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Sent: Wed 3/31/2021 11:31:02 AM
Subject: RE: COVID-19 Literacy | for CIb internal use only | March 31, 2021
Received: Wed 3/31/2021 11:31:03 AM

Krijg m ook *

From: 5.1.2e <5.1.2e @rivm.nl>
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Ja, ik krijg deze. Wij (5.1.2e zorgen voor het One Health stuk.

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Ik zie niet of jullie op verzendlijst staan, dus stuur m maar even door.

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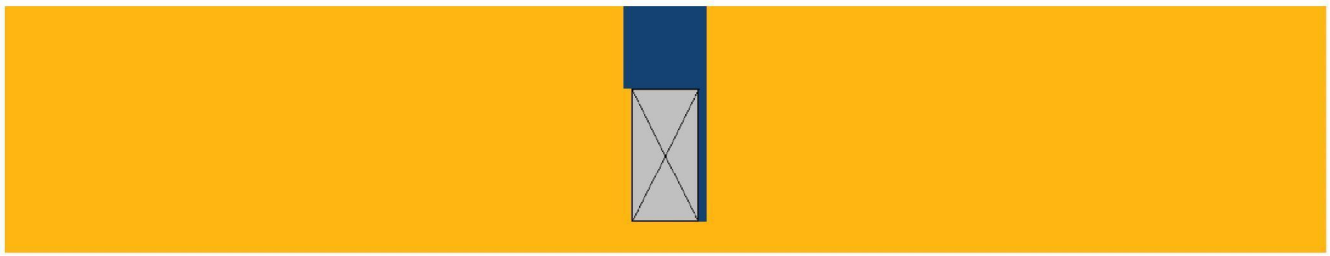

COVID-19 Literacy | for CIb internal use only

6th edition, 31 March 2021

Key messages from the literature on COVID-19

Introduction

After a break of several months, we hereby present a new edition of the COVID-19 literacy newsletter. The newsletter contains key messages from the literature on COVID-19. This edition provides updates on earlier topics and some new topics, which may be written in English or Dutch.

Background & aims

Since March 2020, many of our colleagues at the Centre for Infectious Disease Control (Dutch: Centrum Infectieziektebestrijding – CIb) have been reviewing and summarizing literature on a wide range of subjects related to COVID-19. This serves as a foundational body of literature to support decision-makers (including the OMT), guideline developers, and researchers on COVID-19 within CIb. The summaries can also be used as a starting point for more specific literature searches.

Planning for 2021

Starting from March 2021, we will send out a monthly newsletter summarizing the latest updates of the COVID-19 literature searches. In case of any questions or feedback regarding this newsletter, please e-mail us at 5.1.2e @rivm.nl.

We hope you enjoy reading our summaries!

Best,

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Key messages

ONE HEALTH – SARS-COV-2

- SARS-CoV-2 is a zoonotic virus that can be transmitted from humans to animals and vice versa.
- Multiple mammalian species are susceptible to SARS-CoV-2 including pets, livestock and wild animals.
- Household cats can be infected by infected humans, but do not seem to form a reservoir.
- Farmed mink have been infected in multiple countries worldwide and mink-to-human infections have been described.

SEROPREVALENCE IN CHILDREN

- A lower seroprevalence is observed in children compared to adults.
- Seroprevalence appears to be lower in young(er) children, in comparison with older children/teenagers.

EFFECTIVENESS NON-PHARMACEUTICAL INTERVENTIONS (NPIs)

- Comprehensive and more detailed model evaluations of NPIs have been performed, demonstrating that the most effective interventions are:
    - small gathering cancellations (closures of shops, restaurants, mandatory home working etc.);
    - closures of schools/universities;
    - border restrictions;
    - increased availability of personal protective equipment;
    - individual movement restrictions and;

- national lockdown.

