

The Daily COVID-19 Literature Surveillance Summary

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DISCLAIMER

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NOW LIVE!

Daily audio summaries of the literature in 10 minutes or less.

<https://www.covid19lst.org/podcast/>



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

Epidemiology

- [Indian computer scientists](#) created a mathematical model to predict current trends in COVID-19 disease spread in the United States of America. Using the SIPHERD mode, authors predicted reported cases in the USA are lower than actual cases and relaxation of social distancing measures would increase deaths by 47,000 with an infection to fatality ratio of 0.65%. Although these findings are model-based, authors argue their results emphasize the importance of continued social distancing measures to mitigate the spread of SARS-CoV-2.
- A [science journalist describes an investigation](#) conducted by the Centers for Disease Control and Florida Department of Health into an outbreak of multidrug resistant *Candida auris* in a COVID-19 ICU in Florida. A point prevalence survey of 67 patients showed 52% of patients were colonized (n=35) and that providers used multiple gown and glove layers (not recommended) with extended use of the base layer. Because no further *C. auris* transmission was detected after personal protective equipment practices improved, the author suggests this case highlight the importance of adhering to recommended infection control and PPE practices beyond COVID-19 prevention.

Transmission & Prevention

- The [deputy editor of JAMA](#) released guidance suggesting that both doses of the Pfizer and Moderna COVID-19 vaccines are necessary when seeking adequate immunity from SARS-CoV-2 infection. It is argued that the immune response to one dose is not sufficient, and that receiving only once dose may promote the development of vaccine-resistant variants of the virus.

Management

- [Internists, geneticists, and obstetricians](#) from Indonesia conducted a systematic review and meta analysis of 44 studies (n=36,716) investigating the use of convalescent plasma therapy (CPT) to treat human coronaviruses. They found that CPT reduced mortality (RR 0.57, $p < 0.001$, $I^2 = 44\%$) and increased likelihood of discharge (RR 2.53, $p < 0.001$, $I^2 = 3\%$). Authors suggest CPT has a therapeutic benefit, but since many patients received other treatments, recommend investigating the role of CPT in conjunction with other medications for patients with COVID-19.

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HOW TO TEST SARS-COV-2 VACCINES ETHICALLY EVEN AFTER ONE IS AVAILABLE

Eyal N, Lipsitch M.. Clin Infect Dis. 2021 Feb 26:ciab182. doi: 10.1093/cid/ciab182. Online ahead of print.

Level of Evidence: 5 - Expert Opinion

BLUF

An opinion piece penned by Rutgers and Harvard Schools of Public Health promotes the need for continued testing of both currently approved and second-generation COVID-19 vaccinations. The authors suggest that any ethical hurdles can be addressed and are often outweighed by the benefits (e.g. more efficacious vaccines or improvements in delivery and distribution of vaccines) that may be discovered with continued trials (see summary).

SUMMARY

Random Controlled Trial comparing first to second-generation vaccines:

- The authors assert that as long as there is a potential benefit; more efficacious vaccine, or, improved delivery/logistics, then these increased trials should be seen as ethical.

Random Controlled Trial of Second-Generation versus Placebo

- These types of trials would be ethical if for example the second-generation vaccine trialed is the only available vaccine in said market or data would be beneficial to pandemic research.

Challenge trials, immune-bridging studies

- These trials would be seen as ethical as they require far fewer willful, altruistic participants.

ESTIMATION OF UNDETECTED SYMPTOMATIC AND ASYMPTOMATIC CASES OF COVID-19 INFECTION AND PREDICTION OF ITS SPREAD IN USA

Mahajan A, Solanki R, Sivadas N.. J Med Virol. 2021 Feb 23. doi: 10.1002/jmv.26897. Online ahead of print.

