



Covid-19 lockdown og dets betydning for dels vækst, udvikling og trivsel, dels behandling af overvægt i kommunale og sygehus klinikker



Jens-Christian Holm

Consultant in Paediatrics, PhD, Associate Clinical and Research Professor, Head of Research and The Children's Obesity Clinic, European Centre of Management (COM) and The Danish Childhood Obesity Biobank Department of Paediatrics Copenhagen University Hospital Holbæk, Denmark and The Novo Nordisk Foundation Center for Basic Metabolic Research, University of Copenhagen, Denmark

Co-chair of The Childhood Obesity Task Force (EASO)

Årskonference Holbæk modellen
7 September 2021 Hotel Nyborg Strand



Konsekvenser for børn og unge af
Corona- pandemien og – nedlukninger mm.

1. Fysiske aktiviteter og vægt

2. Fysiske senfølger

3. Mental sundhed og psykisk sygdom

Corona-nedlukning rammer børn

https://www.sdu.dk/da/om_sdu/institutter_centre/iob_idraet_og.biomekanik/nyt_job/corona-nedlukning+rammer+boern+og+unge

SDU

Verdensmål Uddannelse Forskning Nyheder Samarbejde Bibliotek Om SDU Søg Log ind Menu

SDU > Om SDU > Institutter og centre > Institut for Idræt og Biomekanik > Nyheder > Corona-nedlukning rammer børn og unge



Corona-nedlukning rammer børn og unge: Faldende fysisk aktivitet er bekymrende

Landsdækkende undersøgelse fra Syddansk Universitet viser bekymrende tendens med faldende fysisk aktivitet og stigende kropsvægt blandt børn og unge under corona-nedlukningen.

Skriv her for at søge

18°C 20:00
06-09-2021

Institut for Idræt og Biomekanik ved Syddansk Universitet

- 1229 børn i alder 6-16 år adspurgt
- 80 % mindre aktive under nedlukning end før nedlukning
- 25% har taget på i vægt under nedlukning
- Færre idrætsaktiviteter i skoleregi og ingen foreningsidræt under nedlukning

Institut for Idræt og Biomekanik ved Syddansk Universitet

- De 6-16-årige er i gennemsnit kun fysisk aktive i 32,6 minutter om dagen.
- Hele 87,6% af de adspurgte lever ikke op til anbefalingerne om 60 minutters daglig fysisk aktivitet under nedlukningen.
- Herunder svarer 81,4%, at de er mindre fysisk aktive under vinterens nedlukning, sammenlignet med samme periode før nedlukningen.
- 67,5% er mindre fysisk aktive nu sammenlignet med under første nedlukning i foråret 2020.

Sundhedsstyrelsen

Definition af senfølger for voksne og børn i DK.

- Sygdom over 4 uger: langvarigt forløb
- Symptomer over 12 uger: senfølger
- Uanset om der er tale om et sygdomsforløb med langvarige symptomer eller senfølger, så medfører det ikke i sig selv behov for en sundhedsfaglig indsats. Der kan være tale om lettere symptomer, også over flere måneder, der langsomt aftager og til sidst forsvinder af sig selv. Omvendt kan der være behov for en sundhedsfaglig indsats fx ved egen læge eller på sygehus inden for 12 uger. Det vil altid bero på en vurdering af kompleksitet og alvorlighed af symptomerne.

Hvilke senfølger

- Der er blevet rapporteret forskellige langvarige symptomer (som varer i over 4 uger efter sygdomsstart). De mest hyppige er:
- Åndenød og hoste
- Brystsmerter, trykken for brystet og hjertebanken
- Træthed og feber
- Kognitive problemer som koncentrations- og hukommelsesbesvær, hovedpine, søvnforstyrrelser, perifer neuropati (nedsat/ændret følesans), svimmelhed og delir (forvirringstilstand som oftere ses hos ældre)
- Mavesmerter, kvalme, diarre, anoreksi/nedsat appetit (hos ældre)
- Led- og muskelsmerter
- Symptomer på depression og angst
- Tab af smags-/lugtesans, tinnitus, ørepine, ondt i halsen, svimmelhed
- Hududslæt

L Illness duration and symptom profile in symptomatic UK school-aged children tested for SARS-CoV-2

https://www.thelancet.com/journals/lanchi/article/PIIS2352-4642(21)00198-X/fulltext?utm_campaign=lancetcovid21&utm_content...

