 2.7% (n=19) were positive for SARS-CoV-2 antibodies, 13/19 had a COVID-19 compatible illness (based on clinical criteria in the Council of State and Territorial Epidemiologists COVID-19 case definition) and just 5 had been tested for SARS-CoV-2 (Table 3). Authors suggest case-based/syndromic surveillance alone could lead to missed SARS-CoV-2 detection thus community level seroprevalence estimates may be useful in understanding population based transmission.

ABSTRACT

Transmission of SARS-CoV-2, the virus that causes coronavirus disease 2019 (COVID-19), is ongoing in many communities throughout the United States. Although case-based and syndromic surveillance are critical for monitoring the pandemic, these systems rely on persons obtaining testing or reporting a COVID-19-like illness. Using serologic tests to detect the presence of SARS-CoV-2 antibodies is an adjunctive strategy that estimates the prevalence of past infection in a population. During April 28-May 3, 2020, coinciding with the end of a statewide shelter-in-place order, CDC and the Georgia Department of Public Health conducted a serologic survey in DeKalb and Fulton counties in metropolitan Atlanta to estimate SARS-CoV-2 seroprevalence in the population. A two-stage cluster sampling design was used to randomly select 30 census blocks in each county, with a target of seven participating households per census block. Weighted estimates were calculated to account for the probability of selection and adjusted for age group, sex, and race/ethnicity. A total of 394 households and 696 persons participated and had a serology result; 19 (2.7%) of 696 persons had SARS-CoV-2 antibodies detected. The estimated weighted seroprevalence across these two metropolitan Atlanta counties was 2.5% (95% confidence interval [CI] = 1.4-4.5). Non-Hispanic black participants more commonly had SARS-CoV-2 antibodies than did participants of other racial/ethnic

groups (p<0.01). Among persons with SARS-CoV-2 antibodies, 13 (weighted % = 49.9; 95% CI = 24.4-75.5) reported a COVID-19-compatible illness,* six (weighted % = 28.2; 95% CI = 11.9-53.3) sought medical care for a COVID-19-compatible illness, and five (weighted % = 15.7; 95% CI = 5.1-39.4) had been tested for SARS-CoV-2 infection, demonstrating that many of these infections would not have been identified through case-based or syndromic surveillance. The relatively low seroprevalence estimate in this report indicates that most persons in the catchment area had not been infected with SARS-CoV-2 at the time of the survey. Continued preventive measures, including social distancing, consistent and correct use of face coverings, and hand hygiene, remain critical in controlling community spread of SARS-CoV-2.

FIGURES

Characteristic	Participants with SARS-CoV-2 antibodies (N = 19)		Participants without SARS-CoV-2 antibodies (N = 677)		Estimated seroprevalence (95% CI)
	No.	Weighted proportion,* % (95% CI)	No.	Weighted proportion,* % (95% CI)	
Total	**19**	**100**	**677**	**100**	**2.5 (1.4–4.5)**
Sex					
Male	8	50.1 (25.6–74.7)	309	47.8 (43.3–52.2)	2.6 (1.1–6.3)
Female	11	49.9 (25.3–74.4)	366	52.0 (47.6–56.5)	2.4 (1.1–5.1)
Other	0	0 (—)	2	0.2 (0.0–0.9)	—
Age group (yrs)					
0–17	0	0 (—)	48	22.8 (16.7–30.3)	—
18–49	12	61.6 (35.2–82.6)	335	47.4 (40.8–54.1)	3.3 (1.6–6.4)
50–64	6	35.2 (14.8–62.8)	183	17.5 (14.5–21.1)	4.9 (1.8–12.9)
≥65	1	3.2 (0.4–21.8)	111	12.3 (9.4–15.8)	0.7 (0.1–4.5)
Race/Ethnicity					
White, non-Hispanic	2	4.6 (0.7–23.7)	327	37.2 (27.8–47.7)	0.3 (0.1–1.7)
Black, non-Hispanic	16	93.5 (73.8–98.7)	250	44.2 (33.8–55.1)	5.2 (2.9–9.1)
Hispanic	0	0 (—)	44	7.7 (4.2–13.5)	—
Asian/Pacific Islander, non-Hispanic	0	0 (—)	29	6.9 (2.5–17.6)	—
Multiple race/Other/Unknown	1	1.9 (0.2–19.8)	27	4.0 (2.1–7.5)	1.2 (0.1–14.1)

Abbreviation: CI = confidence interval.
* Weights were computed as the inverse of the probability of selection and adjusted so that the marginal distribution of age group, sex, and race/ethnicity of the sample closely agreed with population estimates; presented as column percentages.

Table 2. Demographic characteristics of participants with and without SARS-CoV-2 antibodies and estimated seroprevalence — DeKalb and Fulton counties, Georgia, April 28–May 3, 2020.

