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SERVICE EVALUATION

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Nurses' experience of an Extracorporeal Membrane Oxygentation (ECMO) clinical support team during the COVID-19 pandemic: A service evaluation

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Abstract

Background: The COVID-19 pandemic placed unprecedented stress on the National Health Service and critical care units including those with Extracorporeal Membrane Oxygenation (ECMO) facility as this intervention had proved successful with H1N1 patients in 2009. To successfully care for the influx of ECMO patients, an ECMO clinical support team (ECST) formed by redeployed staff was created to assist critical care nurses.

Aim: This service evaluation aims to review the experience of critical care nursing staff working with an ECST during the period of increased provision of ECMO care.

Design: A UK-based single-site qualitative service evaluation was followed.

Method: Critical care nursing staff's feedback was anonymously collected using a paper questionnaire designed for this project. Data were analysed using inductive content analysis.

Findings: Approximately 40 critical care nurses were invited to complete a questionnaire, 19 (48%) of whom completed it within the available timeframe. A variety of themes were identified including 'Prior knowledge of ECST', 'Management matters', 'ECST in action', 'ECST response', 'Emotions' and 'Overall experience of the ECST'. Staff initially reported apprehension regarding a new team and training responsibilities. Following the rollout of the ECST, nurses' accounts described the utilization of the ECST and subsequent stress relief. Feedback commented on the ECST's positive attitude, effective team working with the critical care team and provision of moral support. Nurses' gratitude was strongly conveyed throughout, with many expressing the positive effect of the ECST on staff emotional well-being.

Conclusion: The implementation of the ECST provided clinical and emotional support to nurses. The ECST demonstrated the effective use of redeployed health care staff to support the critical care unit at a time of a significant increase in patients requiring ECMO. This could be used as a model to enhance staffing levels in the event of future viral outbreaks.

KEYWORDS
COVID-19, critical care, ECMO, pandemic, support

Access to study data and content analysis is available upon request. Service evaluation was approved by the Cardiothoracic Critical Care senior management team. Participants consented to their responses being shared anonymously. Participants' rights, confidentiality and anonymity were respected throughout. The authors have received no funding towards this research.

1 | INTRODUCTION

In March 2020, Coronavirus (COVID-19) was declared a pandemic by the World Health Organization (WHO).[1] It caused unprecedented disruption to health services globally, including the National Health Service (NHS). In the United Kingdom (UK) 4 431 043 positive COVID-19 cases and 151 533 deaths were recorded by May 2021.[2] COVID-19 may affect the lungs of those infected, with common symptoms that include pyrexia, cough, anosmia and fatigue.[3] Bilateral infiltrates on chest x-rays, similar to acute respiratory distress syndrome (ARDS), also appear to be common.[3] These symptoms may cause the body to require supplementary oxygen and mechanical ventilation support; however, for some patients, ventilator support remains inadequate. A number of these patients may benefit from additional assistance using Extracorporeal Membrane Oxygenation (ECMO).[4]

Veno-venous (VV) ECMO supports lung function primarily by transporting a patient's blood through an oxygenator extracorporeally. Blood is taken from and returned to the body via a large cannula located within major veins. This acts as an external or artificial lung and allows the lungs to rest and recover from the illness.[5] Patients may require ECMO support for several weeks. In 2020, there were five adult NHS hospitals in England commissioned to provide lifesaving VV ECMO support to patients.

Partly as a result of the success of ECMO support in severely ill patients with the H1N1 virus in 2009,[6] NHS England predicted that significant additional ECMO support would be required to cope with the COVID-19 pandemic. This echoed the increase of Critical Care provision being sought across the NHS, with operating theatres being transformed to house Intensive Care patients. This was estimated to be an increase in bed capacity of up to 7–10 times the usual number of beds (2–3) for the ECMO unit based at a hospital in the Northwest of England. The positioning of ECMO patients is vital in optimizing their outcomes. Proning has been shown to be useful in patients with severe Acute Respiratory Distress Syndrome (ARDS)[7] and is recommended for patients with severe COVID-19.[8] Proning a patient on ECMO support is a high-risk procedure because of the potential disruption of the cannula. Six to eight staff members are recommended to safely perform proning, which may include a perfusionist or ECMO-trained nurse to monitor the ECMO circuit.[9] Other everyday activities such as rolling the patient to provide hygiene, pressure area checks and bed sheet changes are also deemed precarious and require large numbers of staff.