Level of Evidence: 5 - Modeling

BLUF

Indian computer scientists created a mathematical model to predict current trends in COVID-19 disease spread in the United States of America. Using the SIPHERD mode (Figure 1), authors predicted reported cases in the USA are lower than actual cases and relaxation of social distancing measures would increase deaths by 47,000 with an infection to fatality ratio of 0.65%. Although these findings are model-based, authors argue their results emphasize the importance of continued social distancing measures to mitigate the spread of SARS-CoV-2.

FIGURES

We model the dynamics of the COVID-19 disease spread by dividing the population into different categories, as listed below.

- S - fraction of the total population that is healthy and has never caught the infection
- E - fraction of the total population that is exposed to infection, transmit the infection and turn into either Symptomatic or purely Asymptomatic, and not detected
- I - fraction of the total population infected by the virus that shows symptoms and undetected
- P - fraction of the total population infected by the virus that doesn't show symptoms even after the incubation period and undetected. These are the purely Asymptomatic cases
- H - fraction of the total population that are found positive in the test and either hospitalized or quarantined

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Figure 1, SIPHERD model definition as described by researchers

DRUG-RESISTANT YEAST INFECTIONS SPREAD IN COVID-19 UNIT

Kuehn BM.. JAMA. 2021 Feb 23;325(8):714. doi: 10.1001/jama.2021.1031.

Level of Evidence: 5 - Opinion

BLUF

A science journalist describes an investigation conducted by the Centers for Disease Control and Florida Department of Health into an outbreak of multidrug resistant *Candida auris* in a COVID-19 ICU in Florida. A point prevalence survey of 67 patients showed 52% of patients were colonized (n=35) and that providers used multiple gown and glove layers (not recommended) with extended use of the base layer (see summary). Because no further *C. auris* transmission was detected after personal protective equipment practices improved, the author suggests this case highlight the importance of adhering to recommended infection control and PPE practices beyond COVID-19 prevention.

SUMMARY

Among 67 patients admitted to the COVID-19 unit and screened during point prevalence surveys, 35 (52%) were colonized with *C. auris*. Mean age of colonized patients was 69 years (range = 38–101 years) and 60% were male. Six (17%) colonized patients later had clinical cultures that grew *C. auris*.

The investigation found health care workers used multiple gown and glove layers in the COVID-19 unit, extended use of the underlayer of PPE, lapses in cleaning and disinfection of shared medical equipment, and lapses in adherence to hand hygiene likely contributed to widespread *C. auris* transmission. After hospital A removed supplies from hallways, enhanced cleaning and disinfection practices, and ceased base PPE layer practices, no further *C. auris* transmission was detected on subsequent surveys.

SYMPTOMS AND CLINICAL PRESENTATION

ADULTS

THE EFFECT OF COVID-19 ON LOWER URINARY TRACT SYMPTOMS IN ELDERLY MEN

Can O, Erkoç M, Ozer M, Karakanli MU, Otunctemur A.. Int J Clin Pract. 2021 Feb 23:e14110. doi: 10.1111/ijcp.14110. Online ahead of print.

Level of Evidence: 4 - Case-control studies, or "poor or non-independent reference standard

BLUF

A cohort study conducted by urologists at 3 hospitals in Istanbul, Turkey that included 94 male patients hospitalized with COVID-19 for more than 3 weeks, found that lower urinary tract symptoms based on the International Prostate Symptom Score (IPSS) were increased in elderly patients (>50 years) diagnosed with COVID-19 by RT-PCR in comparison to scores prior to COVID-19 ($p<0.0001$; Table). This suggests lower urinary tract symptoms could be a symptom of COVID-19 and should be included in the differential diagnosis of elderly patients presenting with such symptoms with no clear etiology.

SUMMARY

Pre-COVID IPSS scores were assessed via a questionnaire on presentation (at the time of COVID-19 diagnosis and not from prior patient reporting before the pandemic), possibly allowing for patient recall bias.