Characteristic	Participants with SARS-CoV-2 antibodies (N = 19)		Participants without SARS-CoV-2 antibodies (N = 671)*	
	No.	Weighted proportion,† % (95% CI)	No.	Weighted proportion,† % (95% CI)
Illness history during 2020				
COVID-19–compatible illness§	13	49.9 (24.4–75.5)	229	33.3 (27.6–39.6)
Any illness with cough or shortness of breath	10	31.1 (13.8–55.9)	188	26.2 (21.2–32.0)
Any illness with fever/feeling feverish	12	47.9 (23.3–73.6)	147	21.7 (16.7–27.6)
Any illness with loss of taste or smell	8	28.4 (12.4–52.7)	38	8.2 (4.9–13.5)
Sought medical care for illness¶	6	28.2 (11.9–53.3)	117	16.3 (12.1–21.6)
Hospitalized because of illness	0	0 (—)	5	0.9 (0.4–2.2)
Missed work or school because of illness	10	42.4 (20.1–68.2)	121	19.7 (15.1–25.4)
Previous test for SARS-CoV-2				
None	14	84.3 (60.6–94.9)	643	97.1 (95.4–98.2)
Positive result	2	7.0 (1.5–27.0)	0	0 (—)
Negative result	1	4.4 (0.7–23.5)	23	2.6 (1.6–4.3)
Unknown result**	2	4.3 (0.7–23.3)	5	0.3 (0.1–1.1)
Medical history				
Any chronic condition††	7	20.3 (8.1–42.5)	309	39.8 (34.0–45.8)
Chronic lung disease	1	1.5 (0.1–19.2)	86	14.0 (10.8–18.0)
Cardiovascular disease	5	15.5 (5.4–37.2)	167	18.5 (14.9–22.7)
Chronic kidney disease	0	0 (—)	8	1.1 (0.4–3.0)
Liver disease	0	0 (—)	8	0.6 (0.2–1.5)
Diabetes mellitus§§	2	5.3 (0.9–24.6)	61	7.2 (5.2–10.0)
Autoimmune/Rheumatologic condition	2	5.9 (1.2–25.6)	27	2.8 (1.8–4.3)
Immunocompromising condition or therapy	0	0 (—)	46	5.1 (3.6–7.2)
Neurologic condition	0	0 (—)	18	2.8 (1.7–4.7)
Seasonal allergies	10	43.3 (21.8–67.7)	404	59.7 (52.7–66.3)
Pregnant or postpartum¶¶	0	0 (—)	9	1.4 (0.5–3.5)
Known exposures to ill persons				
Contact with ≥1 person with confirmed COVID-19	2	7.8 (1.8–28.0)	30	6.5 (3.8–10.9)
Cared for person with confirmed COVID-19	2	7.8 (1.8–28.0)	12	2.5 (1.2–5.3)
Contact with ≥1 person with respiratory symptoms (not known confirmed COVID-19)	5	20.9 (7.3–46.9)	139	21.9 (17.3–27.2)
Travel during 2020				
International travel (outside of the United States)	2	9.8 (2.6–30.5)	81	11.1 (7.2–16.7)
Domestic travel (outside of Georgia)	4	24.3 (9.2–50.5)	254	32.4 (26.7–38.8)
Work setting				
Attend or work in a school or daycare***	6	21.7 (8.9–44.1)	188	38.8 (31.3–47.0)
Work in a health care setting***	5	19.9 (7.2–44.6)	56	8.4 (5.3–13.1)
Outpatient or urgent care clinic	3	10.0 (2.4–33.3)	17	2.1 (1.2–3.8)
Hospital or emergency department	2	10.0 (2.7–30.9)	13	1.3 (0.6–2.4)
Long-term care or assisted living facility	0	0 (—)	3	0.9 (0.2–3.3)
>1 setting	0	0 (—)	4	0.4 (0.1–1.2)
Other†††	0	0 (—)	19	3.8 (1.9–7.5)

Table 3. Characteristics and exposures of participants with and without SARS-CoV-2 antibodies — DeKalb and Fulton counties, Georgia, April 28–May 3, 2020.

Characteristic	Participants with SARS-CoV-2 antibodies (N = 19)		Participants without SARS-CoV-2 antibodies (N = 671)*	
	No.	Weighted proportion,† % (95% CI)	No.	Weighted proportion,† % (95% CI)
Work industry (participants aged ≥18 years)§§§				
Utilities/Construction/Manufacturing	0	0 (—)	42	4.7 (3.2–6.7)
Warehouse/Shipping/Parcel delivery	2	19.6 (5.2–52.0)	9	0.8 (0.4–1.8)
Restaurants/Bars/Food services/Accommodation	1	10.7 (2.1–39.9)	23	3.4 (2.1–5.4)
Retail/Grocery stores	0	0 (—)	19	2.0 (1.2–3.4)
Transportation	0	0 (—)	14	1.5 (0.8–2.7)
Education/Child day care	0	0 (—)	48	6.3 (4.6–8.6)
Health care¶¶¶	6	37.6 (15.6–66.1)	53	7.4 (4.7–11.4)
Barber shop/Beauty salon/Personal services	1	3.9 (0.6–22.8)	9	1.0 (0.5–2.1)
Finance/Banking/Insurance and real estate/Rental/Leasing	0	0 (—)	34	3.8 (2.6–5.6)
Professional/Scientific/Technical services	0	0 (—)	47	7.1 (4.5–11.0)
Public administration	2	4.7 (0.8–23.9)	22	2.5 (1.5–4.1)
Religious organizations	1	2.9 (0.3–21.4)	5	0.3 (0.1–1.1)
Student	2	5.0 (0.9–24.3)	14	1.6 (0.9–2.9)
Other industry	0	0 (—)	53	6.4 (4.6–8.7)
Retired or unemployed	3	7.5 (1.7–27.6)	154	18.8 (14.7–23.8)
Insufficient information to classify	1	8.0 (1.6–32.6)	78	9.6 (6.7–13.5)
Dwelling type				
Single unit (including townhouses)	13	48.0 (23.5–73.5)	489	71.9 (59.4–81.7)
Multiunit (≥2 housing units per building)	6	52.0 (26.5–76.5)	175	27.2 (17.5–39.7)