• Evidence for face mask use by the public is limited, but the evidence, albeit based on observational and modelling studies, is growing.
• Implementation of a curfew needs to be carefully planned, as increased crowding in households and in shops/public transport before the start of the curfew can inadvertently lead to more transmission.
• Appropriate and timely implementation of NPI is important with the variants of concern (VOCs) that are more easily transmitted. Updates on model-based evaluations taking these VOCs into account have not been published so far.

COVID-19 AND IMMUNOLOGY

• The speed and number of scientific research and publications have expanded exponentially.
• Insight into the immune response to SARS-CoV-2 has also made exponential progress over the last year.

VACCINE EFFECTIVENESS AFTER ONE DOSE

• Reported vaccine effectiveness estimates against SARS-CoV-2 infection range from -6% to 91% at least 14 days after one dose.
• Reported vaccine effectiveness estimates against hospitalization range from 33% to 94% at least 14 days after one dose.
• Vaccine effectiveness estimates after one dose for the Moderna vaccine are lacking.

COVID-19 AND PREGNANCY

• In April 2020, a living systematic review on clinical manifestations, risk factors, and maternal and perinatal outcomes of COVID-19 in pregnancy was started.
• Based on the latest evidence, it appears that pregnant women with COVID-19 have a higher risk of ICU admission, invasive ventilation or ECMO, in comparison with non-pregnant women of reproductive age with COVID-19. A lower threshold for ICU admission

in pregnancy might partly explain the results.
- Risk factors for severe illness from COVID-19 in pregnancy include increasing maternal age, high body mass index, non-white ethnicity, and pre-existing comorbidities.

KEY SYMPTOMS COVID-19

- Investigating the prevalence of COVID-19 symptoms in non-hospitalized populations is relevant for identifying milder cases who can spread the disease.
- Fever, cough and anosmia/ageusia appear to be key symptoms of a COVID-19 infection
- The inclusion of additional symptoms such as headache, fatigue and diarrhea in COVID-19 screening protocols may capture more cases, but more tests are needed.
- Most studies rely on self-reported data.

AIRBORNE TRANSMISSION OF SARS-COV-2

- Epidemiological evidence for airborne SARS-CoV-2 transmission is sparse.
- Most of the available studies describe outbreaks in settings with specific environmental conditions (e.g. air flow, humidity, temperature), which may have contributed to transmission.
- As sequencing is often not performed, and other routes of transmission cannot be ruled out completely, overall quality of evidence is low.

COMBORBIDITY AND THE RISK OF SEVERE COVID-19 IN ADULTS

- Two major sources to select medical high-risk groups for prioritizing vaccination are the British OpenSAFELY analysis and a meta-analysis performed by the Robert Koch Institute (RKI).

Summaries

ONE HEALTH – SARS-COV-2

Research questions & methods

We investigated the susceptibility of animals to SARS-CoV-2 and their ability to transmit the virus to other animals or humans. We searched PubMed, BioRxiv and Promed for data on animal susceptibility, clinical symptoms, seroconversion and viral shedding.

Results

A limited number of animal families is susceptible to SARS-CoV-2 infection (1). Mustelidae (e.g. mink and ferret), Primates (e.g. macaque and gorilla) and Felidae (e.g. cat, tiger, lion) are highly susceptible to infection, and show mainly mild clinical symptoms. Animal-to-human transmission has so far only been reported in the case of infected mink farms. Cricetidae (e.g. hamster), can be susceptible as well, and Syrian golden hamsters are commonly used as animal model.

Less susceptible to infection are Canidae (e.g. dog) and so far only one susceptible bat species has been documented (Egyptian fruit bat, *Rousettus aegyptiacus*). Bats are potentially the natural reservoir of the SARS-CoV-2 virus, and are therefore expected to be susceptible and shed infectious viral particles (2).

Household cats

For the general population, household cats could be a concern and potential reservoir. Cats in multiple countries have been reported to be infected if human household members were tested positive for SARS-CoV-2. Therefore, it is likely that these cats were infected by humans.

