

OSA och hypoventilation under COVID-19 pandemin

ÖSSUR INGI EMILSSON
UPPSALA UNIVERSITET

Initial reactions in early 2020

Does NIV / CPAP increase risk of getting COVID-19, or the risk for spread?

What are the safest yet effective ways to initiate treatment?

Lack of evidence!

COVID-19: community CPAP and NIV should be stopped unless medically necessary to support life

Joseph Barker ,¹ Oluwatobiloba Oyefeso,² David Koeckerling,³ Nadeesha Lakmal Mudalige,⁴ Daniel Pan⁵

Thorax 2020;**75**:367.

doi:10.1136/thoraxjnl-2020-214890

Initial reactions in early 2020

Does NIV / CPAP increase risk of getting COVID-19, or the risk for spread?

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Lack of evidence!

Conservative recommendations to those with NIV / CPAP at home

Sleep medicine services dramatically reduced worldwide

Telemonitoring and -communication increased

Conservative use of NIV / CPAP in hospitals

Summary

The COVID-19 pandemic has increased our ability for initiating CPAP / NIV treatment on distance

OSA is a risk factor for COVID-19, but CPAP treatment may decrease that risk

CPAP / NIV does not spread particles as much as initially thought

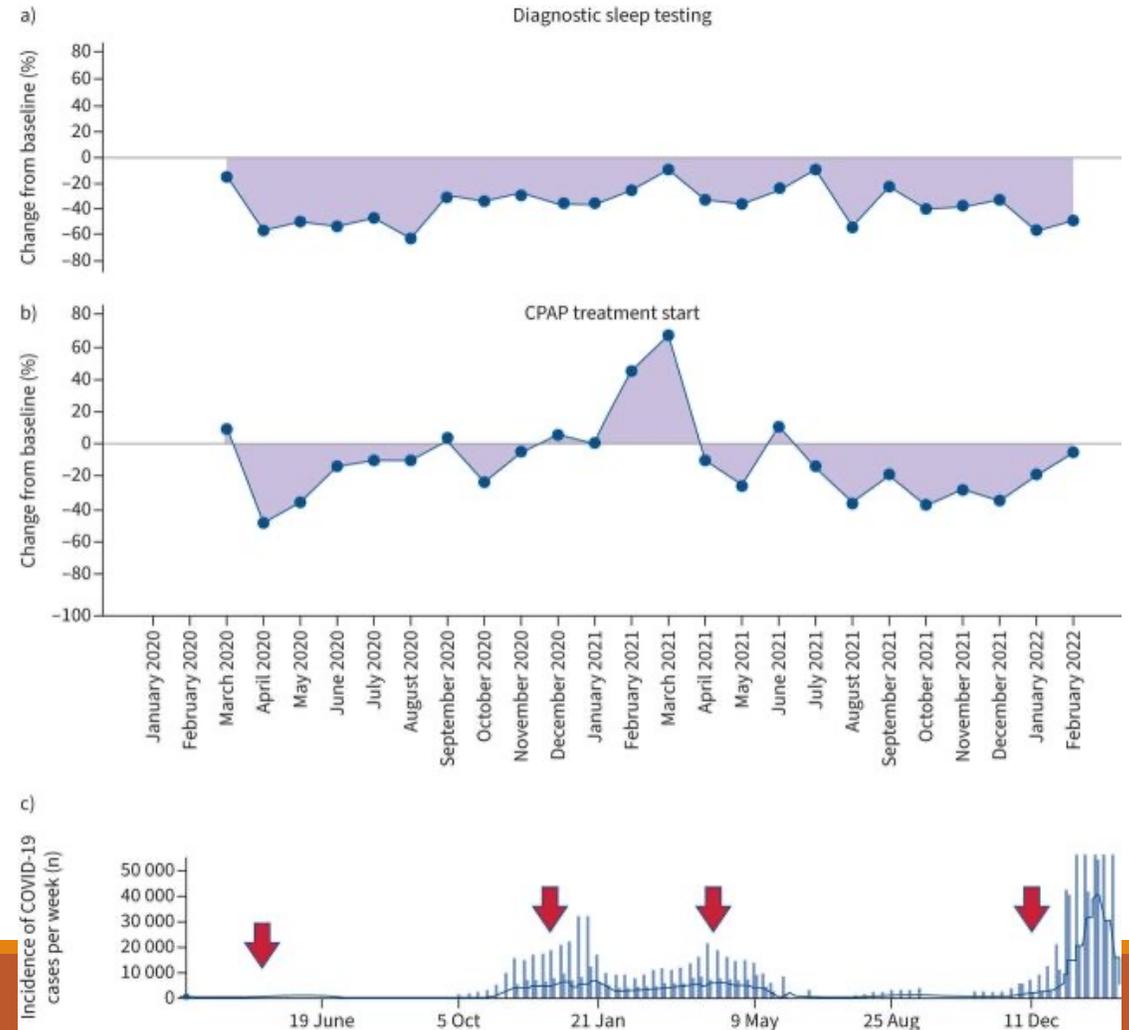
Unknown if any increased risk for cohabitants