Abbreviations: CI = confidence interval; COVID-19 = coronavirus disease 2019; CSTE = Council of State and Territorial Epidemiologists.
* Denominator = six of the 677 seronegative participants had missing data.
† Weights were computed as the inverse of the probability of selection and adjusted so that the marginal distribution of age group, sex, and race/ethnicity of the sample closely agreed with population estimates; column percentages are presented.
§ Based on clinical criteria in the CSTE COVID-19 case definition. (https://cdn.ymaws.com/www.cste.org/resource/resmgr/2020ps/Interim-20-id-01_covid-19.pdf).
¶ Went to a doctor, clinic, emergency department, saw a doctor remotely through telemedicine because of the illness, or was hospitalized overnight for the illness.
** Includes test result still pending at the time of the survey.
†† Some persons reported more than one chronic condition; chronic conditions included chronic lung disease, cardiovascular diseases, chronic kidney disease, liver disease, diabetes mellitus, autoimmune or rheumatologic condition, immunocompromising condition or therapy, and neurologic condition.
§§ Includes reports of prediabetes.
¶¶ Postpartum defined as up to 6 weeks after childbirth.
*** Since January 2020 but not necessarily at the time of the survey.
††† Additional settings reported included functional medicine, physical therapy clinic, support office/building, mental health clinic, research administration, emergency medical technician, plasma donation center, home health care, federal OSHA clinic, research clinic, volunteer at a hospital, technician-phone interviews, dietician office, school nurse, dentist office, community clinic, and pharmaceutical representative.
§§§ Work information collected in a free text field was coded based on the Census Industry and Occupation Classification System. The codes were then combined into broad industry categories based on National Health Interview Survey simple and detailed recode categories. https://www.cdc.gov/niosh/topics/coding/analyze.html.
¶¶¶ One seropositive participant worked in health care but not in a health care setting (reported full-time telework in 2020).

Table 3. Characteristics and exposures of participants with and without SARS-CoV-2 antibodies — DeKalb and Fulton counties, Georgia, April 28–May 3, 2020.

COVID-19 MORTALITY IS NEGATIVELY ASSOCIATED WITH TEST NUMBER AND GOVERNMENT EFFECTIVENESS

Liang LL, Tseng CH, Ho HJ, Wu CY.. Sci Rep. 2020 Jul 24;10(1):12567. doi: 10.1038/s41598-020-68862-x.
Level of Evidence: 3 - Local non-random sample

BLUF

A cross sectional study of 169 countries conducted in Taiwan found that higher COVID-19 mortality rate was positively associated with an increased aged 65+ population (p-value<0.001) and transport infrastructure quality score (p-value = 0.002). Mortality rate was also negatively associated with government effectiveness score (p-value = 0.017), COVID-19 test number per 100 people (p-value = 0.001), and number of hospital beds (p-value < 0.001). This study suggests that these factors may increase risk for higher COVID-19 mortality rates in certain countries (Table 1-2 and Figure 1).

SUMMARY

Additional information on the study and findings:
-Data was retrieved utilizing the Logistics Performance Indicators (LPI), World Development Indicators (WDI), Worldometer website, and the Worldwide Governance Indicators (WGI), databases.
-Case number per 1,000 people (p-value = 0.477), Critical case rate percent (p-value = 0.372), and Communicable disease death rate (p-value = 0.157) did not appear to be significantly associated with COVID-19 mortality rate (Table 2).
-The predicted mortality rate was positively and strongly associated with the observed mortality rate in countries (Figure 2).