In a recent study on the possibility of cats as potential reservoir, cats were experimentally infected and co-housed with healthy animals. The virus was only infectious for 2 passages, after which the viral load was too low for transmission. This makes cats an unlikely reservoir for SARS-CoV-2 (3).

Mink

Mink are commonly farmed for fur, with large mink populations in for example Denmark, Poland, and the Netherlands. In at least 10 countries, mink were infected with SARS-CoV-2 as a result of human-to-animal transmission. In addition, it is very likely that humans, which were in close occupational contact with these animals, were infected via animal-to-human transmission (4). In the USA, SARS-CoV-2 infection has been reported to have spread from farmed mink to wild mink (5).

Conclusion

Besides the potential natural reservoir of SARS-CoV-2 in bats, other mammals are susceptible to SARS-CoV-2 infection as well. Potentially, these mammals could form a new reservoir from

which new SARS-CoV-2 outbreaks can spread to humans. Except for one wild mink close to an infected farm, no infected wild animals were found to this date and the original host of SARS-CoV-2 has not been found.

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SEROPREVALENTIE ONDER KINDEREN

Onderzoeksvragen & methoden:

In een aantal Europese landen is gekeken naar de seroprevalentie bij kinderen en volwassenen. Zijn er verschillen te zien voor de verschillende leeftijden en ten opzichte van volwassenen?

Resultaten

In Frankrijk (1), Duitsland (2), Zwitserland (3)en Spanje (4)zijn seroprevalentie-resultaten van kinderen en volwassenen vergeleken. De seroprevalentie onder kinderen (5 maanden-4,4 jaar) op 22 kinderdagverblijven die ondanks de lockdown open waren, was 3,7% (95% BI 1,3-6,8%; 14/327) en onder de medewerkers 6,8% (95% BI 3,2-11,5%; 14/197). In een controlegroep van volwassenen - medewerkers van ziekenhuizen in dezelfde gebieden, niet werkend met COVID-19 patiënten of kinderen - was dit 5,0% (95% BI 1,6-9,8%; 9/164). Bij de kinderen waren symptomen niet gerelateerd aan seropositiviteit, bij de medewerkers en de controlegroep waren er wel enkele symptomen die met seropositiviteit geassocieerd konden worden. Binnen een groep van 2.482 kind-ouder paren waren 70 deelnemers seropositief (14 kind-ouder paren, 34 alleen de ouder en 8 alleen kind positief). De combinatie ouder-positief/kind-negatief kwam 4,3 keer (95%BI: 1,2-15,5) vaker voor dan de combinatie ouder-negatief/kind-positief. De seroprevalentie onder de kinderen (1-10 jaar) was 0,6% (95%BI: 0,3-1,0%) en onder de ouders

1,8% (95% BI: 1,2-2,4%). Binnen een andere studie naar kinderen en hun gezinsleden was 1/123 (0,8%) van de 5-9 jarigen positief en van 8 (6,5%) kon het niet bepaald worden, bij de 10-19 jarigen was 9,6% (32/332) positief en 5 (1,5%) onbepaald. Kinderen in de leeftijd 5-9 jaar (relatieve risico 0,32 (0,11-0,63)) hadden een significant lager risico om seropositief te testen dan de 20-49 jarigen (9,9% positief; 108/1096). In een grote seroprevalentie-studie hebben in totaal 61.075 mensen waaronder 11.422 kinderen (0-19 jarigen) meegedaan aan een vingerprikbloedtest. Seroprevalenties per leeftijdsgroep waren 1,1% (95% BI: 0,3-3,5%; <1 jarigen), 2,1% (95% BI: 1,3-3,4; 1-4 jaar), 3,1% (95% BI: 2,2-4,2; 5-9 jaar), 4,0% (95% BI: 3,1-5,0; 10-14 jaar), 3,7% (95% BI: 2,9-4,8; 15-19 jaar). Bij de volwassenen liepen de puntschattingen per 5-jaars leeftijdsgroepen van 4,0% (30-34 jarigen) tot 6,6% (70-74 jarigen).