Changes at sleep clinics

Initiation of CPAP treatment for OSA

43% decrease in OSA diagnosis during 2020

Start of PAP or oral devices reduced by 17% and 51%



Initiation of CPAP treatment for OSA

New means for patient contacts:

- Distance monitoring
- Use of single-use devices for diagnosis
- Digital communication
- Digital instructions

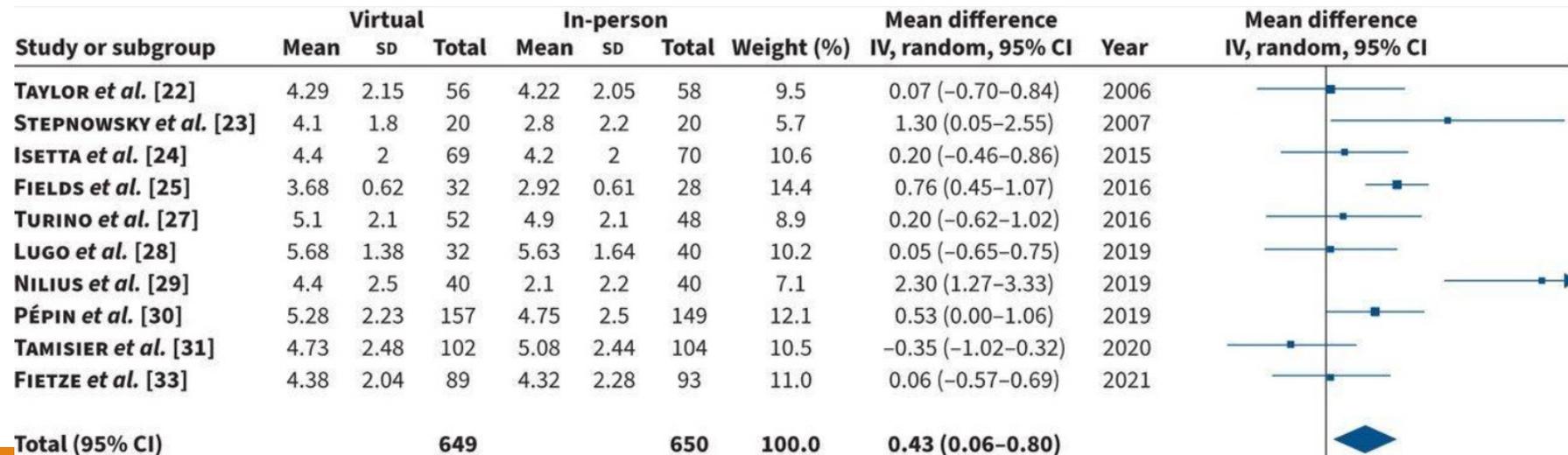
Initiation of CPAP treatment for OSA

Impact on compliance at initiation?

