

# Links to some of the latest information and resources on **Nasal High Flow (NHF) use with COVID-19 patients**

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Europe

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Recent evidence-  
based COVID-19  
guidelines



Clinical  
webinars



Infection risk  
& uncertainty



Articles, studies,  
systematic reviews  
& opinions



Miscellaneous

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## Recent evidence-based COVID-19 guidelines

(MULTI-REGIONAL) *Click links for further reading on COVID-19 guidelines...*



→ **WHO: Clinical management of COVID-19: living guidance.**

(JAN 2021 UPDATE)

GLOBAL

→ **NIH: COVID-19 treatment guidelines – oxygenation and ventilation**

(DEC 2020 UPDATE)

USA

→ **Surviving Sepsis Campaign: Guidelines on the management of adults with COVID-19 in the ICU.**

(JAN 2021 UPDATE)

EUROPE AND USA COMBINED

→ **Surviving Sepsis Campaign: Recommendation chart**

(JAN 2021 UPDATE)

EUROPE AND USA COMBINED

→ **ANZICS: COVID-19 Guidelines – V3.**

(OCT 2020 UPDATE)

AUSTRALIA AND NEW ZEALAND

→ **National COVID-19 Clinical Evidence Taskforce: Respiratory support for adults with severe to critical COVID-19.**

AUSTRALIA AND NEW ZEALAND

→ **National Health Commission of the People's Republic of China: diagnosis and treatment protocol for COVID-19 patients.**

CHINA

→ **Handbook of COVID-19 Prevention and Treatment (first affiliated Chinese hospital).**

CHINA

→ **European Respiratory Journal: Management of hospitalised adults with coronavirus disease-19 (COVID-19): A European Respiratory Society living guideline**

EUROPE

→ **Society of Critical Care Medicine (SCCM) summary video of NHF use in COVID-19 respiratory failure.**

USA

→ **WHO: TECHNICAL SPECIFICATIONS for invasive and non-invasive ventilators for COVID-19.**

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## Clinical webinars (MULTI-REGIONAL)

*Click links to view further information on COVID-19.*



### → ATS Webinar: Nicholas Hill: Non-invasive techniques in the COVID-19 Pandemic.

USA

- **5:00** Summary of existing guidelines
- **7:57** Technical differences and distinctions between NHF and NIV
- **9:25** Indications for NIV
- **27:00** NHF discussed
- **30:10** Aerosol dispersion
- **48:00** ROX index

### → ER Cast: COVID-19 Inside NYC. Dr Reuben Strayer.

USA

- **6:20** PPE discussed
- **16:20** CPAP pre-oxygenation discussed
- **18:10** NHF discussed
- **23:10** Pre-oxygenation with NHF

### Philips: International Learning from COVID-19:

EUROPE

#### → Webinar Series 2.

- **31:00 - 1:10:00** Non-invasive respiratory support strategies discussed
- **1:21:00** Aerosolization discussed (Dr Hui, Hong Kong)
- **1:26:00** Summary from Dr Mark Elliot (Chair, UK)

#### → Webinar Series 3.

- **7:30** Italian experience with CPAP in COVID-19 (Dr Annalisa Carlucci)
- **19:00** Temple University, USA, experience with NHF and early analysis of data
- **37:00** Dr Nick Hart (London) discusses intubation strategies, pathophysiology of COVID-19 and oxygen supply
- **1:16:00** Dr Wolfram Windisch (Germany) describes experience
- **1:46:00** Dr Mark Elliot (Chair, UK) discusses CPAP v NHF in COVID-19 survey results

#### → Webinar Series 4.

- **1:34:50** Aerosolization and cross infection discussed

### → FPH: Respiratory Care Webinar 1: Nasal high flow - moving forward with COVID-19, Dr Anil Patel.

UK

- Aerosolization discussed.

### → FPH: Respiratory Care Webinar 3: High-flow nasal cannula for COVID-19 patients, Dr Jie Li.

USA

- Aerosol dispersion in the hospital setting.

### → FPH: NHF and COVID-19 JAPAN AND USA

- **From start:** NHF as a respiratory support (Pr Gerard Criner)
- **22:38** NHF and bio-aerosol dispersion (Dr Jie Li)
- **36:25** Aerosol dispersion under oxygen delivery modes (Dr Kazuko Yamamoto)
- **45:40** Video of particle dispersion (Takazono T et al)

### → FPH: Respiratory Care Webinar 2: HFNO outside ICU, safety and effectiveness, Dr Audrey Créac'hcadec.

FRANCE

- Local experience of NHF use in COVID-19 patients outside the ICU.

### → FPH: Respiratory Care Webinar Discussion: Dr Nicholas Hart, Dr Alison Armstrong, Dr Swapna Mandel and Dr Chris Carlin.

UK

- Value of NHF in preparation for the second wave of COVID-19 in the UK.

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## Infection risk & uncertainty (MULTI-REGIONAL)

Click links below for further reading on COVID-19 and aerosolization of the virus.