FIGURES

	< 50 age (n:32)	> 50 age (n:62)
IPSS score before COVID-19	1.3 ± 1.6	5.1 ± 4.1
IPSS score during COVID-19	1.5 ± 1,6	9 ± 6.4
	p=0.053	p<0.0001

Table: IPSS scores of all patients

International Prostate Symptom Score of all the patients

TRANSMISSION & PREVENTION

NECESSITY OF 2 DOSES OF THE PFIZER AND MODERNA COVID-19 VACCINES

Livingston EH.. JAMA. 2021 Mar 2;325(9):898. doi: 10.1001/jama.2021.1375.

Level of Evidence: 5 - Guidelines and Recommendations

BLUF

The deputy editor of JAMA released guidance suggesting that both doses of the Pfizer and Moderna COVID-19 vaccines are necessary when seeking adequate immunity from SARS-CoV-2 infection. It is argued that the immune response to one dose is not sufficient, and that receiving only once dose may promote the development of vaccine-resistant variants of the virus.

SUMMARY

CDC recommends: second dose should be given within 3 weeks (for Pfizer) and within 4 weeks (for Moderna); doses should not be given more than 6 weeks apart (but no need to be given first dose all over again if out of this time frame).

CURRENT VIEWS ON THE POTENTIALS OF CONVALESCENT PLASMA THERAPY (CPT) AS CORONAVIRUS DISEASE 2019 (COVID-19) TREATMENT: A SYSTEMATIC REVIEW AND META-ANALYSIS BASED ON RECENT STUDIES AND PREVIOUS RESPIRATORY PANDEMICS

Aviani JK, Halim D, Soeroto AY, Achmad TH, Djuwantono T.. Rev Med Virol. 2021 Feb 23. doi: 10.1002/rmv.2225. Online ahead of print.

Level of Evidence: 1 - Systematic review of randomized trials or n-of-1 trials

BLUF

Internists, geneticists, and obstetricians from Indonesia conducted a systematic review and meta analysis of 44 studies (n=36,716) investigating the use of convalescent plasma therapy (CPT) to treat human coronaviruses (Figure 1). They found that CPT reduced mortality (RR 0.57, $p < 0.001$, $I^2 = 44\%$) and increased likelihood of discharge (RR 2.53, $p < 0.001$, $I^2 = 3\%$) (Figure 2, 4). Authors suggest CPT has a therapeutic benefit, but since many patients received other treatments, recommend investigating the role of CPT in conjunction with other medications for patients with COVID-19.