ABSTRACT

A question central to the Covid-19 pandemic is why the Covid-19 mortality rate varies so greatly across countries. This study aims to investigate factors associated with cross-country variation in Covid-19 mortality. Covid-19 mortality rate was calculated as number of deaths per 100 Covid-19 cases. To identify factors associated with Covid-19 mortality rate, linear regressions were applied to a cross-sectional dataset comprising 169 countries. We retrieved data from the Worldometer website, the Worldwide Governance Indicators, World Development Indicators, and Logistics Performance Indicators databases. Covid-19 mortality rate was negatively associated with Covid-19 test number per 100 people (RR = 0.92, P = 0.001), government effectiveness score (RR = 0.96, P = 0.017), and number of hospital beds (RR = 0.85, P < 0.001). Covid-19 mortality rate was positively associated with proportion of population aged 65 or older (RR = 1.12, P < 0.001) and transport infrastructure quality score (RR = 1.08, P = 0.002). Furthermore, the negative association between Covid-19 mortality and test number was stronger among low-income countries and countries with lower government effectiveness scores, younger populations and fewer hospital beds. Predicted mortality rates were highly associated with observed mortality rates (r = 0.77; P < 0.001). Increasing Covid-19 testing, improving government effectiveness and increasing hospital beds may have the potential to attenuate Covid-19 mortality.

FIGURES

	N	Mean	SE	95% CI
Covid-19 mortality rate (%)	169	3.70	0.28	3.15–4.25
Covid-19 related factors				
Test number per 100 people	153	3.75	0.47	2.82–4.69
Case number per 1,000 people	169	1.69	0.25	1.20–2.18
Critical case rate (%)[a]	120	0.56	0.06	0.44–0.68
Country related factors				
Government effectiveness score[b]	167	− 0.01	0.08	− 0.17–0.16
Population aged 65 or older (%)	162	9.17	0.51	8.15–10.18
Bed number per 1,000 people	146	3.14	0.22	2.72–3.57
Communicable disease death rate (%)	159	31.04	1.79	27.50–34.58
Transport infrastructure quality score[c]	153	2.75	0.05	2.64–2.86

Table 1. Descriptive statistics of model variables. [a]Critical case rate = number of critical cases/total number of cases. [b]Range of data: from − 2.5 (worst) to 2.5 (best). [c]Range of data: from 1 (worst) to 5 (best).

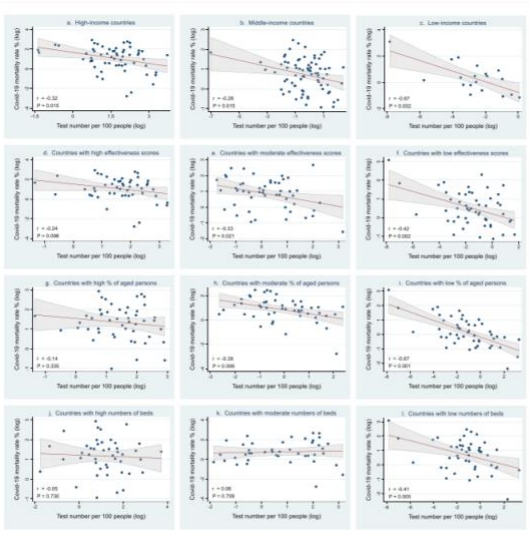


Figure 1. Correlation between Covid-19 mortality rate and test number. Countries were categorized by income group (**a**–**c**): (**a**) High-income (N = 59), (**b**) Middle-income (N = 75), (**c**) Low-income (N = 19); by government effectiveness scores (**d**–**f**): (**d**) High effectivenss scores (N = 50), (**e**) Moderate effectiveness scores (N = 50), (**f**) Low effectiveness scores (N = 51); by percentage of people aged 65 or older (**g**–**i**): (**g**) High percentages of aged persons (N = 49), (**h**) Moderate percentages of aged persons (N = 49), (**i**) Low percentages of aged persons (N = 49); by number of hospital beds (**j**–**l**): (**j**) High numbers of beds (N = 45), (**k**) Moderate numbers of beds (N = 43), (**l**) Low numbers of beds (N = 46). Lines are linear predictions of Covid-19 mortality rate on test number. The 95% confidence intervals of the fitted values are shown by grey areas (r: correlation coefficient).

Predictors	RR[a]	SE[b]	P	95% CI
Test number per 100 people	0.92	0.02	0.001	0.87–0.96
Case number per 1,000 people	1.03	0.04	0.477	0.95–1.10
Critical case rate (%)	1.05	0.06	0.372	0.94–1.18
Government effectiveness score[c]	0.96	0.02	0.017	0.92–0.99
Population aged 65 or older (%)	1.12	0.02	<0.001	1.07–1.17
Bed number per 1,000 people	0.85	0.03	<0.001	0.80–0.90
Communicable disease death rate (%)	0.99	0.01	0.157	0.98–1.00
Transport infrastructure quality score[d]	1.08	0.03	0.002	1.03–1.14

Table 2. Multiple regression for predicting Covid-19 mortality rates. A total of 101 countries were included in the regression analysis. The dependent variable was Covid-19 mortality rate % (log). The R-squared value was 0.58; adjusted R-squared value was 0.54. [a]RR: relative risk. [b]SE: standard errors. [c,d]Both government effectiveness and infrastructure quality scores were multiplied by 10. Thus the corresponding relative risk should be interpreted on the basis of a 0.1 incremental increase in these indicators.