→ WHO: Modes of transmission of virus causing COVID-19: implications for IPC precaution recommendations.

GLOBAL

→ Wilson N et al. The effect of respiratory activity, ventilatory therapy and facemasks on total aerosol emissions. *MedRxiv pre-print*.

AUSTRALIA

→ Takazono T et al. Effects of surgical masks on droplet dispersion under various oxygen delivery modalities. *Critical Care*.

→ Video: Experimental footage of particle dispersion.

JAPAN

→ Li J et al. High-flow nasal cannula for COVID-19 patients: low risk of bio-aerosol dispersion. *Eur. Respir. J.*

USA

→ Jermy et al. Assessment of dispersion of airborne particles of oral/nasal fluid by HFNC therapy. *MedRxiv pre-print*.

NEW ZEALAND

→ Li J et al. Placing a mask on COVID-19 patients during high-flow nasal cannula therapy reduces aerosol particle dispersion. *ERJ Open Res.*

USA

→ Leung C et al. Comparison of high-flow nasal cannula versus oxygen face mask for environmental bacterial contamination in critically ill pneumonia patients. *J. Hosp. Infect.*

HONG KONG

→ Hui D et al. Exhaled air dispersion during high flow nasal cannula therapy versus CPAP via different masks. *Eur. Respir. J.*

HONG KONG

→ Li et al. High-flow aerosol dispersing – versus aerosol generating procedures. *AJRCCM*.

USA

→ Gaeckle N et al. Aerosol generation from the respiratory tract with various modes of oxygen delivery. *AJRCCM*.

USA

→ Kaur R et al. Practical strategies to reduce nosocomial transmission to healthcare professionals providing respiratory care to patients with COVID-19. *Critical Care*.

USA

→ Kotoda M et al. Assessment of the potential for pathogen dispersal during high-flow nasal therapy. *J. Hosp. Infect.*

JAPAN



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## Articles, studies, systematic reviews & opinions (MULTI-REGIONAL)



→ Patel M et al. Retrospective analysis of high flow nasal therapy in COVID-19-related moderate-to-severe hypoxemic respiratory failure. *BMJ Open Respiratory Research*.\*

USA

→ Guy T et al. High flow nasal oxygen: a safe, efficient treatment for COVID-19 patients not in an ICU. *Eur. Respir. J.*\*

FRANCE

→ Vianello A et al. Assessment of outcomes and safety of HFNC in AHRF consequent to COVID-19.\* *Thorax*.

ITALY

→ Deng L et al. Outcome of early versus late HFNC in elderly COVID-19 ARDS patients. *medRxiv*.

CHINA

→ Bonnet et al. High flow nasal oxygen therapy to avoid invasive mechanical ventilation in SARS-CoV-2 pneumonia: a retrospective study. *Annals of Intensive Care*.

FRANCE

→ Jackson et al. High flow nasal cannula for acute hypoxic respiratory failure in COVID-19. *Respiratory Care*.

USA

→ Gershengorn et al. The impact of NHF use on patient mortality and the availability of mechanical ventilators in COVID-19. *Ann. Am. Thorac.*

USA

→ Anesi et al. Characteristics, outcomes, and trends of patients with COVID-19-related critical illness at a learning health system in the United States. *Ann. Intern. Med.*

USA

→ Westafer et al. No evidence of increasing COVID-19 in health care workers after implementation of high flow nasal cannula: A safety evaluation. *Am. J. Emerg. Med.*

USA

→ Calligaro et al. The use of NHF for severe COVID-19 in a resource-constrained setting. *EClinical Medicine*.

SOUTH AFRICA

→ Hu et al. Application of high-flow nasal cannula in hypoxemic patients with COVID-19: a retrospective cohort study. *BMC Pulmonary Medicine*

CHINA

→ Zucman N et al. Using the ROX index to predict outcome of NHF use during COVID-19 AHRF. *Intensive Care Med.*

FRANCE

Asia & Pacific

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\* publication reports observations on both NHF outcomes as well as staff infection rates.

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## Articles, studies, systematic reviews & opinions (MULTI-REGIONAL)



Europe

→ Gattinoni L et al. COVID-19 pneumonia: different respiratory treatments for different phenotypes? *Intensive Care Med.*  
ITALY

→ SYSTEMATIC REVIEW:  
NHF for AHRF in patients with COVID-19: systematic reviews of effectiveness and its risks of aerosolization, dispersion, and infection transmission. *Can. J. Anaesth.*  
GLOBAL

Americas

→ Gattinoni L et al. COVID-19 pneumonia: ARDS or not? *Critical Care.*  
ITALY

→ Duan J et al. Use of HFNC and NIV in patients with COVID-19: a multicentre observational study. *Am. J. Emerg. Med.\**  
CHINA

→ Raoof S et al. High-flow, non-invasive ventilation and awake (non-intubation) proning in COVID-19 patients with respiratory failure. *Chest.*  
USA

Asia & Pacific

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→ Fisher & Paykel Healthcare  
COVID-19 Resource Center.  
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→ Fisher & Paykel Healthcare  
Optiflow Flow Matters - Vol. 10.  
GLOBAL



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## USA AND CANADA

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→ NIH: COVID-19 treatment guidelines – oxygenation and ventilation.

