

Question submitted to RapidInfo4U

Is there any evidence to suggest chest physiotherapy is an aerosol-generating procedure?
Does the evidence compare different types of chest physiotherapy treatment techniques - and whether certain treatments may be more aerosol generating than others? (i.e. positive pressure devices, oscillating devices, cough assist, breathing techniques, patient coughing, suction etc).

Short Answer

There is insufficient evidence to state that chest physiotherapy is an aerosol-generating procedure. However, absence of evidence is not evidence of absence. International and national professional physiotherapy bodies have endorsed guidelines for physiotherapy management during COVID-19 which state that chest physiotherapy interventions are potentially aerosol-generating procedures and strongly recommend using airborne precautions when delivering these interventions. Furthermore, a recent systematic review classified chest physiotherapy interventions as *potentially* aerosol-generating and recommended, for the purposes of selecting personal protective equipment, that such procedures be treated as aerosol-generating.

Long answer

Guidelines for physiotherapy management of adult patients with suspected or confirmed COVID-19 were published in the Journal of Physiotherapy in April of this year [1]. This *Physiotherapy Management for COVID-19* report has been endorsed by World Physiotherapy, the International Confederation of Cardiorespiratory Physical Therapists and national professional physiotherapy associations from Australia, Canada, Belgium, India, France and the UK. These clinical practice recommendations were prepared by a group of international experts in cardiorespiratory physiotherapy. The authors identified recently developed guidelines for COVID-19 management of critically ill patients from international agencies (e.g.

World Health Organization), critical care professional societies (e.g. European Society of Intensive Care Medicine), and professional physiotherapy associations. These documents, in conjunction with expert opinion, were then used to develop the clinical practice recommendations for physiotherapy management of COVID-19 [1].

[Chest physiotherapy management for COVID-19: clinical practice recommendations](#)

The *Physiotherapy Management for COVID-19* report [1] states that there is insufficient evidence regarding the aerosol-generating potential of chest physiotherapy interventions. Nonetheless, they recommend assuming that the following procedures *may be* aerosol-generating (p.79):

- cough-generating procedures (e.g. cough or huff during treatment)
- positioning or gravity-assisted drainage techniques and manual techniques (e.g. expiratory vibrations, percussion and manually assisted cough) that may trigger a cough and sputum expectoration
- use of positive pressure breathing devices (e.g. inspiratory positive pressure breathing), mechanical insufflation-exsufflation devices, intra/extra pulmonary
- high-frequency oscillation devices (e.g., The Vest, MetaNeb, Percussionaire)
- PEP and oscillating PEP devices
- bubble PEP
- nasopharyngeal or oropharyngeal suctioning
- manual hyperinflation
- open suction
- saline instillation via an open-circuit endotracheal tube
- inspiratory muscle training, particularly if used with patients who are ventilated and disconnection from a breathing circuit is required
- sputum inductions
- any mobilisation or therapy that may result in coughing and expectoration of mucus

The guidelines [1] strongly recommend using airborne precautions if performing any of these procedures and that physiotherapists in conjunction with the wider medical team consider the risks versus benefit in undertaking them. If the chest physiotherapy intervention is deemed essential the recommendations are:

- procedures should be undertaken in a negative-pressure room, where available, or in a single room with the door closed
- the minimum number of required staff should be present and they must all wear PPE
- Entry and exit from the room should be minimised during the procedure

[Classification of aerosol-generating procedures: chest physiotherapy](#)

In October 2020, a systematic review on the classification of aerosol-generating procedures was published in BMJ Open Respiratory Research. This review investigated how official guidance documents and academic publications have classified the aerosol-generating potential of procedures. The authors systematically searched Medline, Cochrane Central and Google, and included documents from a variety of sources such as healthcare organisations, agencies, government departments and research literature in the review. To be eligible for inclusion the documents had to state whether procedures were aerosol-generating, possibly aerosol-generating or not aerosol-generating. The review included 128 documents.

To aid classification and data extraction the authors created 39 procedure groups through an iterative process of expert consensus; one of the procedure groups identified was chest physiotherapy. Procedures were given one count for each document in which they were classified as either 1) aerosol-generating, 2) possibly aerosol-generating or 3) not aerosol-generating. Based on the literature, the authors defined an aerosol-generating procedure as any intervention or procedure that could produce aerosols capable of transmitting diseases. They note that some of the documents defined aerosol-generating procedures as those capable of producing aerosols *in excess* of what is produced when a patient is coughing, breathing or talking (p.3).

A total of 46 documents included in the review referenced chest physiotherapy interventions; 23 (50%) classified them as aerosol-generating; 14 (30%) classified them as possibly aerosol-generating and 9 (20%) classified them as not aerosol-generating. The authors conclude that chest physiotherapy interventions are potentially aerosol-generating procedures. Furthermore, the authors recommend that for the purposes of selecting personal protective equipment any procedure classified as potentially aerosol-generating be treated as an aerosol generating procedure.

Conclusion

There is insufficient evidence to state that chest physiotherapy is an aerosol-generating procedure. However, absence of evidence is not evidence of absence. International and national professional physiotherapy bodies have endorsed guidelines for physiotherapy management during COVID-19 which state that chest physiotherapy interventions are potentially aerosol-generating procedures and strongly recommend using airborne precautions when delivering these interventions. Furthermore, a recent systematic review classified chest physiotherapy interventions as potentially aerosol-generating and recommended, for the purposes of selecting personal protective equipment, that such procedures be treated as aerosol-generating.

Disclaimer

This document has not been peer-reviewed; it should not replace individual clinical judgement. The views expressed in this document are not a substitute for professional medical advice. The content of this document is correct as of 04/12/20.

Rapid Evidence Search & Summary (RESS)

Our team of multidisciplinary researchers and clinicians in conjunction with the University of Limerick Library and Information Services have developed a detailed protocol for conducting a Rapid Evidence Search & Summary (RESS) to answer questions submitted to RapidInfo4U. Our RESS protocol uses PICO or PEO methods to refine your question and follows a detailed search procedure capturing guidance documents from governments, institutions and professional bodies; searching clinical and COVID

specific repositories; and identifying the most recent reviews and RCTs in the scientific literature using established databases.

References

1. Thomas P, Baldwin C, Bissett B, Boden I, Gosselink R, Granger CL, Hodgson C, Jones AY, Kho ME, Moses R, Ntoumenopoulos G. (2020). Physiotherapy management for COVID-19 in the acute hospital setting: clinical practice recommendations. *Journal of Physiotherapy* 66(2), p. 73-82.
2. Jackson T, Deibert D, Wyatt G, Durand-Moreau Q, Adishes A, Khunti K, Khunti S, Smith S, Chan XH, Ross L, Roberts N. (2020). Classification of aerosol-generating procedures: a rapid systematic review. *BMJ Open Respiratory Research*, 7(1).