Whilst the increase in ECMO provision during COVID-19 could assist in treating severely ill patients, not all critical care nursing staff are trained in overseeing an ECMO patient and circuit. This patient group is highly complex, requires a high level of ventilatory support, and needs constant monitoring and continuous use of intravenous drugs to keep them stable. The emotional impact of caring for such patients on frontline staff should also be acknowledged, as the COVID-19 pandemic placed health care staff in an unprecedented situation with unknown outcomes.

Critical care staffing crises were experienced at some ECMO hospitals during the H1N1 outbreak in 2009.[10] Therefore, in order to successfully care for the influx of ECMO patients during the COVID-19 pandemic, it was important that critical care staff were adequately supported.

What is known about the topic

- The COVID-19 pandemic placed vast demands on the NHS with staff redeployed to help care for increasing numbers of patients in areas affected by the virus, including Critical Care.
- These specialist and demanding environments require effective teamwork and communication to achieve high-level patient care.
- The implementation of an ECMO clinical support team (ECST) was trialled to assist nursing staff caring for an increased volume of ECMO patients.

What this paper adds

- This paper focuses on the experience of critical care nursing staff and the use of an ECST.
- The contribution of clinical and emotional support by the ECST is demonstrated throughout.
- The use of an ECST may be used as a model to enhance staffing levels in the event of future viral outbreaks or catastrophic events.
- In addition, this paper contributes to research into staff experience and the impact of working on the frontline.

1.1 | The ECMO clinical support team (ECST)

As a result of COVID-19, many NHS services were temporarily scaled back or closed, with staff redeployed to assist in more affected areas. Volunteers for the ECST varied in their pre-redeployment roles including clinical and non-clinical staff. These included physiotherapists, prosthetists, rehabilitation assistants, occupational therapists, administrators, apprentices and more; authors DS and KD were redeployed to the ECST for its duration. ECST members attended a one-day training conducted by critical care nursing staff and clinical educators. The session included basic nursing theory and practical demonstration of tasks including oral and eye care, hygiene tasks, tracheostomy dressings and proning. Participants were also offered the opportunity to visit the critical care unit as some had no previous experience working in a clinical environment.

The role of the ECST was to assist with basic nursing care duties. Whilst these tasks are important, they may be forgotten or delayed when more serious problems require prioritization or urgent attention. The team also intended to provide additional staff numbers for tasks such as patient repositioning and proning. Upon the ECST implementation, additional tasks were identified and were added to the team's

duties including restocking equipment and infusions from the pharmacy. A poster was displayed in the critical care unit to inform the nursing staff of appropriate tasks that ECST could assist them with (Appendix 1).

The ECST provided support to the 30-bedded cardiothoracic critical care unit for 9 weeks (April–June 2020). During that period, 34 patients underwent ECMO support, with 14 ECMO beds being utilized at their peak. The ECST varied in numbers throughout this period as redeployed staff were required to return to their original places of work following the reopening of services or left the role for other reasons.

2 | AIM

This service evaluation aimed to appraise the experience and feedback of critical care nursing staff working with an ECST during the COVID-19 pandemic.

Nursing staff's views and opinions on the implementation of an ECST may influence the setup and use of similar support teams in the event of further health care provision challenges during the ongoing COVID-19 pandemic and in preparation for other disease outbreaks that could place pressure on critical care environments and their multidisciplinary staff.

3 | DESIGN

This single-site service evaluation was conducted following Standards for Quality Improvement Reporting Excellence (SQUIRE) guidelines.

3.1 | Setting and sample

This project was conducted at a Critical Care unit with an ECMO facility at a hospital in Northwest England, where the use of a novel ECST was being trialled. A convenience sample of critical care nurses working on the unit was invited to patriciate in the service evaluation in June 2020. Whilst other sampling methods may provide more representative sampling, this was a unique experience where the tension between originality and discovery of data versus time and data gathering needed compromise.[11]

3.2 | Data collection

During the final 2 weeks of the ECST service (June 2020), questionnaires were placed in communal spaces such as the staff room for critical care nursing staff to complete anonymously. A post-box was provided for completed questionnaires. An electronic version was also available.

