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## RESPONSE TIMES FOR ACUTE NON-INVASIVE VENTILATION SET-UPS

## Dear Editor,

NIV is a lifesaving treatment in chronic obstructive pulmonary disease (COPD). Prompt NIV treatment in hypercapnic COPD exacerbations allows for improved physiological outcomes, reduced intubation rates and shortened hospital stay in (1, 2). Therefore, consensus expert opinion is that prompt application of acute NIV substantially reduces the risk of death and should be started without delay in appropriately selected patients with acute hypercapnic respiratory failure (AHRF). The ‘door-to-mask’ time (hospital arrival to NIV commencement: target  $\leq 120$  minutes) has been widely used to measure the quality of acute NIV services as per the 2018

reported a median ‘door-to-mask’ time at the emergency department at Heartlands Hospital in 2014 of 115 min, meeting the 2018 BTS quality standard of  $\leq 120$  minutes(5). As part of an important quality improvement initiative, we have subsequently developed internal guidelines and monthly NIV training sessions to try to improve acute NIV service quality. We aimed to look at response times within the door-to-mask time using standards derived from the British Thoracic Society/Intensive Care Society Guideline for the ventilatory management of acute hypercapnic respiratory failure and 2019 BTS NIV Audit Report to generate insights for future quality improvement (6) (Figure 1).

Data on metrics were recorded for all acute NIV recipients in the Emergency Department (ED) at Heart of England Foundation NHS Trust and stored in our acute NIV quality database for subsequent extraction and calculation of median (interquartile ranges (IQR)). Between 27/03/19 and 26/09/19, 89 patients received NIV with 46 starting on acute NIV in ED, 38 developed acidosis later and 5 had incomplete data(7). The total door to mask time in ED was 163 (197) mins. Within this, the door-to-first-ABG time was 29 (55) minutes, the first-ABG-to-Decision making/call time was 72 (77) minutes and decision making-to-mask time was 40 (20) minutes. We saw an increase in door-to-mask time from 2014 to 2019, likely reflecting the national increase in ED wait times. However, the decision-making to mask time was 40 min which has decreased from 55 since 2014, reflecting the improved response times of physiotherapists potentially due to feedback on performance and monthly NIV training sessions for allied health professionals, as well as internal guideline development (8). This audit is part of a continual quality improvement project and will serve as a foundation to monitor specific response times and quality with iterative interventions. With the ongoing COVID-19 pandemic and stringent infection control measures around aerosol generating procedures, it is now essential to determine the impact this has had on NIV service quality and excess deaths with a view for continual quality improvement.

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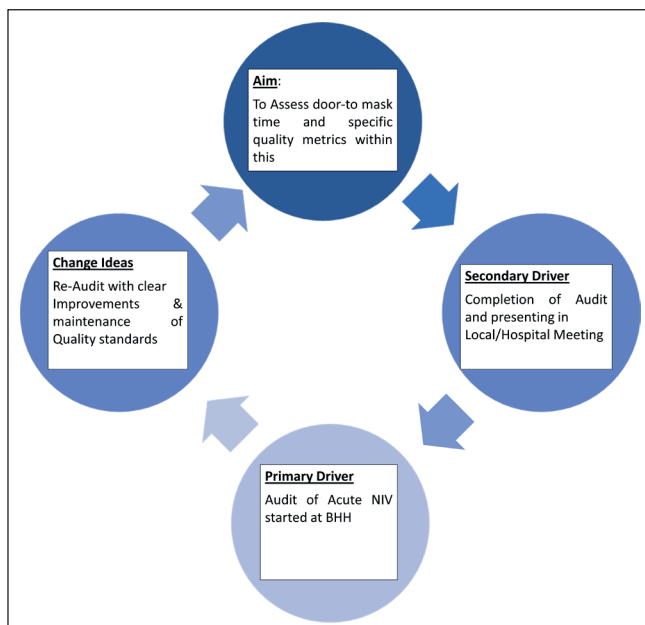
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BTS Quality Standards (3, 4). In setting a 120 min target from arrival to mask application, this statement intends to establish that recognition and treatment of AHRF are time-critical events for patients admitted acutely. We previously