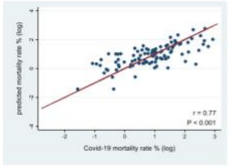


Figure 2. Correlation between observed and predicted Covid-19 mortality rates. The 45-degree line indicates equality of observed and predicted Covid-19 mortality rates (r: correlation coefficient; N = 99).

SYMPTOMS AND CLINICAL PRESENTATION

INCIDENCE, RISK FACTORS, AND PROGNOSIS OF ABNORMAL LIVER BIOCHEMICAL TESTS IN COVID-19 PATIENTS: A SYSTEMATIC REVIEW AND META-ANALYSIS

Wu Y, Li H, Guo X, Yoshida EM, Mendez-Sanchez N, Levi Sandri GB, Teschke R, Romeiro FG, Shukla A, Qi X.. Hepatol Int. 2020 Jul 24. doi: 10.1007/s12072-020-10074-6. Online ahead of print.
Level of Evidence: 2 - Systematic review of surveys that allow matching to local circumstances

BLUF

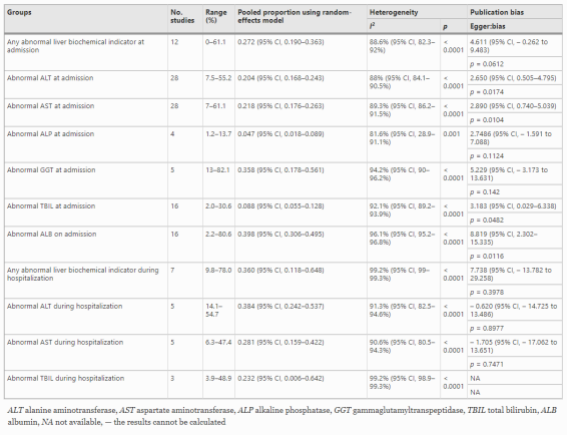
A systematic review and meta-analysis of 45 studies (Figure 1) through 27 April 2020 by international researchers found that pooled incidence of abnormal liver biomarkers in COVID-19 patients was 27.2% on admission and 36% during hospitalization (Table 2) with the most common being albumin (ALB; 39.8%), gamma-glutamyl transpeptidase (GGT; 35.8%), aspartate aminotransferase (AST; 21.8% and 28.1%), alkaline phosphatase (ALT; 20.4% and 38.4%) and total bilirubin (TBIL; 8.8% and 23.2%), while severe/critical patients had higher incidence than mild/moderate patients overall. Authors suggest abnormal

liver biomarkers are common in COVID-19 and closely related to severity and prognosis, so careful monitoring is warranted for timely treatment especially in those with underlying liver disease.

ABSTRACT

BACKGROUND AND AIMS: Coronavirus disease 2019 (COVID-19) pandemic is ongoing. Except for lung injury, it is possible that COVID-19 patients develop liver injury. Thus, we conducted a systematic review and meta-analysis to explore the incidence, risk factors, and prognosis of abnormal liver biochemical tests in COVID-19 patients. METHODS: PubMed, Embase, Cochrane Library, China National Knowledge Infrastructure (CNKI), VIP, and Wanfang databases were searched. The incidence of abnormal liver biochemical tests, including aspartate aminotransferase (AST), alanine aminotransferase (ALT), alkaline phosphatase (ALP), gamma-glutamyl transpeptidase (GGT), total bilirubin (TBIL), and albumin (ALB), was pooled. Risk ratio (RR) was calculated to explore the association of abnormal liver biochemical tests with severity and prognosis of COVID-19 patients. RESULTS: Forty-five studies were included. The pooled incidence of any abnormal liver biochemical indicator at admission and during hospitalization was 27.2% and 36%, respectively. Among the abnormal liver biochemical indicators observed at admission, abnormal ALB was the most common, followed by GGT, AST, ALT, TBIL, and ALP (39.8%, 35.8%, 21.8%, 20.4%, 8.8%, and 4.7%). Among the abnormal liver biochemical indicators observed during hospitalization, abnormal ALT was more common than AST and TBIL (38.4%, 28.1%, and 23.2%). Severe and/or critical patients had a significantly higher pooled incidence of abnormal liver biochemical indicators at admission than mild and/or moderate patients. Non-survivors had a significantly higher incidence of abnormal liver biochemical indicators than survivors (RR = 1.34, p = 0.04). CONCLUSIONS: Abnormal liver biochemical tests are common in COVID-19 patients. Liver biochemical indicators are closely related to the severity and prognosis of COVID-19 patients.