Conclusie

In de 4 geïncludeerde studies was de seroprevalentie hoger onder volwassenen ten opzichte van de onderzochte kinderen. Ook lijkt de seroprevalentie onder jongere kinderen lager dan bij de oudere kinderen.

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EFFECTIVENESS NON-PHARMACEUTICAL INTERVENTIONS (NPIs)

Research questions & methods:

What is the effectiveness of NPIs to mitigate the spread of SARS-CoV-2?

A literature search was performed in PubMed and Google to identify papers and reports

published between November 2020 and February 2021, that ranked the effectiveness of several NPIs or discussed the effectiveness of a specific NPI.

Results

NPI overall

The study of Haug et al. analyzed the impact of NPIs on the reproduction number, Rt, of COVID-19(1). A coded dataset was used containing 6,068 NPIs that were implemented in March-April 2020, in 79 countries or US states. Their approach combined four different computational techniques. When using the 46 NPI categories that were implemented more than five times, six NPI categories showed significant impacts on Rt in all four methods. The largest impacts on Rt were shown by small gathering cancellations (e.g., closures of shops, restaurants, gatherings of 50 persons or fewer, mandatory home working), the closure of educational institutions, and border restrictions. Other full-consensus NPIs were increased availability of personal protective equipment, individual movement restrictions and national lockdown.

Other models confirm especially the effectiveness of cancelling gatherings/public events, working at home and school/university closures(2-4).

Patel et al. (preprint) simulated the joint effect of vaccination and NPIs (stay at home order, face mask use, and school closings) for the state of North Carolina(5). The study suggests that, for a population of 10.5 million, about 1.8 million infections and 8,000 deaths could be prevented with more efficacious COVID-19 vaccines, higher vaccination coverage, and maintaining NPIs, such as distancing and face mask usage. Moreover, the findings highlight the importance of continued adherence to NPIs while the population is vaccinated, particularly under scenarios of lower vaccine efficacy (50% vs 90%) and coverage (25, 50 and 75% were tested).

Curfew and lockdown

Two French studies evaluated the effect of curfew (and lockdown) in September-December 2020. Metropolitan areas that introduced curfew a week earlier than others had decreasing numbers of COVID-19 cases before other areas(6). Dimeglio et al. demonstrated that the circulation of the virus in Toulouse was reduced by 38% by the 8 pm curfew. A stricter curfew (6 pm instead of 8 pm), that was implemented on Jan 15, led to a smaller reduction (35%). This could be because the more restrictive evening curfew results in larger groups of people in shops and supermarkets before they all hurried to get home(7).

Another unwished consequence of the lockdown was seen in Lombardy, Italy, where the lockdown and night curfew (11pm – 5am) led to an increase of domestic infections from 72.8% to 92.7%. Infections in schools, hospitals, workplaces, social gatherings and sport centers decreased though(8).

Face mask use

ECDC published an update on the effectiveness of face mask use last February(9). The evidence for face mask use in the public is mainly based on observational studies. Two reviews, of Coclite et al. and Brainard et al., arrive at similar conclusions: estimates of cluster-RCTs were in favor of wearing face masks vs. no mask, but not at statistically significant levels (aOR 0.90,

95% CI 0.78–1.05) and 0.94 (0.75-1.19) respectively). Observational studies demonstrate larger effects (unadjusted RR 0.55-0.90, and 0.39-0.85 respectively, depending on study type). Mathematical models indicated an important decrease in mortality when the population mask coverage is near-universal, regardless of mask efficacy(10, 11). Rader et al. related self-reported mask use in the USA to the reproduction number at state level. A logistic model controlling for physical distancing, population demographics, and other variables found that a 10% increase in self-reported mask-wearing was associated with an increased odds of transmission control (OR 3.53, 95% CI 2.03–6.43)(12). Ngonghala et al. predicted for four US regions that high mask use compliance after community lockdown lifting (even if the level of lifting was very high) greatly reduces the community transmission of COVID-19, resulting in very mild or no outbreaks in all four jurisdictions(13).