THE LANCET
Child & Adolescent Health

Log in Register Subscribe Claim

ARTICLES | ONLINE FIRST

Illness duration and symptom profile in symptomatic UK school-aged children tested for SARS-CoV-2

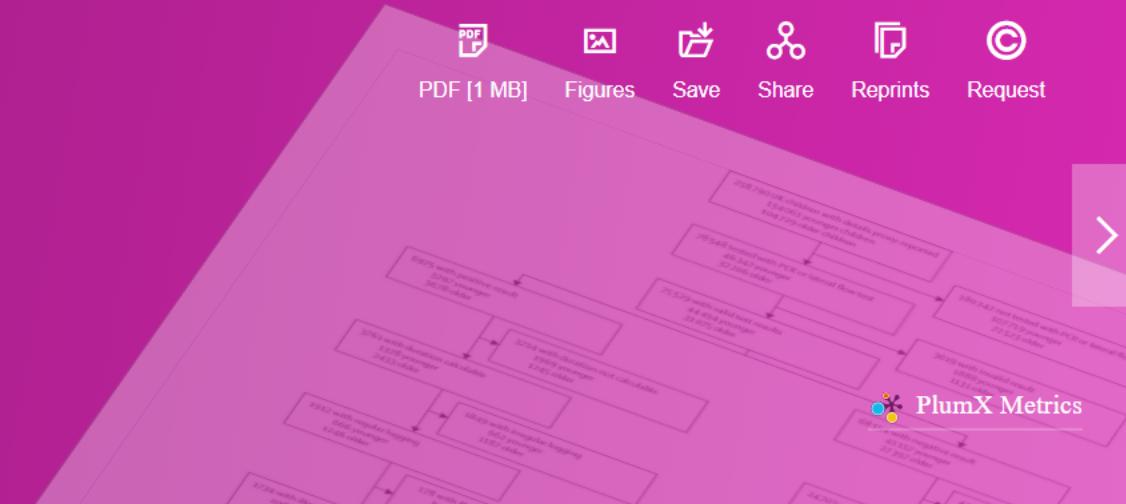
Erika Molteni, PhD † • Carole H Sudre, PhD † • Liane S Canas, PhD • Sunil S Bhopal, PhD • Robert C Hughes, MPH •
Michela Antonelli, PhD • et al. Show all authors • Show footnotes

Open Access • Published: August 03, 2021 • DOI: https://doi.org/10.1016/S2352-4642(21)00198-X •

Check for updates

PDF [1 MB] Figures Save Share Reprints Request

PlumX Metrics



Summary

Request Your
Institutional Access

Background

In children, SARS-CoV-2 infection is usually asymptomatic or causes a mild illness of short duration. Persistent illness has been reported; however, its prevalence and characteristics are unclear. We aimed to determine illness duration and characteristics in symptomatic UK school-aged children tested for SARS-CoV-2 using data from the COVID Symptom Study, one of the largest UK citizen participatory epidemiological studies to date.

Methods

In this prospective cohort study, data from UK school-aged children (age 5–17 years) were reported by an adult proxy. Participants were voluntary, and used a mobile application (app) launched jointly by Zoe Limited and King's College London. Illness duration and symptom prevalence, duration, and burden were analysed for children testing positive for SARS-CoV-2 for whom illness duration



Skriv her for at søge



18°C



20:09
06-09-2021



August 2021.

Senfølger er sjældne for børn og ofte milde.

- Hidtil største undersøgelse af senfølger efter forløb med covid-19, pcr-verificeret smittet.
- 1734 børn med positiv test rapporterede.
- 4,4 % havde fortsat symptomer efter 28 dage.
- 1,8% efter 56 dage.
- Symptomer var hovedsageligt hovedpine, træthed og lugttab. Ingen forværring i symptomer over tid.

- 1:4000 børn 0-19 år efter infektion med (eller muligvis kun efter vaccination mod) SARS-CoV-2.
- Enten positive PCR eller antistof for covid-19 *eller* tæt kontakt med smittet person.
- Symptomer: Feber i mere end tre dage. Dernæst hyppigst: gastrointestinale symptomer, udslæt, konjunktivitis, mukokutane forandringer og tegn på hæmodynamisk instabilitet. Mindre hyppigt ses neurologiske symptomer, cervical lymfadenopati og respiratoriske symptomer
- Behandling: Baseret på erfaringer fra KS har den generelle behandlingsstrategi af børn med PIMS-TS været IVIG og acetylsalicylsyre, mens nogle desuden fik samtidig kortikosteroidbehandling
- Prognose: I enkelte studier har man undersøgt den kortsigtede prognose, der viser normalisering af kliniske såvel som parakliniske fund 7-14 dage efter udskrivelsen [29, 21, 23]. I to studier har man dog rapporteret om persistente kardiale dysfunktion sekundært til myokarditis efter udskrivelsen [21, 22]. Mortaliteten har i de hidtidige opgørelser været meget lav med sammenlagt seks dødsfald i tre publikationer med cohorte på 58, 108 og 168 patienter [6, 9, 18].