FIGURES



Groups	No. studies	Range (%)	Pooled proportion using random-effects model	Heterogeneity		Publication bias
				I^2	*p*	Egger:bias
Any abnormal liver biochemical indicator at admission	12	0–61.1	0.272 (95% CI, 0.190–0.363)	88.6% (95% CI, 82.3–92%)	< 0.0001	4.611 (95% CI, − 0.262 to 9.483)
						p = 0.0612
Abnormal ALT at admission	28	7.5–55.2	0.204 (95% CI, 0.168–0.243)	88% (95% CI, 84.1–90.5%)	< 0.0001	2.650 (95% CI, 0.505–4.795)
						p = 0.0174
Abnormal AST at admission	28	7–61.1	0.218 (95% CI, 0.176–0.263)	89.3% (95% CI, 86.2–91.5%)	< 0.0001	2.890 (95% CI, 0.740–5.039)
						p = 0.0104
Abnormal ALP at admission	4	1.2–13.7	0.047 (95% CI, 0.018–0.089)	81.6% (95% CI, 28.9–91.1%)	0.001	2.7486 (95% CI, − 1.591 to 7.088)
						p = 0.1124
Abnormal GGT at admission	5	13–82.1	0.358 (95% CI, 0.178–0.561)	94.2% (95% CI, 90–96.2%)	< 0.0001	5.229 (95% CI, − 3.173 to 13.631)
						p = 0.142
Abnormal TBIL at admission	16	2.0–30.6	0.088 (95% CI, 0.055–0.128)	92.1% (95% CI, 89.2–93.9%)	< 0.0001	3.183 (95% CI, 0.029–6.338)
						p = 0.0482
Abnormal ALB on admission	16	2.2–80.6	0.398 (95% CI, 0.306–0.495)	96.1% (95% CI, 95.2–96.8%)	< 0.0001	8.819 (95% CI, 2.302–15.335)
						p = 0.0116
Any abnormal liver biochemical indicator during hospitalization	7	9.8–78.0	0.360 (95% CI, 0.118–0.648)	99.2% (95% CI, 99–99.3%)	< 0.0001	7.738 (95% CI, − 13.782 to 29.258)
						p = 0.3978
Abnormal ALT during hospitalization	5	14.1–54.7	0.384 (95% CI, 0.242–0.537)	91.3% (95% CI, 82.5–94.6%)	< 0.0001	− 0.620 (95% CI, − 14.725 to 13.486)
						p = 0.8977
Abnormal AST during hospitalization	5	6.3–47.4	0.281 (95% CI, 0.159–0.422)	90.6% (95% CI, 80.5–94.3%)	< 0.0001	− 1.755 (95% CI, − 17.062 to 13.651)
						p = 0.7471
Abnormal TBIL during hospitalization	3	3.9–48.9	0.232 (95% CI, 0.006–0.642)	99.2% (95% CI, 98.9–99.3%)	< 0.0001	NA
						NA

ALT alanine aminotransferase, *AST* aspartate aminotransferase, *ALP* alkaline phosphatase, *GGT* gammaglutamyltranspeptidase, *TBIL* total bilirubin, *ALB* albumin, *NA* not available, — the results cannot be calculated

Table 2. Incidence of abnormal liver biochemical indicator: results of meta-analyses.

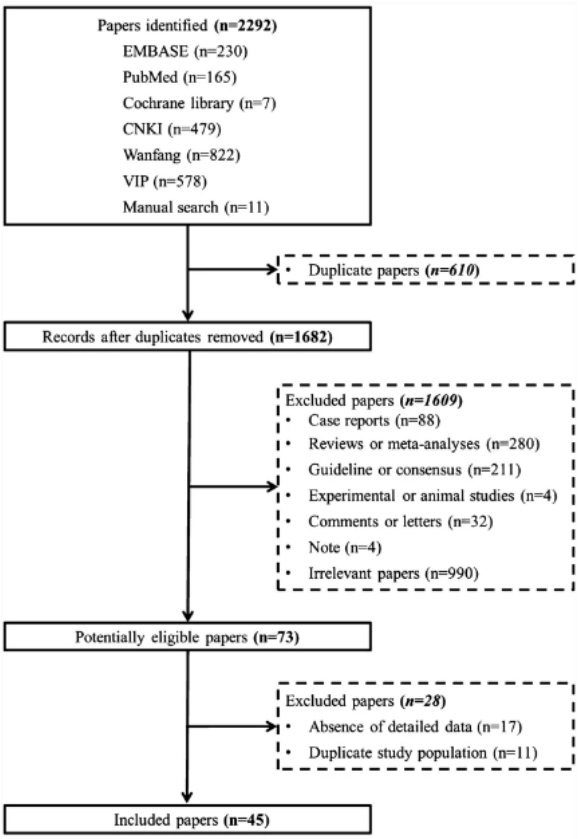


Figure 1. Flow chart of study selection.

MANAGEMENT

OBGYN

MISTAKES FROM THE HIV PANDEMIC SHOULD INFORM THE COVID-19 RESPONSE FOR MATERNAL AND NEWBORN CARE

Gribble K, Mathisen R, Ververs MT, Coutsoudis A.. Int Breastfeed J. 2020 Jul 25;15(1):67. doi: 10.1186/s13006-020-00306-8.
Level of Evidence: Other - Guidelines and Recommendations

BLUF

An opinion piece by the School of Nursing and Midwifery at Western Sydney University argues that health practitioners and policy makers should learn from the mistakes during the HIV epidemic, making a case for COVID-19 infected mothers to breastfeed their newborns (Figure 2) as opposed to bottle feeding during the COVID-19 pandemic. The authors believe infants will be more likely to thrive if COVID-19 infected mother and her child are allowed more skin-to-skin contact and close proximity (Figure 1), despite current SARS-CoV-2 status, suggesting practitioners and policy makers should support breastfeeding in new mothers.