ECDC further states that the initial concerns that mandatory face mask usage would generate a false sense of security, and could decrease adherence to other types of protective behavior, such as physical distancing, have been shown to be unfounded. 'Risk compensation' may occur with some individuals but this is unlikely to counter the positive effects(14). The studies differ greatly regarding methods and evaluated outcome. Seres et al. observed that masks led to larger distances in lines for stores both before and after the mask mandate(15). Reversely, Cartaud et al. found that participants in an online survey confronted with online persons with a face mask, happy, neutral or angry face, found the persons with masks more trustworthy, resulting in a smaller preferred interpersonal distance (IPD)(16).

Conclusion

Recent comprehensive studies demonstrate that small gathering cancellations (closures of shops, restaurants, mandatory home working etc.), closures of schools/universities, border restrictions, increased availability of personal protective equipment, individual movement restrictions and national lockdown are the most effective NPIs in reducing COVID-19 transmission. Evidence for face mask use in the public is growing, but predominantly based on observational studies.

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COVID-19 AND IMMUNOLOGY

Research questions & methods:

Over the last year, the number of publications on COVID-19 immunology has exponentially expanded. To stay informed across the spectrum of COVID-19 immunology, a thorough search strategy has been set up covering the various arms of the immune system. This search strategy is now in the process of being condensed towards high quality, major publications (incl. peer reviewed preprints and in press). Weekly COVID-19 Immunology overviews and alerts will be sent to IIV staff and interested colleagues.

Results

Here, as an introduction to discoveries in SARS-CoV-2 immunology, we highlight a *Nature Reviews Immunology* review [1]. The authors present an overview and timeline of major immunology discoveries during the first year of the pandemic. With 168 references clearly organized around each discovery and month, this review discusses key immunology concepts around COVID-19. The review demonstrates extraordinary progress globally in our understanding of the immune response to SARS-CoV-2.

Conclusion

Extraordinary progress has been made in our understanding of SARS-CoV-2 immunology, as reflected in the number of high impact, high quality research papers over the last year. The review highlighted above provides a clear overview of last year's major insights.

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VACCINE EFFECTIVENESS AFTER ONE DOSE

Research questions & methods:

Currently, four COVID-19 vaccines are approved by the European Medicines Agency. The vaccines developed by Pfizer, Moderna and AstraZeneca require two doses for an optimal immune response and protection. Vaccine shortage combined with the urge to vaccinate as many people as possible as soon as possible, raises the question if the second dose may be postponed safely. A literature search was performed to investigate the vaccine specific

effectiveness against a SARS-CoV-2 infection and hospitalization after one dose of the COVID-19 vaccines currently administered in the Netherlands. A time interval of at least 14 days after the first dose was chosen because at that time any protection may be expected.

Literature was identified via an Embase search, preprints (MedRxiv, Preprints with the Lancet, preprints.org) and other sources (e.g. communications).

Results

Study populations

The post-marketing studies were performed in England, the UK, Scotland, Israel, Denmark and the USA. The study population consisted mainly of health care workers (HCWs) or long term care facility residents (LTCFRs).

VE against infection

For Pfizer, VEs of -6% to 91% (1-11)against a SARS-CoV-2 infection (irrespective of symptoms) are estimated with a time interval of at least 14 days after dose 1 to before dose 2. The smallest VE of -6% (95% CI -23, 8) was reported 14-20 days after dose 1 in those >80 years (1)of age and the largest VE of 91% (90% CI 83, 98) was reported 21 days after dose 1 in adults aged ≥16 yr (mean age of 59.7 years ± SD 14.7 yr) (7). In two studies the VE against SARS-CoV-2 infection (irrespective of symptoms) at least 14 days after one dose of the AstraZeneca vaccine was estimated with VEs between 5% and 68% in LTCFRs (11)and between 45% and 80% in HCWs (10).