A separate questionnaire was distributed to the redeployed staff that made up the ECST. The findings of this separate questionnaire are currently being written up for publication.[12]

The questionnaire was created by authors DS and KD, who were members of the ECST, to collect nurses' opinions and experiences both pre and post-implementation of the ECST (Appendix 2). Questions aimed to be balanced and neutral with good face and content validity. The content included questions on initial thoughts and expectations, positives, negatives and suggested future changes. The impact of the ECST on emotional well-being was included as this topic emerged frequently in conversations with nurses. The choice to use questionnaires was deemed the optimum means of data collection as they were easily accessible, not lengthy to complete and provided a good level of insight. Open-ended questions were used in order to collect in-depth responses with the inclusion of one closed question to vary question style and allow respondents to select their most applicable answer.

3.3 | Ethics

This evaluation of the nursing team's experience was approved by the Cardiothoracic Critical Care senior management team and met the definition of a service evaluation in accordance with UK Health Research authority guidelines; therefore, ethical approval was not required.[13] Participants were made aware of the purpose of this questionnaire and consented to their responses being shared anonymously.

3.4 | Data Analysis

Of the 40 questionnaires offered, 19 (48%) were completed within the 2-week timeframe.

An inductive content analysis approach was followed,[14] with all authors examining the raw data and coming to an agreement on responses, context and meaning. This researcher's triangulation helped determine all possible meanings of the data and enhance the credibility of the findings.[15] The responses were then broken down into meaning units and condensed thoroughly whilst ensuring the core meaning was kept intact. These units were coded and progressively divided into categories. Lastly, categories were reviewed and grouped under six overall themes.

The six themes which emerged, and their respective categories are shown below (Table 1). These included: Prior knowledge of ECST, Management matters, ECST in action, ECST response, Emotions and Overall experience of the ECST.

4 | FINDINGS

Key findings are illustrated under their relevant theme with response extracts to enhance the trustworthiness of the results. Where no comments had been written in response to a question, this was interpreted as satisfaction with no further suggestions or comments. A copy of the findings was provided to the Cardiothoracic Critical Care senior management team.

TABLE 1 Theme and categories

Prior knowledge of ECST	Management matters	ECST in action	ECST team response	Emotions	Overall experience of the ECST
Communication	Training	ECST role	Team Attitude	Apprehension prior to ECST start	Positive experience
ECST perception of team	Staffing and organization	General support	Moral support	Stress relief	Thanks and gratitude
ECST perception of role		Teamwork	Rapport	Emotional well-being	Satisfaction
				Acknowledgement of event	Preparation for the future

4.1 | Prior knowledge of ECST

Staff were asked about their prior knowledge and expectations of the role of the ECST, providing varied responses regarding communication, team perception and understanding of the ECST role.

A small number of respondents (6/19) reported having little or no prior communication about the ECST until its implementation.

> 'NOTHING AT ALL. Then shortly after they came in zone. Heard in AM handover' (Q13).

> 'wasn't made aware until saw them' (Q7).

However, nurses did not provide feedback regarding their preferred means of communication to bridge the lack of prior information about the ECST.

The majority of nurses reported some knowledge of the upcoming ECST including their previous work location, redeployment status and possible non-clinical backgrounds. They had awareness regarding the aim of the ECST to provide additional support, with their responses indicating their perception was that the role would be helpful.

> 'staff redeployed from other areas to help us out on CTCCU with different tasks during busy period' (Q15).

Nursing staff had the overall knowledge about the physical tasks that the ECST would be there to complete. Several responses described such tasks and recognized that the role would assist nurses.

> 'they would be here to help us with washes, rolls, personal hygiene needs for patients, help in damp dusting' (Q9).

> 'Team would support nurses and health care with patients during covid 19 from personal care to stocking'. (Q11).

4.2 | Management matters

Respondents raised several management matters including training anxieties and staffing levels.

Nursing staff reported some concerns regarding the ECST staff's abilities to adapt to the role, the competencies of non-clinical staff and their confidence in completing tasks. There was an acknowledgement that, despite training, it would take time for the ECST to settle into the new role.

> 'concerned about team adapting to role' (Q2).

> 'looking forward to meeting them and helping them settle in' (Q1).

> 'should be helpful in busy time on the unit, but would need some guidance and planning to get best from team' (Q18).

Concerns were also mentioned around the ECST training responsibilities placed upon the nursing staff. The impact of these teaching responsibilities is further discussed within the emotions theme.