ORIGINAL ARTICLE

Multisystem Inflammatory Syndrome in U.S. Children and Adolescents

Leora R. Feldstein, Ph.D., Erica B. Rose, Ph.D., Steven M. Horwitz, M.D., Jennifer P. Collins, M.D., Margaret M. Newhams, M.P.H., Mary Beth F. Son, M.D., Jane W. Newburger, M.D., M.P.H., Lawrence C. Kleinman, M.D., M.P.H., Sabrina M. Heidemann, M.D., Amarilis A. Martin, M.D., Aalok R. Singh, M.D., Simon Li, M.D., M.P.H., et al., for the Overcoming COVID-19 Investigators, and the CDC COVID-19 Response Team*

Article **Figures/Media**

Metrics

40 References **725 Citing Articles** **Letters**

Abstract

BACKGROUND

Understanding the epidemiology and clinical course of multisystem inflammatory syndrome in children (MIS-C) and its temporal association with coronavirus disease 2019 (Covid-19) is important, given the clinical and public health implications of the syndrome.

METHODS

We conducted targeted surveillance for MIS-C from March 15 to May 20, 2020, in pediatric health centers across the United States. The case definition included six criteria: serious illness leading to hospitalization, an age of less than 21 years, fever that lasted for at least 24 hours, laboratory evidence of inflammation, multisystem organ involvement, and evidence of infection with severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) based on reverse-transcriptase polymerase chain reaction (RT-PCR), antibody testing, or exposure to persons with Covid-19 in the past month. Clinicians abstracted the data onto standardized forms.

RESULTS

July 23, 2020
N Engl J Med 2020; 383:334-346
DOI: 10.1056/NEJMoa2021680
Chinese Translation 中文翻译

Related Articles

EDITORIAL JUL 23, 2020
Childhood Multisystem Inflammatory Syndrome — A New Challenge in the Pandemic
M. Levin

ORIGINAL ARTICLE JUL 23, 2020
Multisystem Inflammatory Syndrome in Children in New York State
E.M. DuFort and Others

CORRESPONDENCE OCT 29, 2020
Multisystem Inflammatory Syndrome in Children in the United States

18°C DAN

NEJM

- **RESULTS** We report on 186 patients with MIS-C in 26 states. The median age was 8.3 years, 115 patients (62%) were male, 135 (73%) had previously been healthy, 131 (70%) were positive for SARS-CoV-2 by RT-PCR or antibody testing, and 164 (88%) were hospitalized after April 16, 2020. Organ-system involvement included the gastrointestinal system in 171 patients (92%), cardiovascular in 149 (80%), hematologic in 142 (76%), mucocutaneous in 137 (74%), and respiratory in 131 (70%). The median duration of hospitalization was 7 days (interquartile range, 4 to 10); 148 patients (80%) received intensive care, 37 (20%) received mechanical ventilation, 90 (48%) received vasoactive support, and 4 (2%) died. Coronary-artery aneurysms (z scores ≥ 2.5) were documented in 15 patients (8%), and Kawasaki's disease-like features were documented in 74 (40%). Most patients (171 [92%]) had elevations in at least four biomarkers indicating inflammation. The use of immunomodulating therapies was common: intravenous immune globulin was used in 144 (77%), glucocorticoids in 91 (49%), and interleukin-6 or 1RA inhibitors in 38 (20%).
- **CONCLUSIONS** Multisystem inflammatory syndrome in children associated with SARS-CoV-2 led to serious and life-threatening illness in previously healthy children and adolescents.

DPU Danmarks Pædagogiske Universitet i samarbejde med Århus Universitet

- 93% af børn savner deres venner. Sociale problematikker
- 20 % af børn er fagligt udfordrede og disse blev særlig ramt af manglende hjælp fra lærere.
- Jo yngre elever jo mere pressede

TUBA (TUBA tilbyder hjælp, rådgivning og terapi til unge mellem 14 og 35 år, der er vokset op i hjem med alkohol- eller stofmisbrug)

- TUBAs egen chatrådgivning, så stigning i angst og depressionssymptomer afspejlet i et øget antal henvendelser under lockdown, heraf mange af selvskadende karakter, især selvmordstanker.
- Fra TUBAs kontakt med de unge ved vi, at nogle unge blev mere depressive og angste, fik mere tankemylder, fik svært ved at skabe struktur og overskue hverdagen. De følte sig ensomme og alene med alt det svære.
- Vi ved også, at nogle børn og unge syntes, at noget blev lettere under krisen. F.eks. at der var færre krav fra skole og uddannelse. Det kan også tænkes, at det blev lettere for børnene og de unge at skjule problemerne, og at det faktisk momentant føltes lettere, selvom det på sigt kan have alvorlige konsekvenser.
- .