VE against hospitalization

VEs against hospitalization range from 60% to 85% and 74% to 94% for the Pfizer and AstraZeneca vaccines, respectively (3, 12). For a single dose of either the Pfizer or AstraZeneca vaccine, VEs ranged from 33% to 85% (3, 12)with the lowest VE of 33% (95% CI 12-49) 14-20 days after dose 1 in those aged 18-64 year and the highest VE of 85% (95% CI 68-93) 28-34 days after dose 1 in those aged 18-64 years.

Conclusion

There is a large variety in study designs, study populations and time since vaccination in studies in which a VE after one dose is estimated. This challenges the comparability and interpretation of the results. Though, the majority of the reported VEs suggest a protective effect after one dose of the Pfizer or AstraZeneca vaccine. It is unclear how long this protection will last. Vaccine specific VEs are lacking for the Moderna vaccine.

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COVID-19 AND PREGNANCY

Research questions & methods:

In April 2020, a living systematic review was started by a research group from the UK to determine clinical manifestations, risk factors, and maternal and perinatal outcomes of COVID-19 in pregnancy (PregCOV-19 project) [1]. The systematic review is being updated on a regular basis. Here we provide a summary of the most recent update, focusing on (severe) outcomes related to COVID-19 in pregnant and recently pregnant women.

More information on the PregCOV-19 project and the latest updates are available via: https://www.birmingham.ac.uk/research/who-collaborating-centre/pregcov/about/index.aspx

An overview of all ongoing and completed COVID-19 reviews including living reviews can be found here: www.covid19reviews.org

Results

Databases were searched up to 6 October 2020 [1]. A total of 192 studies were included. Overall, 10% of pregnant and recently pregnant women attending or admitted to hospital for any reason had suspected or confirmed COVID-19. From the pregnant and recently pregnant women diagnosed with COVID-19, 4% (2% to 7%; 50 studies, 41,288 women) were admitted to the ICU, 3% (1% to 5%; 31 studies, 42,026 women) needed invasive ventilation, and 0.2% (0.0% to 0.7%; 13 studies, 33,521 women) required extracorporeal membrane oxygenation (ECMO). In comparison with non-pregnant women of reproductive age with COVID-19, pregnant women with COVID-19 had a higher risk of ICU admission (OR 2.13, 95% CI 1.53-2.95; 7 studies, 601,108 women), invasive ventilation (OR 2.59, 95% CI 2.28 to 2.94; 6 studies, 601,044 women) or ECMO (OR 2.02, 95% CI 1.22-3.34; 2 studies, 461,936 women). Increased maternal age (cut-off 35 years or more), high body mass index (cut-off 30 or more), non-white ethnicity, and pre-existing comorbidities were associated with serious complications such as ICU admission in pregnant women with COVID-19. The included studies were heterogenous, for example in terms of sampling strategies and definitions of outcomes, and sample sizes were often small. Not

many studies reported outcomes by trimester of symptom onset, what makes it difficult to assess whether COVID-19 complications are increased in women presenting in later stages versus earlier in pregnancy.

Conclusion

Based on the results from a comprehensive literature review, it seems that ICU admission and the need for invasive ventilation or ECMO are more likely in pregnant women with COVID-19 than in non-pregnant women with COVID-19. This may be partly explained by a lower threshold for ICU admission in pregnancy. More studies are needed that assess outcomes by trimester of pregnancy.

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KEY SYMPTOMS COVID-19

Research questions & methods:

What symptoms or combinations of symptoms are predictive of a COVID-19 infection?

The search focused on studies that assessed COVID-19 symptoms in community-based cohorts. Studies were identified by a snowballing approach.