> '…staff brought to support us with our care of patients and we had to help teach them how to support us' '…it was bit daunting, newly qualified nurse… trying to delegate jobs and teaching' (Q19).

Staff did not report whether these training concerns were raised with management or team leaders.

Many nurses enjoyed the additional staffing brought about by the ECST and its associated benefits. They described the advantages of having more staff, particularly when completing tasks that require multiple people.

> '…relieved a lot of pressure when finding numbers to turn, prone, etc.' (Q11).

Some nurses thought that staffing levels, distribution of team members and shift patterns could be improved and offered a variety of suggestions, such as

> 'sometimes felt overcrowded in the unit'… 'Spread them in different days' (Q8).

> 'support team not needed as much on night shift…' (Q11).

4.3 | ECST in action

When commenting on the ECST in action, many nurses described the role and the tasks involved. These included their involvement in physical tasks and patient care. The tasks described were the same as those described in the nurses' prior knowledge of the ECST, suggesting that the team was utilized as they had expected.

> 'we were able to undertake high patient care because we had extra support with damp dusting, stocking, hygiene' (Q14).

All staff referred directly or indirectly to the general support provided by the ECST. 17 of the 19 responses included the words 'helpful' or 'support' within their feedback on their experience. All feedback about the general support provided by the ECST was positive.

> 'very helpful, willing and supportive' (Q9).

> '… willing helpful positive vibe' (Q10).

Nursing staff reported experiences of teamwork when working with the ECST. Their comments described MDT involvement and the ability to continue the efficient running of high-level service. Responses illustrated how nurses were able to focus on vital tasks whilst successfully providing patient care, through effective teamwork and organization.

> '…the ward has continued to carry on safely and in a timely manner thanks to the support team. More hands make it safer and easier' (Q11).

> 'support team were very helpful and enthusiastic. They worked really well with CTCCU team' (Q14).

4.4 | ECST team response

The ECST response to working in their new position was discussed often in the information gathered. Despite initial concerns around the team's ability to adapt to the role, positive comments were made surrounding their attitude and work ethic, provision of moral support and relationship with staff.

Many respondents (17/19) commented on the ECST members' attitude to their role. These include descriptions of team members' willingness to help, positive attitude and hardworking nature, as well as a positive involvement when working with nurses, patients and the wider team.

> 'some came from non-clinical areas…took it in their stride with a smile' (Q5).

> 'whole team were friendly, helpful and willing to learn about the patients and their care requirements…' (Q18).

In addition to physical support, there were numerous remarks highlighting the ECST's provision of moral support. Nursing staff commented frequently on the positive impact the support team had through metaphors such as 'raising their spirits'.

> '… the support team were really positive people who lifted our spirits' (Q1).

> '…We couldn't have done it without them. They kept going and going and helped keep our spirits up' (Q12).

Over half of the respondents indicated that the nursing team and the ECST had established rapport and built positive relationships. This may have been a result of working closely together and may also demonstrate the nurses' trust in the ECST.

> 'psychologically boosting and improving moods… Became friends' (Q13).

> 'brilliant and a pleasure to work with. Good luck back in your usual roles' (Q18).

4.5 | Emotions

Throughout the staff responses, a variety of emotions can be identified, many regarding the issue of stress. Whilst this may be expected during times of uncertainty, there is also an acknowledgement of stress relief and a positive effect on emotional well-being brought about by the ECST.

Prior to the commencement of the ECST, some nurses described apprehension about changes and a new team/role during an already stressful time. Some were uncertain of its use and the timing of the help. Others expressed training concerns and worried that assisting in training the ECST would lead to additional strain and anxiety.

> 'I was very sceptical… I was finding the unit very heavy' (Q17).

> 'Quite apprehensive and caused some added stress in a very stressful time… "the initial feeling of added responsibility of teaching to qualified staff"' (Q12).

Following the rollout of the ECST, nurses' accounts indicate the stress decreased and they depict an effect of stress relief because of the support received. Staff reported being able to focus on more critical tasks whilst maintaining high-level patient care and ensuring all patient tasks were completed. Some described feeling less worried, with one response also illustrating the positive effect of the ECST on patient stress levels.

> '…times were stressful and the support team were there to relieve certain pressures' (Q15).

'very happy to help, made me feel supported so I could complete other tasks' (Q16).