→ Society of Critical Care Medicine: summary video of NHF use in COVID-19 respiratory failure.



→ FPH: Respiratory Care Webinar 3: High-flow nasal cannula for COVID-19 patients, Dr Jie Li.

→ ATS: Nicholas Hill: Non-invasive techniques in the COVID-19 pandemic.

→ ER Cast: COVID-19 – Inside NYC. Dr Reuben Strayer.



→ Li J et al. Placing a mask on COVID-19 patients during high-flow nasal cannula therapy reduces aerosol particle dispersion. *ERJ Open Res.*

→ Li et al. High-flow aerosol dispersing – versus aerosol generating procedures. *AJRCCM.*

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→ Kaur R et al. Practical strategies to reduce nosocomial transmission to healthcare professionals providing respiratory care to patients with COVID-19. *Critical Care.*

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→ Anesi et al. Characteristics, outcomes, and trends of patients with COVID-19-related critical illness at a learning health system in the US. *Ann. Intern. Med.*

→ Jackson et al. High flow nasal cannula for acute hypoxic respiratory failure in COVID-19. *Respiratory Care.*

→ Patel M et al. Retrospective analysis of high flow nasal therapy in COVID-19-related moderate-to-severe hypoxemic respiratory failure. *BMJ Open Respiratory Research.*

→ Raoof S et al. High flow, non-invasive ventilation and awake (non-intubation) proning in COVID-19 patients with respiratory failure. *Chest.*

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## ASIA & PACIFIC

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→ **ANZICS: COVID-19 Guidelines – V3.**  
(OCT 2020 UPDATE)  
**AUSTRALIA AND NEW ZEALAND**

→ **National Health Commission of the People's Republic of China: diagnosis and treatment protocol for COVID-19 patients.**  
**CHINA**

→ **National COVID-19 Clinical Evidence Taskforce: Respiratory support for adults with severe to critical COVID-19.**  
**AUSTRALIA AND NEW ZEALAND**

→ **Handbook of COVID-19 Prevention and Treatment (first affiliated Chinese hospital).**  
**CHINA**



→ **Jermy et al. Assessment of dispersion of airborne particles of oral/nasal fluid by HFNC therapy. *MedRxiv pre-print.***  
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→ **Hui D et al. Exhaled air dispersion during high flow nasal cannula therapy versus CPAP via different masks. *Eur. Respir. J.***  
**HONG KONG**

→ **Kotoda M et al. Assessment of the potential for pathogen dispersal during high-flow nasal therapy. *J. Hosp. Infect.***  
**JAPAN**

→ **Leung C et al. Comparison of high-flow nasal cannula versus oxygen face mask for environmental bacterial contamination in critically ill pneumonia patients. *J. Hosp. Infect.***  
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Europe

## EUROPE & AFRICA

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→ Surviving Sepsis Campaign:  
Guidelines on the management  
of adults with COVID-19 in  
the ICU.

EUROPE AND USA

→ Surviving Sepsis Campaign:  
Recommendation chart.

EUROPE AND USA

→ European Respiratory Journal:  
Management of hospitalised  
adults with coronavirus  
disease-19 (COVID-19):  
A European Respiratory  
Society living guideline

EUROPE



FPH: Respiratory Care webinars

→ 1: Nasal high flow - moving forward  
with COVID-19.

UK

→ 2: HFNO outside ICU, safety and  
effectiveness.

FRANCE

→ Webinar Discussion: NHF and the  
second wave of COVID-19 in the UK.

UK

Philips: International Learning  
from COVID-19.

EUROPE

→ Webinar Series 2.

→ Webinar Series 3.

→ Webinar Series 4.



→ Gattinoni L et al.  
COVID-19 pneumonia:  
different respiratory  
treatments for  
different phenotypes?  
*Intensive Care Med.*

ITALY

→ Gattinoni L et al.  
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(JAN 2021 UPDATE)

→ **F&P Healthcare COVID-19 Resource Center.**

→ **WHO: TECHNICAL SPECIFICATIONS for invasive and non-invasive ventilators for COVID-19.**



→ **The Internet Book of Critical Care – COVID podcast #5.**

→ **The Internet Book of Critical Care – COVID podcast #7.**



→ **WHO: Modes of transmission of virus causing COVID-19: implications for IPC precaution recommendations.**



→ **SYSTEMATIC REVIEW:**  
**High-flow nasal cannula for acute hypoxemic respiratory failure in patients with COVID-19: systematic reviews of effectiveness and its risks of aerosolization, dispersion, and infection transmission.**  
*Can. J. Anaesth.*

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