Results

In a recent study performed in the UK and the US, over 125.000 adults registered symptoms and RT-PCR test results in the COVID-19 Symptom Study app [1]. Between 24 March and 15 September 2020, 1,281 persons had a positive test. Within three days of symptom-onset, the combination of cough, fever, dyspnea and anosmia/ageusia identified 69% of cases. When headache and fatigue were added, sensitivity increased to 92%. The number of tests to identify one case (test per case, TPC) doubled to 85 however, as headache and fatigue are also common in persons who do not have COVID-19. The combination with highest sensitivity (96%) included fatigue, anosmia/ ageusia, cough, headache, sore throat and diarrhea, requiring 96 tests per case.

Several other studies also reported the presence of non-respiratory symptoms and their

predictive value for test-positivity. The top five individual predictors of a COVID-19 infection in a German study using the COVID-19 Symptom Tracker were chills, fever, anosmia, nausea/vomiting, and shortness of breath [2]. In a study from the US (preprint, not yet peer-reviewed), the three symptoms with the largest individual positive predictive values were anosmia (52.5%), ageusia (51.0%), and fever (47.6%) [3]. The association between anosmia/ageusia and a positive test (OR 13.6; 95% CI 10.1-18.3) was also confirmed in another US study [4].

Looking at combinations of symptoms, a Portuguese case-control study found that in the best fit prediction model fever (aOR 1.96; 95% CI 1.78-2.18), myalgia (aOR 1.64; 95% CI 1.46-1.84), headache (aOR 1.44; 95% CI 1.29-1.62), fatigue (aOR 1.24; 95% CI 1.11-1.39) and diarrhea (aOR 1.42; 95% CI 1.22-1.65) were associated with a positive test [5]. Anosmia/ageusia (aOR 10.3, 95% CI 8.4-12.7), fever (aOR 2.5, 95% CI 2.0-3.1), myalgia (aOR 1.5, 95% CI 1.2-1.8) and cough (aOR 1.3, 95% CI 1.0-1.6) were associated with a positive test in an Italian study [6]. A study from the US (preprint) showed that the two symptom clusters most strongly associated with a COVID-19 infection were 1) ageusia, anosmia and fever, and 2) shortness of breath, cough and chest pain [3].

Conclusion

It appears that by adding non-typical symptoms such as headache and fatigue to current COVID-19 definitions, a larger proportion of cases can be identified. A limitation of the studies concerns the self-reporting nature. Users of an app may not be representative for the general population. Moreover, the results depend on different factors such as test availability/practices, COVID-19 incidence, and which symptoms are registered at what stage of the disease process [7].

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AIRBORNE TRANSMISSION OF SARS-COV-2

Research questions & methods:

A literature search was performed in LitCovid and Embase to identify epidemiological studies that suggest possible airborne transmission of SARS-CoV-2 via aerosols, published between September 2020 and January 2021.

Results

Six studies concerned epidemiological analyses of SARS-CoV-2 clusters or outbreaks. Only few studies utilized whole genome sequencing in order to identify the path of disease transmission, and the possibility of multiple index cases could not be excluded.

Günther et al. analyzed a cluster of SARS-CoV-2 infections of employees at a German meat processing plant [1]. A thorough investigation (including on-site visits and sequencing) indicated that although secondary infections could have occurred within apartments, bedrooms, or carpools, the majority of transmissions occurred within the beef processing facility, originating from a single employee. The authors concluded that environmental conditions in the facility, such as the low temperature and constant air recirculation, may have promoted aerosol transmission over distances of more than 8 meter from the index case.

An outbreak investigation in a restaurant in China, revealed that the distances between infector and infected persons were 4.8 and 6.5 meters, suggesting possible long distance droplet transmission. According to the authors, environmental conditions, i.e., strong air flows from the air conditioning, may have contributed to transmission [2]. In another Chinese outbreak all cases lived in one building sharing the same piping system [3]. Phylogenetic analyses and contact tracing indicated transmission through the air, but the specific circumstances (i.e., the drains were often dry) might have played a role. Other routes, for example via direct transmission in the elevator, could not be ruled out.