Nationale forskningscenter for velfærd, VIVE

- 110 børnehaveledere adspurgt om trivsel efter at børnehaverne er genåbnet.
- Størstedelen fortæller, at de nye rammer med mindre børnegrupper, mere udeliv og aflevering til personale udenfor stuerne har medført:
 - Øget trivsel for børnene
 - Nemmere afleveringer

DANSKE REGIONER

EKSPERTPANEL OM CORONAS
AFLEDTE KONSEKVENSER FOR
SUNDHED OG TRIVSEL –
WORKSHOP OM PSYKISK SYGDOM
OG MENTAL SUNDHED D. 18. MAJ

2021

Psykiatri ved Naja W Iversen

- Antallet af udredningsforløb i 2020 er på stort set på niveau med 2018 i børne- og ungdomspsykiatrien og voksenpsykiatrien
- Overholdelsen af udredningsretten ser ud til at være næsten upåvirket af COVID-19
- Stort fald i ambulante kontakter (både i børn- og ungdomspsykiatrien og i voksenpsykiatrien)
- Antallet af indlæggelser er steget en smule i voksenpsykiatrien
- Indlæggelser faldt i børne- og ungdomspsykiatrien

Psykiatri

- Faldet i den ambulante kontakt b&u er særlig stort for nervøse og stressrelaterede lidelser fx depression
- I voksenpsykiatrien falder de ambulante kontakter på alle diagnoser. Særligt fald i indlæggelser med psykotiske lidelser
- Antallet af psykologkonsultationer (offentlig betalt psykologbehandling) på grund af angst og depression er steget fra 2019 og 2020
- Antallet af kontakter med privatpraktiserende psykiatere ser ikke ud til at være blevet påvirket af COVID-19
- Det gælder både for børne- og ungdomspsykiatrien og voksenpsykiatrien

Dansk Psykolog Forening: 3 konsekvenser for psykisk sygdom og mental sundhed efter COVID-19

- De fleste vil klare sig fint – men visse grupper er i risiko for mentale helbredsproblemer Mennesker formår at tilpasse sig og klare modgang. Men en risikogruppe må forventes at opleve psykiske eftervirkninger, herunder især personale i social- og sundhedssektoren samt personer med psykiske lidelser af forskellig sværhedsgrad.
- Flere vil få behandlingskrævende angst, depression og senfølger – mens andre har fået det bedre. Flere søger psykologbehandling for angst eller depression under corona og ventetiden er historisk høj. En betydelig andel oplever psykiske senfølger efter at have været smittet med covid-19 (f.eks. angst; dødsangst og sygdomsangst) og depression mv.
- Allerede udsatte børn og familier er i øget risiko under og efter krisen – nogle børn oplever øget trivsel. Børn og unge er i risiko for angst, mistrivsel og stress. Coronakrisen virker som en katalysator, der gør allerede udsatte børn og unge mere udsatte, men skaber også ny udsatthed for social og psykisk mistrivsel med negative konsekvenser på længere sigt. Nogle børn oplever også positive konsekvenser, i form af bedre tid til det enkelte barn i skole og dagtilbud og en pause fra sociale krav.

Dansk Psykiatrisk Selskab- Covid-19

- Øget risiko for sygdom og indlæggelse blandt psykiatriske patienter – måske pga deres samtidige dårlige fysiske sundhedstilstand – hvilket understøtter det aktuelle helhedsorienterede (Body & Mind) perspektiv i udviklingen af den psykiatriske behandling
- Restriktionerne: Forværring af psykisk lidelse pga vanskeligheder i det tværsektorielle arbejde, mindre behandler kontakt og færre aktivitetsmuligheder pointerer igen vigtigheden af netværksarbejdet og udgående funktioner. Nu ser vi ophobning af ambulant henvisninger og stigning i anvendelsen af tvang.
- Samfundet: Psykiatriens hårdt tiltrængte løft risikere at blive nedprioriteret el forsinket – og patient behandlingen uændret utilstrækkelig, når alle kræfter sættes ind på én sygdom
- Positivt: Digitaliseringen af psykiatrisk behandling har fået skub, som med fortsat understøttelse kan blive et godt alternativ og evt. en forbedring af psykiatriens indsatser

Afledte konsekvenser Covid-19 ved Merete Nordentoft

- Mindre social kontakt
- Færre sociale tilbud
- Mindre fysisk aktivitet
- Mindre støtte i hjem
- Mindre kontakt ml social og sundhedsvæsenet og de pårørende

START linien

EN SOMHEDEN RAMMER BREDT

- Ensomheden er en trussel mod den mentale sundhed
- Restriktionerne har ført til isolation og øget ensomhed
- Mulighederne for at bryde ensomheden er blevet begrænsede
- Mange står udenfor boblerne Isolation og ensomhed fører til tilbagefald Hjemmestudie- og arbejdsplads har forværret ensomheden

Altered immune cell function in obesity

- Chronic low-grade inflammation evident in white adipose tissue and systemically
- People living with obesity have a higher prevalence of infections and cancers.
- Obesity interlinked with infections in a complex manner. Certain rare infections can contribute to development of obesity; other more prevalent infections are associated with more morbidity and higher mortality rates in patients with obesity.
- The Danish Health Authority, recommend that adults with a BMI above 40 should receive vaccinations during influenza epidemics due to their increased risk of morbidity and mortality.