FIGURES

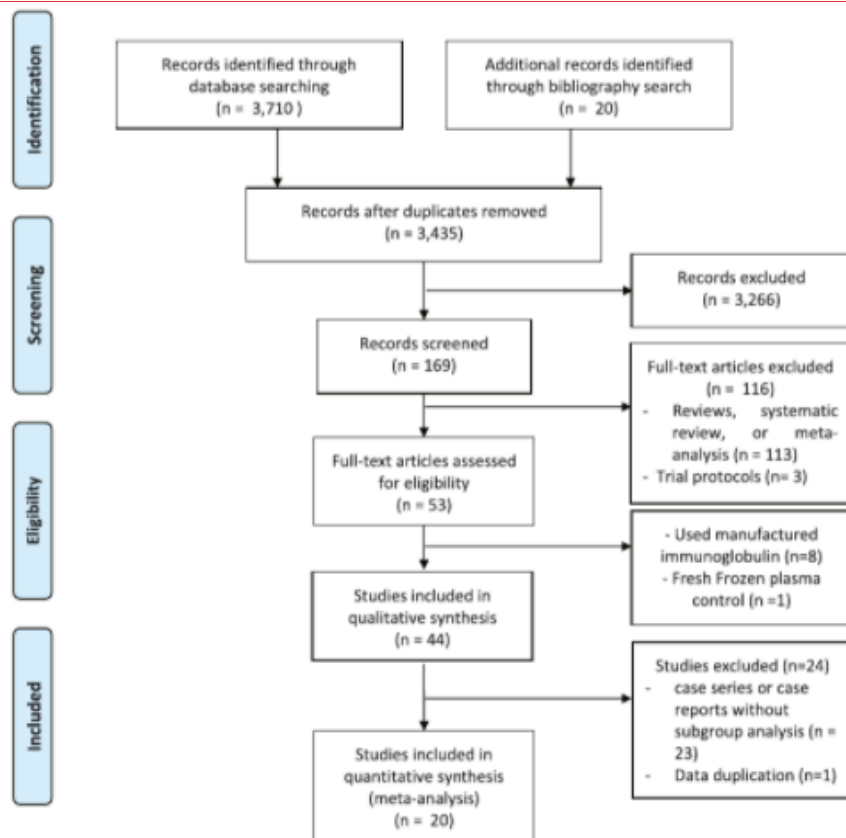


FIGURE 1 Study selection based on PRISMA flow diagram. PRISMA, Preferred Reporting Items for Systematic Reviews and Meta-Analyses.

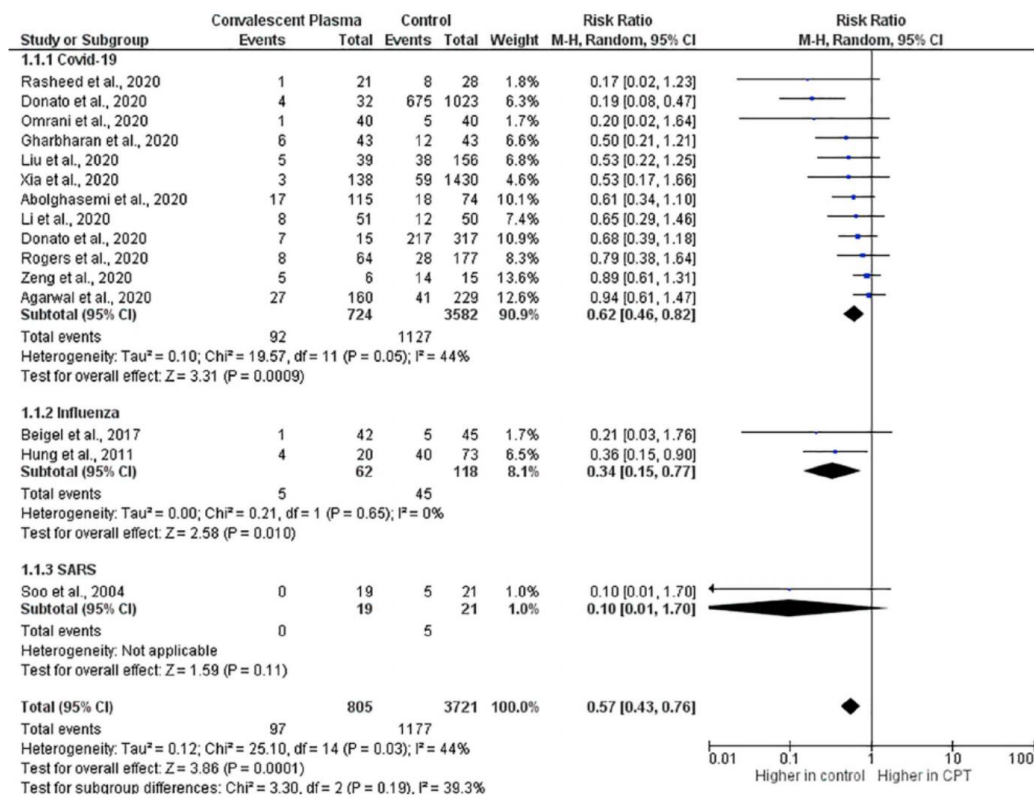
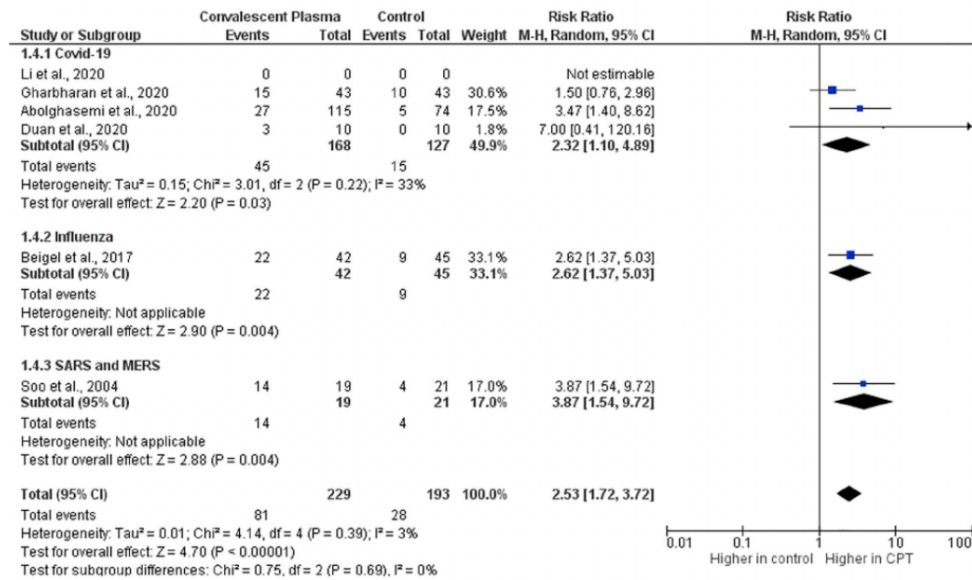


