BRITISH JOURNAL OF HOSPITAL MEDICINE

Ward-based high-flow nasal cannula oxygen for acute lower respiratory tract infection

Alexandra Dipper[1]

Hazel Morrison[1]

Rachel Jones[2]

On behalf of the PRISM Respiratory Trainee Research Network HFNO group

Author details can be found at the end of this article

Correspondence to:
Hazel Morrison;
hazelmorrison@doctors.org.uk

How to cite this article:
Dipper A, Morrison H, Jones R, on behalf of the PRISM Respiratory Trainee Research Network HFNO group. Ward-based high-flow nasal cannula oxygen for acute lower respiratory tract infection. Br J Hosp Med. 2021. https://doi.org/10.12968/hmed.2021.0240

High-flow nasal cannula oxygen therapy uses an air/oxygen blender to deliver heated and humidified oxygen at flows of up to 60 litres/min via nasal cannula. Use of high-flow nasal cannula oxygen delivery for adult patients with acute respiratory failure is well established, but current evidence commonly combines outcomes from medical inpatients with those in perioperative and critical care settings (O'Driscoll et al, 2017). Details of use and outcomes from ward-based high-flow nasal cannula oxygen remain uncertain, particularly in patients with lower respiratory tract infection. The authors conducted a regional clinical service evaluation, collecting data from adult medical inpatients commenced on high-flow nasal cannula oxygen to determine outcomes for those with lower respiratory tract infection.

Inpatients aged >18 years who had been commenced on high-flow nasal cannula oxygen on medical wards (ie not in an intensive care, high dependency, theatre or emergency department setting) during a 6-week period from December 2018 to January 2019 were identified from nine hospitals in the south west of England. Baseline data were recorded within 24 hours of high-flow nasal cannula initiation and included patient demographics, primary diagnosis, reason for high-flow nasal cannula use, arterial blood gas results and details of oxygen delivery before high-flow nasal cannula. Follow-up and mortality data were collected from patient records 30 days after high-flow nasal cannula oxygen initiation. Data were collected by members of the PRISM respiratory trainee research network.

Of the 45 patients commenced on high-flow nasal cannula on a medical ward during this period, lower respiratory tract infection and associated hypoxaemic respiratory failure was the most common indication (28/45, 62%). Among these patients, the median age was 68 years (range 23–91 years) and 64% (18/28) were men. All-cause 30-day mortality was 32% (9/28), with all nine patients dying during their hospital admission. Of 15 patients eligible for escalation to critical care, three required mechanical ventilation (20%). The mortality rate among patients who were not eligible for escalation to critical care was 46% (6/13). Four patients (14%) did not have a treatment escalation plan in place at the time high-flow nasal cannula was commenced. Fifteen patients (54%) commenced high-flow nasal cannula oxygen on respiratory wards, 10 patients (36%) on acute medical units and three patients (11%) on other medical wards. Senior physicians (consultants or registrars) were consulted when starting high-flow nasal cannula in 23/28 (82%) patients.

In this patient cohort, requirement for ward-based high-flow nasal cannula oxygen for acute lower respiratory tract infection was associated with significant mortality and risk of requiring invasive mechanical ventilation (where suitable). The authors highlight that treatment escalation planning decisions, alongside informed discussion with patients and relatives, are a necessary consideration before initiation of ward-based high-flow nasal cannula oxygen for acute lower respiratory tract infection. These observational results require confirmation in larger studies. A national consensus guideline on the use of high-flow nasal cannula oxygen would help to ensure a standardised approach toward patient selection, particularly given the uncertainties regarding its use during the COVID-19 pandemic.

Local understanding of service delivery is essential to improve patient outcomes. In addition to better documentation of treatment escalation plans, considerations for future quality improvement projects include optimising treatment location, as highlighted in a national patient safety alert (National Patient Safety Alert (2020), consistent involvement of senior decision makers when commencing high-flow nasal cannula, education on recognising patients who are likely to fail high-flow nasal cannula therapy and early involvement of intensive care or palliative care teams where appropriate.

Author details

[1]Department of Respiratory Medicine, Musgrove Park Hospital, Taunton, UK

[2]Department of Respiratory and Intensive Care Medicine, Southmead Hospital, North Bristol NHS Trust, Bristol, UK

References

National Patient Safety Alert. NatPSA/2020/002/NHSPS: Interruption of high flow nasal oxygen during transfer. 2020. https://www.england.nhs.uk/wp-content/uploads/2020/04/FINAL-NatPSA-Interuption-of-HFNO-during-transfer-April-2020-v3.pdf (accessed 10 May 2021)

O'Driscoll BR, Howard LS, Earis J et al. BTS guideline for oxygen use in adults in healthcare and emergency settings. Thorax. 2017;72(Suppl 1):ii1–90. https://doi.org/10.1136/thoraxjnl-2016-209729

Collaborators in the PRISM Respiratory Trainee Research Network HFNO group

Regional project leads

Dr Hazel Morrison*, Musgrove Park Hospital, Taunton
Dr Alexandra Dipper*, Musgrove Park Hospital, Taunton
Dr Rachel Jones, Southmead Hospital, North Bristol NHS Trust, Bristol

Local trust project contributors

Dr Jennifer Rossdale, Bristol Royal Infirmary, Bristol
Dr Ivan Collin, Bristol Royal Infirmary, Bristol
Dr Hina Iftikhar, Great Western Hospital, Swindon
Dr George Bardsley, Great Western Hospital, Swindon
Dr Hugh Welch, Musgrove Park Hospital, Taunton
Dr Louise Anning, Derriford Hospital, Plymouth
Dr Imran Howell, Derriford Hospital, Plymouth
Dr Helen McDill, Southmead Hospital, North Bristol NHS Trust, Bristol
Dr Kate Cockcroft, Royal Devon and Exeter Hospital, Exeter
Dr Philip Mitchelmore, Royal Devon and Exeter Hospital, Exeter
Dr Ryan Miller, North Devon District Hospital, Barnstaple
Dr Alison Kent, Royal United Hospital Bath, Bath
Dr Seema Alaee, Cheltenham General Hospital, Gloucestershire Hospitals NHS Foundation Trust, Cheltenham
Dr Adriana Pereira, Gloucestershire Royal Hospital, Gloucestershire Hospitals NHS Foundation Trust, Gloucester
Dr Frances Rickard, Cheltenham General Hospital, Gloucestershire Hospitals NHS Foundation Trust, Cheltenham

PRISM committee

Dr Michael Gibbons, Royal Devon and Exeter Hospital, Exeter
Dr Rahul Bhatnagar, Southmead Hospital, North Bristol NHS Trust, Bristol
Dr John Corcoran, Derriford Hospital, Plymouth
Dr Janet Fallon, Musgrove Park Hospital, Taunton
Dr Philip Mitchelmore, Royal Devon and Exeter Hospital, Exeter
Dr Ryan Miller, North Devon District Hospital, Barnstaple
Dr Joanna Hardy, Southmead Hospital, North Bristol NHS Trust, Bristol
* also PRISM committee members