Summary of altered immune cell functions in obesity

- defects in activation and function of CD4+ and CD8+ T cells
- lowered T- and B-cell proliferation in response to mitogen stimulation
- altered lymphocyte and monocyte functionality
- decreased circulating natural killer (NK) cell populations with diminished activity
- Altered immune cell functions have also been described in children with obesity

Summary of altered immune cell functions in obesity

- Obesity; premature aging of the T-cell compartment by inducing thymic dysfunction.
- Reduce circulating levels of $\gamma\delta$ T cells and impair their function through reduced IL-2 [receptor expression](#) and IFN- γ production.
- Elevated leukocytes and lymphocytes counts (aside from suppressor T cells and natural killer cells), higher monocyte and granulocyte phagocytosis and oxidative burst activity in subjects with obesity compared to normal weight.
- Obesity was related to elevated leukocyte and lymphocyte subsets with lowered T- and B-cell proliferation in response to mitogen stimulation.
- Overall number of circulating T-cells as well as thymic output was lower in subjects with obesity. Altered counts of total lymphocytes in peripheral blood (either increased or decreased) and decreased CD8+ T-cell populations and increased or decreased numbers of CD4+ T-cells compared with controls with normal weight.

Infections in obesity

- People living with obesity have a higher susceptibility to development of post-surgical infections, H1N1 influenza, periodontal infections, and respiratory infections like bacterial pneumonia.
- Higher susceptibility to infection with Mycobacterium tuberculosis, coxsackievirus, Helicobacter pylori, encephalomyocarditis virus and that children with higher BMI are more than three times more likely to be asymptomatic carriers of Neisseria meningitis.
- Severity is most often reported higher in obesity. However, a few studies in the review also report that obesity protects in regard to infections and mortality.
- Hospitalized patients with obesity more likely to develop secondary infections and complications. Increased length of stay and higher mortality. Obesity negatively affect pulmonary function and patients with obesity exhibit pulmonary complications of a higher severity.

H1N1 influenza virus

- Obesity is a predictor of worse outcomes, as adults with obesity have a higher risk of complications and mortality from pandemic viruses such as H1N1 influenza virus. Higher risk of hospitalization due to seasonal influenza virus.
- From antibody responses to a trivalent influenza vaccine, an obesity-associated decrease in the CD8+ T cell response as well as greater decline in influenza antibody titers 12 months post vaccination compared to individuals with normal weight.
- Obesity may impair a person's ability to create a proper immunity response to influenza virus.
- Likely explained by defects in activation and function of CD4+ and CD8+ T cells.

Obesity and IAV vaccination

- People living with obesity demonstrate an impaired immune response to Influenza A virus (IAV) vaccination and antimicrobial treatment. Efficacy of other vaccines may be reduced. Vaccination for IAV H1N1 that host-associated factors such as obesity can reduce vaccine efficacy.
- Higher BMI was associated with a greater decline in influenza A antibody titers after 12 months, obesity may impair the ability to mount a protective immune response to influenza virus.
- Relatively lower effectiveness of influenza vaccines in people with obesity is hypothesized to be mediated by insufficient T cell function, since peripheral blood mononuclear cells from vaccinated adults with obesity show decreased activation of cytotoxic T cells and reduced expression of functional markers.

Reduced effect of antimicrobial treatment

- Patient response to treatment also differed in obesity. With higher BMI, serum and tissue drug levels are not adequate. This reduced antimicrobial effects using standard doses may also contribute to the more severe outcomes in patients with obesity. Patients with obesity may need higher doses of treatment to facilitate an effective response.
- In children with obesity, pharmacokinetic studies have shown abnormalities in terms of dosage, distribution, pharmacokinetics, plasma concentrations and clearance in children with obesity.

This article is licensed under the Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License (CC BY-NC-ND) (<http://www.karger.com/Services/OpenAccessLicense>). Usage and distribution for commercial purposes as well as any distribution of modified material requires written permission.