SUMMARY

A letter published in the Lancet in 1985 identified a mother from Australia who transmitted HIV to her newborn through breastmilk. This finding led to authorities in the US recommending HIV positive mothers avoid breastfeeding their newborns. This change led to a stigma with breastfeeding, resulting in even HIV negative mothers switching to infant formula. After further studies were performed, it was found that after 24 months, only about 14% of breastfed babies with HIV positive mothers risked transmitting the disease. Furthermore, the babies that were fed infant formula rather than breastfeeding were more likely to die from pneumonia or diarrhea than HIV. These findings show that health practitioners and policy makers alike should think long and hard about not recommending breastfeeding in mothers with COVID-19, despite any chance of passing the disease to their infant via breastmilk.

ABSTRACT

BACKGROUND: 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. WEIGHING OF RISKS IS NECESSARY IN POLICY DEVELOPMENT: 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. CONCLUSION: 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.

FIGURES

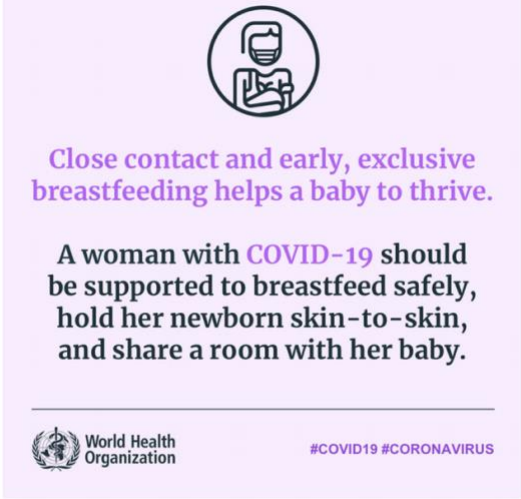


Fig. 1 WHO infographic supporting maternal proximity, skin-to-skin contact, and breastfeeding for women who have COVID-19

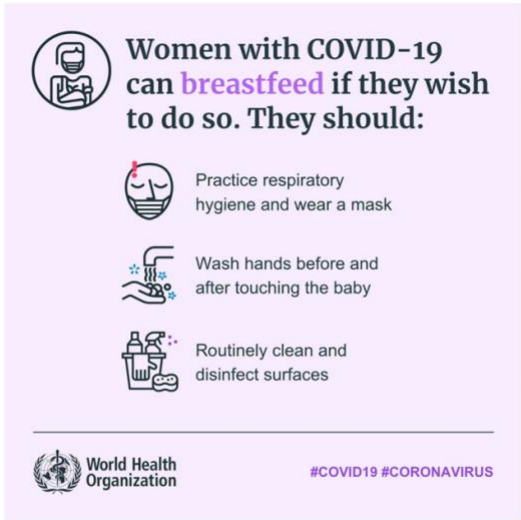


Fig. 2 WHO infographic illustrating the hygiene measures to be undertaken by breastfeeding women who have COVID-19

GASTROENTEROLOGY

NOVEL DEVICE FOR PREVENTING DIFFUSION OF AEROSOL DROPLETS FROM SUBJECTS UNDERGOING ESOPHAGOGASTRODUODENOSCOPY DURING COVID-19 PANDEMIC

Endo H, Koike T, Masamune A.. Dig Endosc. 2020 Jul 22. doi: 10.1111/den.13772. Online ahead of print.
Level of Evidence: Other - Expert Opinion

BLUF

The authors report a simple way to create a cover for the patient's mouth during esophagogastroduodenoscopy by using a piece of non-woven fabric that can be attached to a patient's mouthpiece with a band around the head (Figure 1, Video in primary article). This covering should help to reduce the spread of coarse respiratory droplets during esophagogastroduodenoscopy and similar procedures to minimize the transmission of COVID-19.

FIGURES

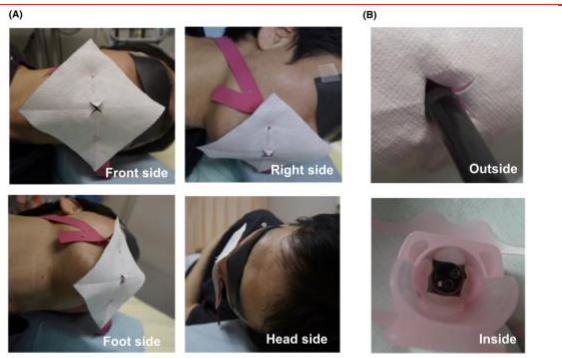


Figure 1 (A) The nonwoven fabric supported by a mouthpiece can cover most of the mouth and nose of the subject with a little space. (B) The central sleeves formed by the X-shaped cut on the nonwoven fabric can cover the entrance of the endoscope. The endoscope can pass through the entrance without severe limitation.

