

Potential role for vascular surgeons during a COVID-19 outbreak: management, workload, and outcomes from the initiation of a central venous line service for patients with COVID-19 undergoing ventilation during the initial UK peak

P. Liu¹, D. Lui¹, S. Mahmood Cheema¹, S. Tahir Hussain^{1,*}, T. Husain² and M. Malina¹

¹West London Vascular and Interventional Centre, London, UK

²Department of Intensive Care Medicine, Northwick Park Hospital, Harrow, UK

*Correspondence to: West London Vascular and Interventional Centre, London, UK (e-mail: t.hussain@nhs.net)

Dear Editor

The surge of patients with COVID-19 in ICUs during the initial UK outbreak necessitated the redeployment of surgeons to other duties, as their workload diminished¹. The need for central venous catheters (CVCs) increased accordingly. A national critical care document² in March 2020 suggested what resources would be needed to meet the new demands, with the recommendation being one 'lines team' per 30 patients. However, the actual workload in a challenging pandemic was uncertain. The authors share their experience of initiating a 24/7 central line service for patients in ICU as a vascular department during the peak.

Fifty consecutive patients with COVID-19 undergoing ventilation (median age 63 (range 25–81) years; 80 per cent men) in ICU who had a CVC inserted by the vascular team from March to May 2020 were assessed. Median follow-up was 18 (range 14–29) days after ICU admission. Thirty-six patients (72 per cent) had multiple co-morbidities, with hypertension (30) and type 2 diabetes mellitus (23) being the most common.

A total of 166 CVCs (80 VasCaths) were inserted, equating to a median of 3 (i.q.r. 2–4) lines per patient. This number was probably an underestimate because 28 per cent of the patients were transferred to other institutions and 38 per cent died during the study interval. Common femoral access was used whenever possible to reduce the risk of operator contamination from aerosol-generating secretions and to avoid catheter dislodgement during proning manoeuvres. There were no procedural technical complications.

In all, 74 CVCs (38 VasCaths) needed to be exchanged at median of 7 (i.q.r. 4–9) days because of thrombosis (35 per cent), infection (24 per cent) or prophylactically (41 per cent). The indications for the first VasCath insertion were renal failure, and management of fluid balance and acidosis.

A large part of the workload was for routine change of lines (41 per cent). The cost benefit of this may need to be reassessed during the challenging conditions of a pandemic, especially given the variable literature to support such practice³. Some 35 per cent of the CVC exchanges were for dysfunction or thrombosis. It is well documented that COVID-19 is associated with hypercoagulation⁴, which is a major risk factor for catheter-related thrombosis (CRT)⁵. This may explain the high number of thrombotic complications observed in this study compared with previous CRT estimates of 14–18 per cent⁵. Thrombosis is, however, associated with both access site and type of catheter⁵. Of the CVC exchanges, some 24 per cent were for suspected infection, either at the exit site or more commonly CVC-related bloodstream infections (CRBSIs). The limited data do not allow analysis of the potential role of COVID-19 in CRBSI.

The learning curve here included the importance of establishing an online referral pathway, teams of two operators per CVC insertion, and availability of ICU-based ultrasound scanners for safe and efficient cannulation. Extended disposable CVC kits were created. The extra materials consisted of items that the authors initially struggled to find on the wards, resulting in the unnecessary donning and doffing of personal protective equipment. The CVC packs made the vascular team independent of support from ICU.

It seemed efficient and safe to use a vascular team with endovascular skills for CVC insertions during the initial pandemic surge. Such practitioners have ultrasound skills and proficiency with wires, as well as familiarity with femoral triangle and jugular anatomy. Their involvement in a dedicated 'lines team' is an important way in which vascular departments can contribute if further ICU surges occur during ongoing national outbreaks of COVID-19. The retraining of staff and additional on-call rotas can then be avoided.

Disclosure. The authors declare no conflict of interest.

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