Position Statement

European Association for the Study of Obesity Position Statement on the Global COVID-19 Pandemic

Gema Frühbeck^{a, b} Jennifer Lyn Baker^{a, j} Luca Busetto^{a, c} Dror Dicker^{a, d}
Gijs H. Goossens^{a, p} Jason C.G. Halford^{a, g} Teodora Handjieva-Darlenska^{a, o}
Maria Hassapidou^{a, n} Jens-Christian Holm^{a, k} Susanna Lehtinen-Jacks^{a, l}
Dana Mullerova^{a, h} Grace O’Malley^{a, f} Jørn V. Sagen^{a, i} Harry Rutter^{a, m}
Ximena Ramos Salas^{a, q} Euan Woodward^{a, q} Volkan Yumuk^{a, e}
Nathalie J. Farpour-Lambert^{a, r}

Obesity Facts

This article is licensed under the Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License (CC BY-NC-ND) (<http://www.karger.com/Services/OpenAccessLicense>). Usage and distribution for commercial purposes as well as any distribution of modified material requires written permission.

Position Statement

Obesity and COVID-19: A Perspective from the European Association for the Study of Obesity on Immunological Perturbations, Therapeutic Challenges, and Opportunities in Obesity

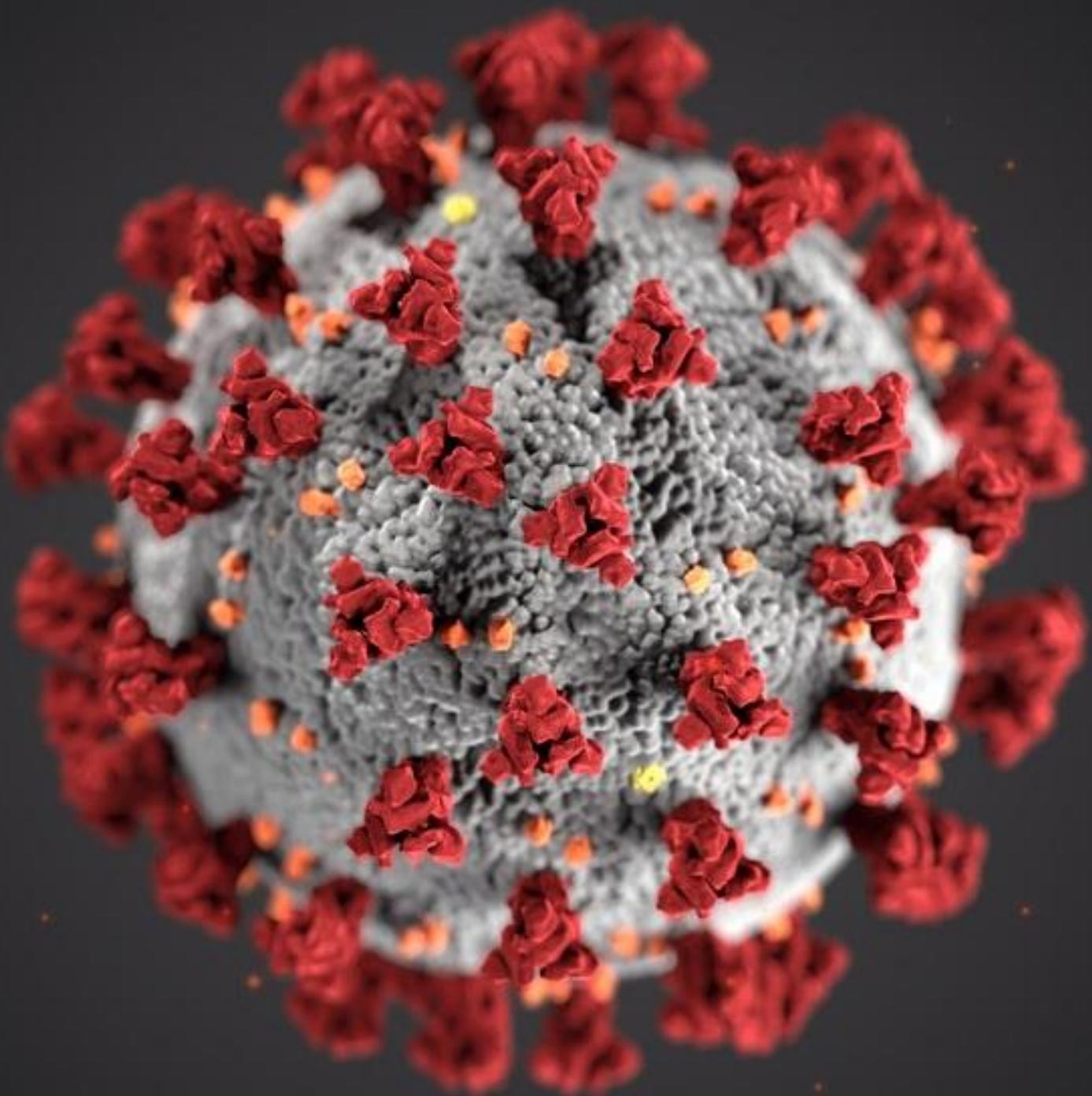
Gijs H. Goossens^{a, b} Dror Dicker^{a, c} Nathalie J. Farpour-Lambert^{a, d}
Gema Frühbeck^{a, e} Dana Mullerova^{a, f} Euan Woodward^{a, g}
Jens-Christian Holm^{a, h}