Two studies described SARS-CoV-2 outbreaks during bus trips, stating that the high secondary attack rate, also among individuals seated more than 2 meters away from the index case, must be partially explained by airborne transmission [4,5]. Furthermore, as Luo et al. suggested, the closed windows with running ventilation on the buses could have created an ideal environment for aerosol transmission [5]. However, other routes of infection cannot be ruled out completely, as was also the case in another study describing possible airborne transmission associated with an outbreak in an apartment building in South Korea [6].

Conclusion

Only few epidemiological studies are available that suggest airborne transmission. Most of the studies describe outbreaks in settings with specific environmental conditions (e.g. air flow, humidity, temperature). The overall quality of studies is low as sequencing was often not performed, and other routes of transmission could not be ruled out.

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COMORBIDITEIT EN HET RISICO OP ERNSTIGE OF FATALE COVID-19 BIJ VOLWASSENEN (18-60 JAAR)

Onderzoeksvragen & methoden:

Hoe verhouden medische hoog-risicogroepen zich tot elkaar en specifiek binnen de leeftijdscategorie 18-60 jaar in het risico op ernstige of fatale COVID uitkomsten?

De literatuurinventarisatie heeft als doel om in kaart te brengen hoe risico's op ernstige uitkomsten bij een SARS-CoV-2 infectie zich tot elkaar verhouden onder risicogroepen, vooral die met de leeftijd 18-60 jaar. Op basis van een automatische search door de bibliotheek worden er wekelijks nieuwe publicaties over comorbiditeit, ernstige COVID, en leeftijd <60 jaar geselecteerd. Relevante studies worden iedere twee weken besproken binnen het team. Een beschrijving van de huidige resultaten en inzichten wordt momenteel opgesteld.

Vragen over deze literatuurinventarisatie kunnen via onderstaande contactgegevens worden gesteld.

Resultaten

Het uitgangspunt in de COVID-19 vaccinatiestrategie, zoals geformuleerd door de Gezondheidsraad, is om in deze fase van de huidige pandemie primair in te zetten op het verminderen van ernstige ziekte en sterfte[1]. In deze fase waarin vaccins nog zeer schaars zijn, komen mensen met het hoogste risico het eerst in aanmerking voor vaccinatie. De selectie van medische hoog-risicogroepen voor prioritering van vaccinatie, zoals gespecificeerd in het Gezondheidsraadadvies van 4 februari 2021, is gebaseerd op twee analyses: de Britse OpenSAFELY-analyse van eerstelijnsdata en de associatie met overlijden ten gevolge van COVID-19[2], en een Duitse meta-analyse van het Robert Koch Instituut (RKI) over de associatie tussen onderliggende aandoeningen en het risico op ziekenhuisopname en overlijden ten gevolge van COVID-19[3]. Daarbij werd bij onderstaande groepen een verhoogd risico op overlijden gevonden vergelijkbaar met dat van personen rond de 70 jaar:

- patiënten met een hematologische maligniteit gediagnosticeerd in de afgelopen 5 jaar;
- patiënten met ernstig nierfalen waarvoor dialyse of voorbereiding voor dialyse;

- patiënten na orgaan- stamcel, of beenmergtransplantatie;
- patiënten met een primaire immuundeficiëntie;
- mensen met het syndroom van Down;
- patiënten met neurologische aandoeningen waardoor de ademhaling gecompromitteerd is;
- mensen met morbide obesitas (body mass index (BMI) >40).

Andere onderliggende aandoeningen kunnen ook een hoger risico hebben op een gecompliceerd beloop; daarbij ligt dat risico gelijk aan het risico van personen met de leeftijd <70 jaar of <60 jaar. Over verdere prioritering binnen de groep met een medische indicatie op basis van specifieke andere aandoeningen is niet geadviseerd door de Gezondheidsraad[1].

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