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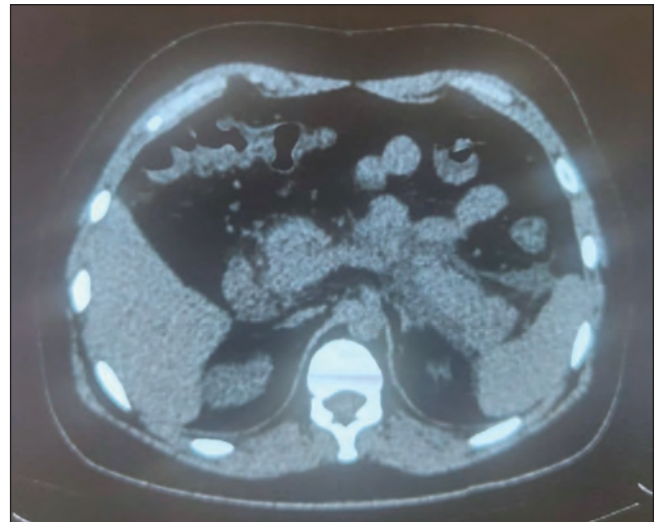
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## UNUSUAL CASES OF ACUTE PANCREATITIS IN PATIENTS WITH COVID-19

### Editor,

COVID-19 commonly presents as cough, shortness of breath, and fever, but extrapulmonary manifestations are being reported in recent times<sup>1</sup>. This is consistent with the fact that the ACE2 receptors through which the coronavirus SARS-CoV-2 enters cells are present in many organs beside the lung<sup>2</sup>. Gastrointestinal involvement in COVID-19 has become more common with many patients presenting with pain abdomen, diarrhoea, nausea and vomiting<sup>3</sup>. Here we



**Figure 1:** Axial plain CT images showing enlarged pancreas with peripancreatic fat stranding

outline 2 cases of COVID-19 associated acute pancreatitis.

A 33 year-old male diagnosed with COVID-19 presented with loose non foul-smelling and non blood-tinged stools, vomiting and pain abdomen. The patient had stable vitals and denied consumption of alcohol over the last 4 months. The epigastric and left hypochondriac region were tender on palpation. Lab investigations revealed grossly elevated serum lipase (5257 IU/L) and amylase (3269 IU/L). CT scan of the abdomen and pelvis revealed perinephric fat stranding in the head, body and part of the tail of the pancreas- suggestive of acute oedematous pancreatitis. Minimal peripancreatic fluid was also seen extending to the anterior perinephric fascia (Figure 1). A diagnosis of acute pancreatitis secondary to COVID-19 infection was made. The patient was given IV fluids, broad spectrum IV antibiotics, analgesics and other supportive treatment. A CT guided fluid aspiration was done for the peripancreatic fluid which was sterile. Patient recovered completely following treatment and was discharged.

In another instance, 76-year-old woman tested positive for COVID-19 after developing low grade intermittent fever over 10 days. Over the course of her home isolation, she developed generalised weakness and myalgia, productive cough MMRC grade 3 breathlessness. She did not consume alcohol.

Respiratory rate was 32 cpm and on auscultation bilateral crepitations were heard in the infrascapular areas. A high resolution CT scan of the chest showed features suggestive of COVID-19 pneumonia with a CT score of 17 out of 25.

Two days after admission, she started developing pain in the epigastric and left hypochondriac area which was tender on palpation and was associated with nausea and vomiting. Repeat investigations revealed grossly elevated amylase (1955 IU/L) and lipase (4895 IU/L). Abdominal ultrasound detected the presence of minimal ascites, prominent pancreatic duct and fluid collection near the tail of the



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