Position Statement

Obesity Facts

Vaccinating People with Obesity for COVID-19: EASO Call for Action

Dror Dicker^{a, b, c} Rachel Goland^d Jennifer Lyn Baker^{a, e} Luca Busetto^{a, f}
Gema Frühbeck^{a, g} Gijs H. Goossens^{a, h} Jason C.G. Halford^{a, i}
Jens-Christian Holm^{a, j} Euan Woodward^a Nathalie J. Farpour-Lambert^{a, k}



Obesity risk in COVID-19

- Obesity, a complex, chronic, progressive and recurrent disease, is associated with increased risks for the initiation, progression, and outcomes of COVID-19.
- Adults living with obesity are more likely to require acute care and admission to the intensive care unit, intubation, and mechanical ventilation, especially among those younger than 60 years.
- Mortality from COVID-19 was found to be higher among patients with obesity.
- Obesity is also the most commonly reported underlying medical condition in U.S. children presenting severe COVID-19.
- People living with obesity often have a systemic low-grade inflammation, a higher susceptibility to infections and a dampened immune response to infectious agents.

Viral impact and load

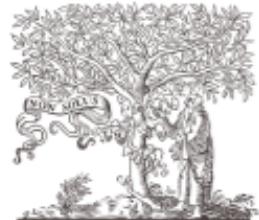
- Obesity may play a role in altering the viral life cycle, together with the intrinsic immunological perturbations and associated impaired immune response, leading to more severe clinical outcomes as compared to individuals with normal body mass index (BMI).
- The prolonged viral clearance demonstrated in patients with obesity infected with SARS-CoV-2 may support the relation between obesity and the risk of severe COVID-19.
- The positive correlation between body weight and time to negative detection of COVID-19 genes might suggest a larger viral load in people with obesity, while angiotensin-converting enzyme 2 in adipose tissue might be a critical link between obesity, non-communicable diseases, and the susceptibility to and severity of COVID-19.

COVID-19 vaccine efficacy in obesity

- Subgroup analysis in COVID-19 vaccination trials demonstrated that the efficacy among adults with obesity was consistent with the overall population (short term).
- A recent randomized trial, which estimated vaccine efficacy, for patients with obesity and other coexisting conditions such as hypertension found effectiveness to be slightly lower among persons with higher numbers of coexisting conditions.

Children and Covid-19

- 1-5% of the diagnosed COVID-19 cases are children so far, and they often have a milder disease than adults, and deaths are extremely rare.
- Diagnostic/clinical findings have been similar to adults including fever and respiratory symptoms, but fewer developed severe pneumonia.
- Lymphocytopenia is common in adults with COVID-19. With lymphocyte counts negatively associated with the severity of the disease, but this seems to be rare in children. No reduction in the number of lymphocytes, and no change throughout the disease.
- Potentially explains the much better outcomes seen in children with COVID-19.



ELSEVIER

Contents lists available at [ScienceDirect](#)

EClinicalMedicine

journal homepage: <https://www.journals.elsevier.com/eclinicalmedicine>



Research Paper

Reduced inflammatory responses to SARS-CoV-2 infection in children presenting to hospital with COVID-19 in China

Guoqing Qian^{a,c,1}, Yong Zhang^{b,1}, Yang Xu^{d,1}, Weihua Hu^{e,1}, Ian P. Hall^c, Jiang Yue^f,
Hongyun Lu^g, Liemin Ruan^{h,*}, Maoqing Ye^{i,*}, Jin Mei^{j,*}

Qian et al. The Hubei province
EClinicalMedicine 34 (2021) 100831

- Studied 127 laboratory-confirmed COVID-19 patients aged 1 month to 16 years with immunoglobulin, complement and proinflammatory cytokines, and lymphatic subsets during the early and late stage of COVID-19 infection.
- Divided cases of disease in four subgroups: mild, moderate, severe and critical.
- Results showed immune responses in children were significantly different from adults. Neither the numbers of T cells and suppressor T cells were associated with severity of disease. No severe inflammatory response or “cytokine storm” in children, even despite the presence of viral pneumonia in half of the children studied.