When questioned on the impact of the presence of the support team on their emotional well-being, 100% of respondents indicated that the presence of the ECST did have an effect. 11 of 19 responses circled the positive impact option with the remaining questionnaires not marking any option, however, the majority of staff wrote additional comments describing the positive impact in more detail.

'Massive morale boost. Really took pressure off' (Q14).

'positive impact - Made me worry less about helping patients' (Q16).

Despite the high level of uncertainty brought about by the pandemic, less than half of the nurses acknowledged this incident in their questionnaires. When describing their experience, some used the pandemic whilst others chose other descriptive words which portrayed the demands of recent events.

'staff redeployed from other areas to help us out…during busy period' (Q15).

'…being so helpful in such a difficult and challenging time' (Q17).

4.6 | Overall experience of the ECST

All staff (19/19) provided positive feedback on their overall experience of the ECST, with expressions of gratitude and satisfaction articulated throughout their responses.

A number of positive experiences were described by all staff working with the ECST. Nurses reported how the team exceeded their expectations and recalled the value the role added to the care provided to patients with high care needs, particularly at a time of increased pressure. One respondent reported feeling initially sceptical about the ECST's implementation, however, they were pleased with their experience and this changed their views.

'really good experience. All very keen and supportive. Positive attitude' (Q3).

'was doubtful if it would work but it flourished beautifully' (Q9).

Throughout their feedback, nurses provided numerous comments expressing gratitude to the ECST.

'Just thank you. You were all amazing and your help was invaluable' (Q6).

'Please extend our thanks and appreciation to them and their hard work and support, we are very grateful' (Q14).

Respondents provided scarce feedback that expressed negative views associated with the implementation of the ECST. One respondent commented on the additional personal protective equipment (PPE) used as an adverse consequence; however, this is a managerial concern rather than a negative connection with the ECST role itself. The lack of undesirable feedback suggests the ECST met the expectations of the nursing team.

'No negatives, only positives' (Q15).

'Nil apart from extra PPE required' (Q18).

Four respondents made suggestions for future implementations of similar support teams within the critical care unit. These included performing additional tasks such as arterial blood gases (ABGs) and having the same staff return if future outbreaks were to occur because of their previous experience.

'… Employ more. Be able to take ABGs [Arterial Blood Gases]' (Q10).

5 | DISCUSSION

To our knowledge, this is the first evaluation to provide an in-depth insight into the experiences of a critical care nursing team supported by an ECST in the provision of care for ECMO patients. Data saturation was reached during data analysis once no new information was discovered, and comments were repeated. This repetition allowed the authors to confidently generate themes to analyse the aim of the study.

The aim of the ECST was to assist critical care nurses through the completion of basic patient care tasks, allowing them to focus on more urgent tasks in their care for COVID-19 patients on ECMO. In addition to completing physical tasks, the ECSTs also approached their role with a positive attitude, worked effectively with the critical care team, and were well utilized which relieved stress on nurses and had a positive effect on staff emotional well-being.

Some concerns raised by staff were managerial in nature such as PPE requirements, training and staffing. It is possible to address these complaints should the use of ECSTs be implemented during future outbreaks through stock-taking, additional training and superior organization. It is also vital that non-clinical staff have completed mandatory training which may not have been compulsory in their previous roles such as moving and handling. These skills are highly important and necessary in the critical care environment to protect both staff members and their team.[16]

The ECST members' positive attitude and work ethic were commented on numerous times throughout the responses. This assisted in the creation of rapport with nursing staff and the overall efficiency of

the care provided. Nurses' gratitude was strongly conveyed in the feedback provided, highlighting the impact of the implementation of the ECST and the value felt by the nursing team.

The qualitative data highlighted the large emotional effect that the pandemic placed on nursing staff. Nurses became the most important frontline staff overnight as COVID-19 spread rapidly. When placed under a large amount of pressure for an unknown timescale, clinical staff may experience psychological impact.[17] This underscores the importance of nursing staff mental health when working in critical care environments and the unexpected positive impact that the ECST had on nurses' well-being. It also highlights the need to ensure the provision of emotional support to nurses in their care roles during future viral outbreaks or health care crises.

These findings could be utilized by senior management to understand and thereby improve the experience of health care staff.

6 | LIMITATIONS

There are limitations regarding the use of questionnaires post-intervention which may affect the internal validity of the study. Questionnaires were completed at the end of the 9-week period and offer a reflection of the nursing staff's prior knowledge and perception of the ECST. Providing questionnaires both before and after the implementation of the ECST may have improved the reliability of the responses.