- In 2022, US study on 666 patients:
- Standard group PAP start → 65% compliance
- Distance PAP start → 55% compliance (and increased discontinuation)

Impact on compliance at follow-up?

- Review in Jan2022
- Alsaif SS et al, ERR



Heterogeneity: Tau²=0.22; Chi²=27.98; df=9 (p=0.0010); I²=68%
 Test for overall effect: Z=2.29 (p=0.02)

Favours (in-person) Favours (virtual)

Initiation of CPAP treatment for OSA

Pros:

- Less need for the patient to visit healthcare centers
- Possibilities for increased efficiency

Cons:

- Potential risk for worse compliance at certain stages
- Does not fit all

Mentometer

Har användning av digitala alternativ (videomöten, distansmonitorering etc) ökat i din vardag?

- Ja, mycket
- Lite grand
- Oförändrat
- Mindre

OSA as a risk factor for severe COVID-19

OSA risk factor for severe COVID-19 – Initial theories

Severe COVID-19 and OSA share risk factors

- Age, male sex, obesity, diabetes, hypertension

Potential mechanisms:

- RAAS system upregulated in OSA
- Systemic inflammation
- Lower baseline saturation (especially in obesity hypoventilation syndrome)

OSA risk factor for severe COVID-19 – Study results

Spanish cohort of SARS-CoV-2 positive patients in the spring of 2020

- 81 with OSA (all with CPAP treatment)
- 1,978 without OSA

No increased risk for severe COVID-19 among CPAP-treated OSA patients

Netherlands cohort of SARS-CoV-2 positive patients admitted to hospital in the spring of 2020

- 49 with OSA (with and without CPAP treatment)
- 674 without OSA

Increased risk for COVID-19 mortality among OSA patients (35% vs 21%)

OSA risk factor for severe COVID-19 – Study results

Icelandic cohort of SARS-CoV-2 positive patients in 2020

- 185 with OSA (with and without CPAP treatment)
- 4,571 without OSA

Table 3. The odds of severe COVID-19 in patients with obstructive sleep apnea

Adjusted for	Odds ratio (95% CI)
No adjustment	5.6 (3.8–8.3)
Age and sex	2.9 (1.9–4.4)
Age, sex, and BMI	2.2 (1.4–3.5)
Age, sex, BMI, and comorbidities*	2.0 (1.2–3.2)
Inverse probability weighting**	2.0 (1.1–3.6)

BMI: body mass index.

* Hypertension, diabetes mellitus, heart failure, chronic kidney disease, chronic obstructive lung disease (COPD), and smoking.

**Weights calculated using age, sex, BMI, hypertension, diabetes mellitus, heart failure, chronic kidney disease, COPD, smoking status, and BMI.

ORIGINAL ARTICLE

Obstructive sleep apnea is an independent risk factor for severe COVID-19: a population-based study

Kristján Godsk Rögnvaldsson^{1,6}, Elías Sæbjörn Eyþórsson², Össur Ingi Emilsson^{1,3}, Björg Eysteinsdóttir⁴, Runólfur Pálsson^{1,2}, Magnús Gottfreðsson^{1,5}, Gunnar Guðmundsson^{1,4} and Vilhjálmur Steingrímsson^{1,2,*,6}

SLEEPJ, 2022, Vol. 45, No. 3

OSA a risk factor for severe COVID-19 - Conclusions

Obstructive sleep apnea likely a risk factor for severe COVID-19

CPAP treatment may mitigate this risk

In the hospital

Mentometer

Hur tror du att CPAP påverkar spridning av utandade partiklar?

- Ökar mycket
- Ökar lite grand
- Oförändrat
- Minskar lite grand
- Minskar mycket

Review in 2022

Noninvasive respiratory support for COVID-19 patients: when, for whom, and how?