Figure 1. (A) The nonwoven fabric supported by a mouthpiece can cover most of the mouth and nose of the subject with a little space. (B) The central sleeves formed by the X-shaped cut on the nonwoven fabric can cover the entrance of the endoscope. The endoscope can pass through the entrance without severe limitation.

PRELIMINARY ANALYSIS OF B- AND T-CELL RESPONSES TO SARS-COV-2

Zhang LX, Miao SY, Qin ZH, Wu JP, Chen HY, Sun HB, Xie Y, Du YQ, Shen J.. Mol Diagn Ther. 2020 Jul 24. doi: 10.1007/s40291-020-00486-3. Online ahead of print.
Level of Evidence: 4 - Non -randomized controlled cohort/follow-up study

BLUF

A cohort study of COVID-19 patients (confirmed n=129, suspected n=20) conducted at Tianjin Haihe Hospital, China by authors affiliated with Tianjin Key Laboratory of Lung Regenerative medicine found sensitivity and specificity of lateral flow immunochromatographic assay (LFIA) and magnetic chemiluminescence enzyme immunoassay (MCLIA) to IgM and IgG were >90% (Tables 1,2) with no significant difference when compared to real-time reverse transcription polymerase chain reaction (RT-PCR; p>0.05), while blood lymphocyte subset measurements revealed significant lymphocytopenia in participants (Table 3). Authors suggest strong antibody (IgM/IgM) response but weak T-cell response in those with COVID-19 may cause difficulty managing inflammation, but LFIA and MCLIA could be useful in early COVID-19 detection and risk assessment regarding vaccine immunization and reinfection.

ABSTRACT

BACKGROUND AND OBJECTIVE: Without a specific antiviral treatment or vaccine, severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) has caused a global pandemic, affecting over 200 countries worldwide. A better understanding of B- and T-cell immunity is critical to the diagnosis, treatment and prevention of coronavirus disease 2019 (COVID-19). METHODS: A cohort of 129 patients with COVID-19 and 20 suspected cases were enrolled in this study, and a lateral flow immunochromatographic assay (LFIA) and a magnetic chemiluminescence enzyme immunoassay (MCLIA) were evaluated for SARS-CoV-2 IgM/IgG detection. Additionally, 127 patients with COVID-19 were selected for the detection of IgM and IgG antibodies to SARS-CoV-2 to evaluate B-cell immunity, and peripheral blood lymphocyte subsets were quantified in 95 patients with COVID-19 to evaluate T-cell immunity. RESULTS: The sensitivity and specificity of LFIA-IgM/IgG and MCLIA-IgM/IgG assays for detecting SARS-CoV infection were > 90%, comparable with reverse transcription polymerase chain reaction detection. IgM antibody levels peaked on day 13 and began to fall on day 21, while IgG antibody levels peaked on day 17 and were maintained until tracking ended. Lymphocyte and subset enumeration suggested that lymphocytopenia occurred in patients with COVID-19. CONCLUSIONS: LFIA-IgM/IgG and MCLIA-IgM/IgG assays can indicate SARS-CoV-2 infection, which elicits an antibody response. Lymphocytopenia occurs in patients with COVID-19, which possibly weakens the T-cell response.

FIGURES

	RT-PCR		Total
	Positive	Negative	
LFIA-IgM			
Positive	120	0	120
Negative	7	20	27
LFIA-IgG			
Positive	121	0	121
Negative	6	20	26
Total	127	20	147

Table 1. Comparison between lateral flow immunochromatographic assay (LFIA)-IgM/IgG and reverse transcription polymerase chain reaction (RT-PCR) assays.

	RT-PCR		Total
	Positive	Negative	
MCLIA-IgM			
Positive	117	0	117
Negative	10	20	30
MCLIA-IgG			
Positive	115	0	115
Negative	12	20	36
Total	127	20	147

Table 2. Comparison between magnetic chemiluminescence enzyme immunoassay (MCLIA)-IgM/IgG and reverse transcription polymerase chain reaction (RT-PCR) assays.

Indicators	Mean ± SD	Proportion[a]
Lymphocytes		
Count ($\times 10^6$/L)	1848.66 ± 1024.83	56:31:19
%	21.98 ± 10.42	71:28:7
T cells		
Count ($\times 10^6$/L)	1319.71 ± 768.41	50:32:24
%	70.10 ± 9.04	22:57:27
CD4 + T cells		
Count ($\times 10^6$/L)	758.38 ± 433.85	39:46:21
%	40.83 ± 8.79	8:68:30
CD8 + T cells		
Count ($\times 10^6$/L)	476.04 ± 317.01	51:32:23
%	24.89 ± 5.31	16:83:7
CD4 +/CD8 +	1.74 ± 0.62	37:43:25

Table 2. Comparison between magnetic chemiluminescence enzyme immunoassay (MCLIA)-IgM/IgG and reverse transcription polymerase chain reaction (RT-PCR) assays.

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CONTRIBUTORS

Ben Showalter
Diep Nguyen
Jacqueline Fezza
Julia Ghering
Krithika Kumarasan
Ryan Wertz

EDITORS

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