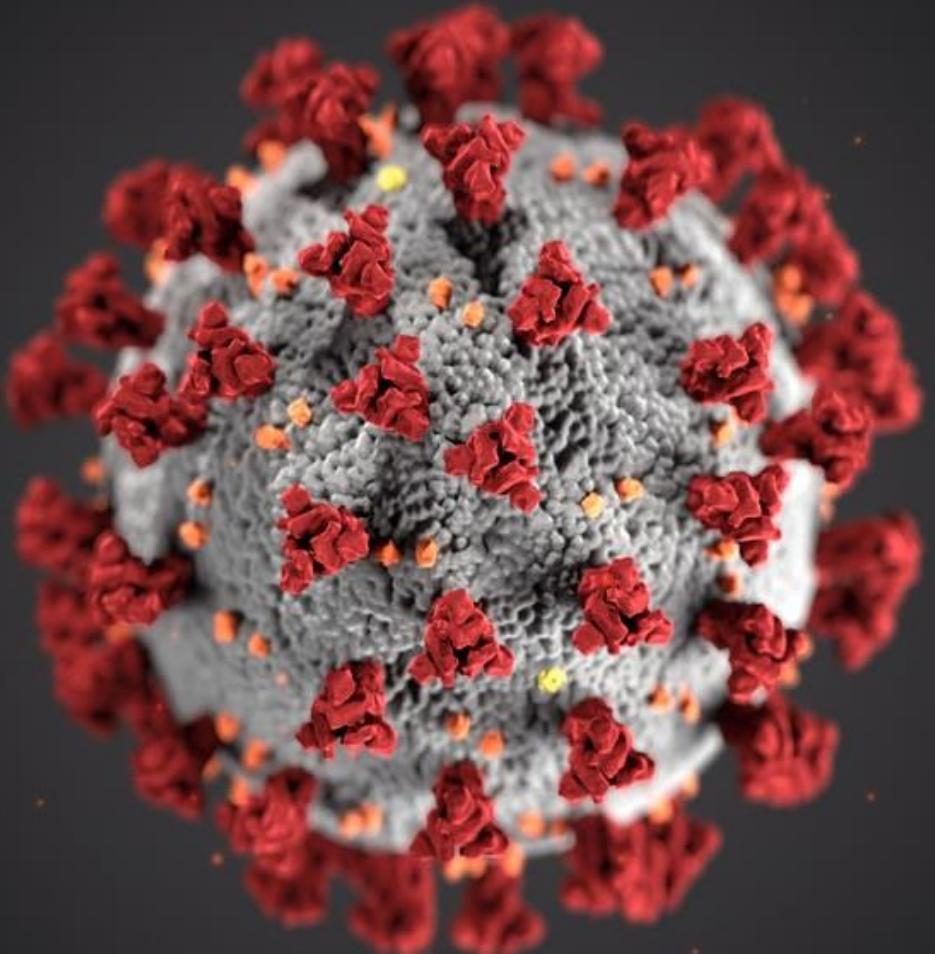
Children and Covid-19

- Half of the patients with severe disease were less than one year of age, and that critical cases often have comorbidities.
- Many other reasons why children tend to be less affected by COVID-19; children got less mature enzymes than adults. The immaturity of enzymes may “protect” the angiotensin-converting enzyme, ACE2, from binding SARS-CoV-2 S-protein that is thought to be a virulent factor of COVID-19.
- The more active innate immune system in children due to a more frequent recurrence of viral infection, higher lymphocyte and NK-cell count, and trained immunity after previous vaccines such as the BCG-vaccine, is thought to play a immunological protective role when facing COVID-19.
- Children may have a healthier respiratory tract, as not as exposed to cigarette smoke etc. as adults.

Pediatric inflammatory multisystem syndrome Covid-19

- Small percentage of children can develop a hyperinflammatory syndrome labelled as Pediatric inflammatory multisystem syndrome - temporally associated with SARS-CoV-2 (PIMS-TS).
- Features; persistent fever, evidence of inflammation, and single or multi-organ dysfunction in the absence of other known infections.
- May share features of Kawasaki disease, toxic shock syndrome or cytokine storm syndrome.
- Can deteriorate rapidly and may need intensive care support.
- The PCR test is more often negative; although, most of the children have antibodies to SARS-CoV-2.
- Although the pathogenesis is not clear, immune-mediated injury has been implicated.

COVID-19-Pandemia



Growth and development, milestones
Nutrition
Activity
Thriving; physical, mental and social
Sleep
Learning
Abuse, isolation, depression



REGION
SJÆLLAND





Disclosures

- Lecture fees and honoraria from Novo Nordisk and Rhythm Pharmaceuticals
- Board member; Danish Association for the Study of Obesity
- Member Obesity Committe; Danish Paediatric Society
- Co-chair; The Childhood Obesity Task Force EASO
- Ex-Officio Executive Committe EASO
- Dr Holm provides education, training and treatment



Thank you very much for your attention



Contact info

Mail

jhom@regionsjaelland.dk

jch@drholm.com

Facebook

Jens-Christian Holm

Twitter

JC_Holm

Homepage jenschristianholm.dk/uk/