Zachary P. Sullivan, Luca Zazzeron, Lorenzo Berra, Dean R. Hess, Edward A. Bittner and Marvin G. Chang*

Table 5 Safety considerations for Noninvasive Respiratory Support (NIRS) in COVID patients

Safety Considerations for Noninvasive Respiratory Support in COVID patients

- 1) Isolated negative pressure environment (room, hood, tent) [44]
 - a) Preferably with anteroom and private bathroom
 - 2) Full contact, droplet, and airborne isolation precautions [44]
 - 3) Full PPE that includes PAPR or N-95, gown, gloves, and face/eye shield [4]
 - 4) Escalation of care to ICU for rapidly increasing O₂ requirement or patients on NIV
 - 5) NIV with helmet and tight air cushion or unvented oronasal mask [9]
 - a) Dual limb circuit over single limb circuits when utilizing CPAP or NIV
 - 6) For single limb circuit, filter over leak port
 - 7) Viral–bacterial filter between mask and exhalation port [4]
 - 8) Staffing that allows for close monitoring to assess for deterioration
 - 9) Sterile equipment nearby in preparation for emergent intubation in the event of rapid deterioration
 - 10) Daily monitoring of HCW for symptoms[1]
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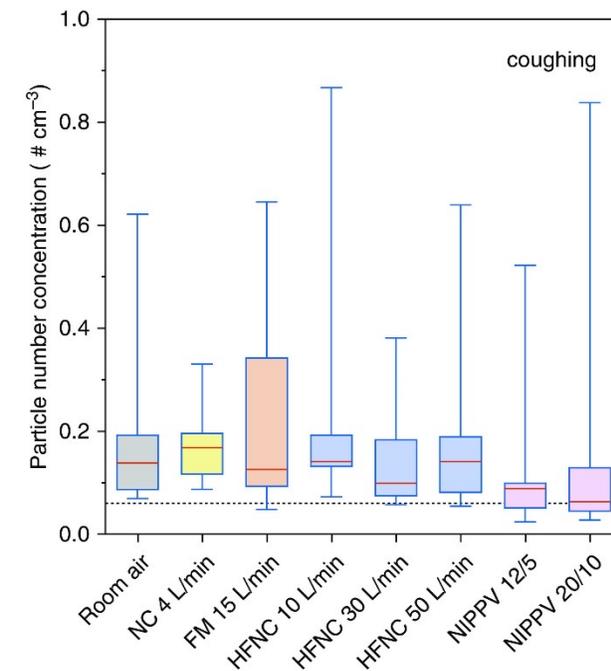
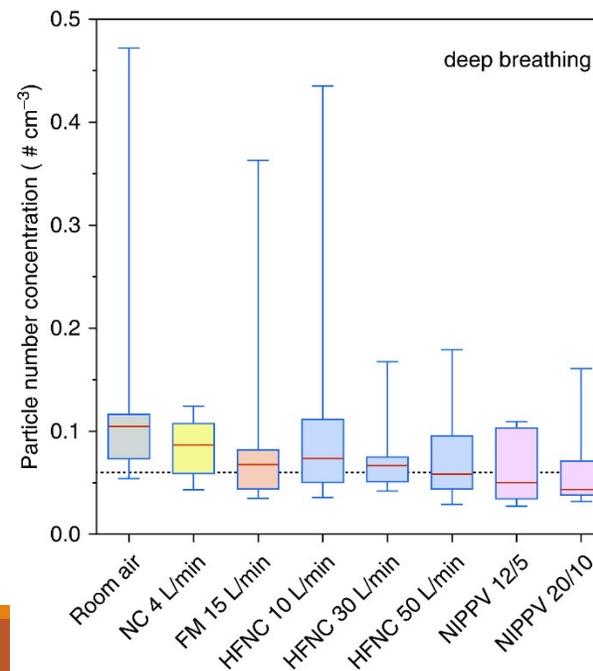
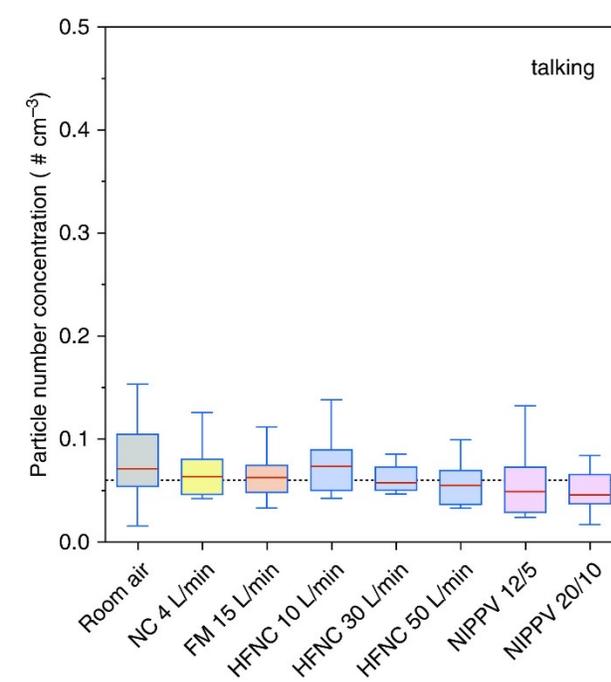
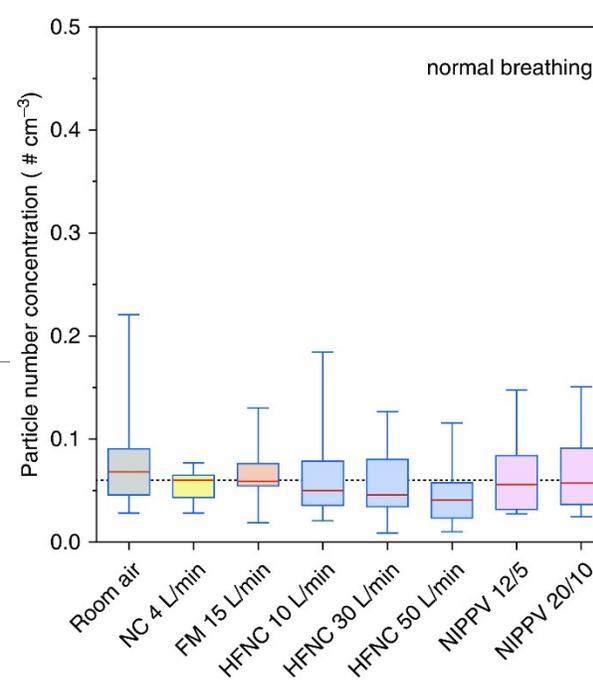
Particle spread from NIV / CPAP