FIGURE 2 Meta-analysis of 30 days mortality in patients receiving convalescent plasma therapy compared to standard-care alone in COVID-19, influenza, and SARS cases

(a) 7-days Discharge Rate



(b) 28-days Discharge Rate

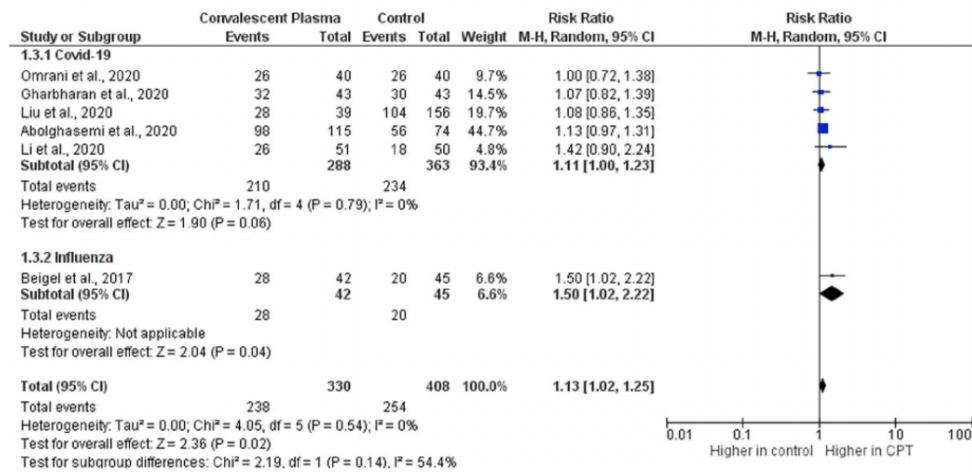


FIGURE 4 Meta-analysis of number of discharged patients after convalescent plasma therapy compared to standard care alone during (a) 7-day post-transfusion and (b) 28-day post-transfusion in COVID-19, influenza and SARS cases

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CONTRIBUTORS

Ashia Hackett
Brad Mott
Margaret Fahrenbach
Nicolas Longobardi
Reza Aghaei

EDITORS

Julia Ghering
Maresa Woodfield

SENIOR EDITORS

Allison Hansen
Avery Forrow

SENIOR EXECUTIVE EDITOR

Sangeetha Thevuthasan

CHIEF EDITOR

Charlotte Archuleta

ADVISOR

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