Study from 2020

10 healthy volunteers

No differences in produced particles

- Tested in negative-pressure room



American Journal of Respiratory and Critical Care Medicine

Home > American Journal of Respiratory and Critical Care Medicine > List of Issues > Volume 202, Issue 8

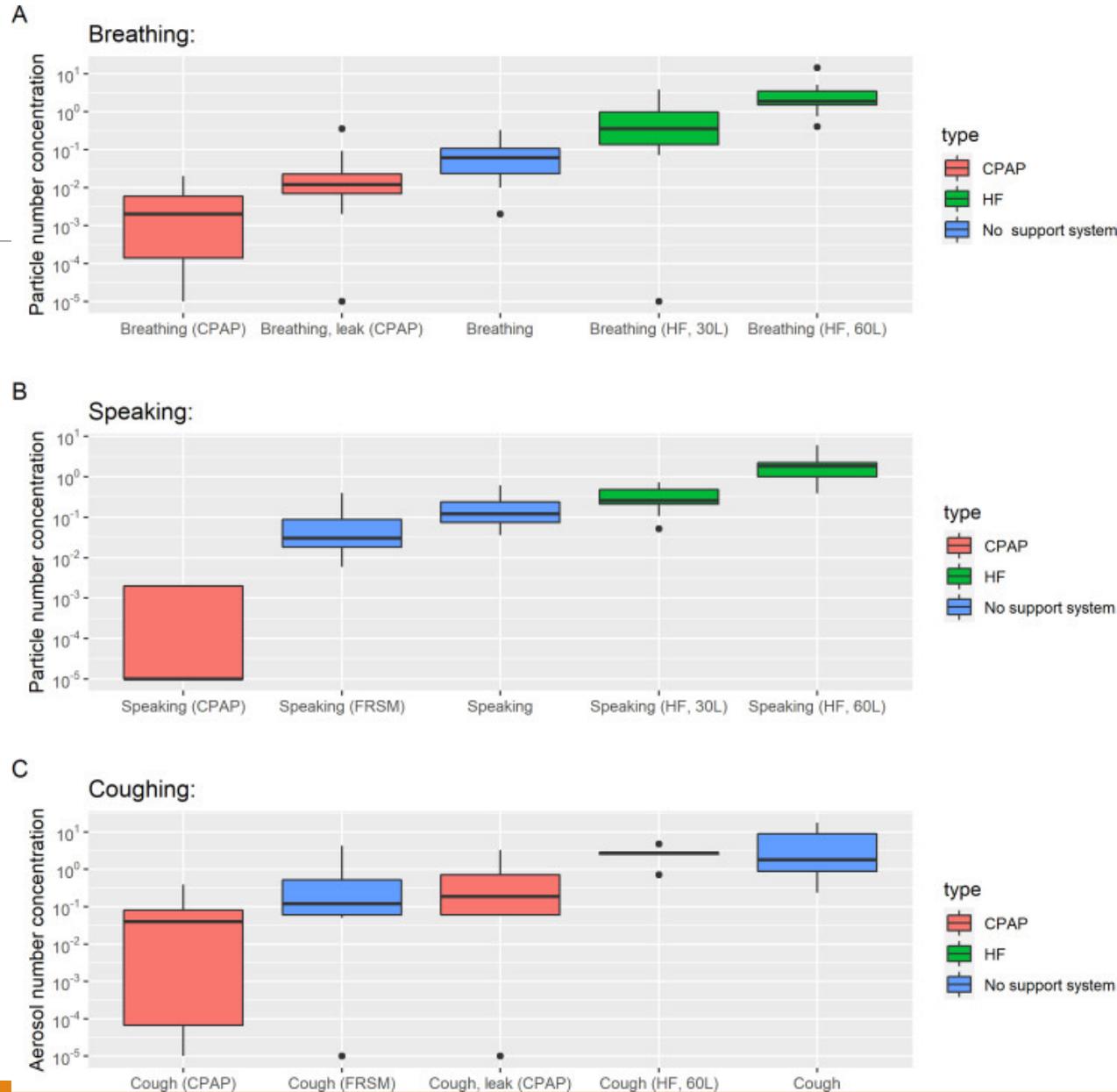
Aerosol Generation from the Respiratory Tract with Various Modes of Oxygen Delivery

Nathaniel T. Gaeckle¹, Jihyeon Lee², Yensil Park³, Gean Kreykes³, Michael D. Evans⁴, and Christopher J. Hogan Jr.²

Pre

Particle spread from NIV / CPAP

Studies on healthy volunteers do not show significant increase in particle spread from CPAP



Particle spread from NIV / CPAP

Studies on hospitalised COVID-19 patients show a similar trend, although:

- Often with filters
- Optimal PPE of healthcare workers
- Small numbers
- Various evaluation techniques, not always relevant

The initial studies on SARS suggested NIV to be a potential source for spreading virus

Particle spread from NIV / CPAP

What should we recommend patients with NIV / CPAP in hospitals?

What should we recommend patients with NIV / CPAP at home?

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