Whilst the addition of interviews may have assisted in validating and enriching findings this was not possible because of time constraints and social distancing. It was also considered that staff may be less honest when interviewed by a member of the ECST.

There were drawbacks of possible response bias. Participants were made aware that the data collected would be viewed by senior management. Whilst this may offer management the opportunity to review feedback and make future changes, it may have impacted the openness of participants' responses.

Another possible limitation pertains to selection biases. ECST members volunteered for the position as part of their redeployment and nursing staff self-selected to contribute to this questionnaire. This may affect the transferability of the work. As health care roles attract compassionate, caring people,[16] it is hoped that a team of any health care professionals may produce transferable outcomes if the use of ECSTs' were trialled at other ECMO units. Although the perceptions and responses in one ECMO unit may not be wholly transferable, understanding the nurses' lived experiences of the concept of an ECST may provide valuable insight during future surges or viral outbreaks.

7 | CONCLUSION

This paper presents the experiences, opinions and feedback of critical care nurses working with a novel ECST in an unprecedentedly overstretched critical care environment during the COVID-19 crisis. The implementation of the ECST during this pandemic provided clinical and emotional support to nurses. The ECST role demonstrated the effective use of redeployed health care staff to support the provision of critical care at a time of a significant increase in patient numbers requiring ECMO. This could be used as a model to enhance staffing levels in the event of future viral outbreaks or similar crises occurring. Further research is needed to develop our understanding of critical care nursing staff's experiences and the impact of working on the frontline during a viral pandemic.

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REFERENCES

1. World Health Organisation. Rolling updates on coronavirus disease (COVID-19). 2020. https://www.who.int/emergencies/diseases/novel-coronavirus-2019/events-as-they-happen. Accessed: October 11, 2020.
2. GOV UK. Coronavirus (COVID-19) in the UK: UK summary. 2020. https://coronavirus.data.gov.uk/ Accessed October 11, 2020.
3. NHS England. Clinical management of persons admitted to hospital with suspected COVID-19 infection. 2020. https://www.england.nhs.uk/coronavirus/wp-content/uploads/sites/52/2020/03/clinical-management-of-persons-admitted-to-hospita-v1-19-march-2020.pdf. Accessed October 11, 2020.
4. National Institute for Health and Care Excellence. COVID-19 rapid guideline: critical care in adults. 2020. https://www.nice.org.uk/guidance/ng159. Accessed October 11, 2020.
5. Makdisi G, Wang LW. Extra corporeal membrane oxygenation (ECMO) review of a lifesaving technology. *J Thorac Dis*. 2015;7(7):166-176. doi:10.3978/j.issn.2072-1439.2015.07.17
6. Noah MA, Peek GJ, Finney SJ, et al. Referral to an extracorporeal membrane oxygenation center and mortality among patients with severe 2009 Influenza A(H1N1). *J Am Med Assoc*. 2011;306(15):1659-1668. doi:10.1001/jama.2011.1471
7. Intensive Care Society. Guidelines on the management of acute respiratory distress syndrome. 2018. https://www.ficm.ac.uk/sites/default/files/ficm_ics_ards_guideline_-_july_2018.pdf. Accessed October 11, 2020.
8. The Australian and New Zealand Intensive Care Society. COVID-19 Guidelines Version March 1, 2020. 2020. https://www.wficc.com/images/ANZICS_-_COVID-19_Guidelines_Version_1.pdf. Accessed October 11, 2020.
9. Daly KJR. Practical proning on ECMO. *Qatar Med J*. 2017;2017(1):1-2. doi:10.5339/qmj.2017.swacelso.19
10. Bibro C, Lasich C, Rickman F, et al. Critically ill patients with H1N1 influenza a undergoing extracorporeal membrane oxygenation. *Crit Care Nurse*. 2011;31(5):8-24. doi:10.4037/ccn2011186
11. Gillham B. *Developing a Questionnaire*. Continuum; 2000.
12. Driver K, Nunez-Shaw E, Shaffi D. An evaluation of the experiences of an ECMO clinical support team implemented during the COVID-19 pandemic. *Assoc Chart Physiother Respir Care*. 2022;54(2):4-19.
13. Health Research Authority. Does my project require review by a Research Ethics Committee? V2.0. 2020. http://www.hra-decisiontools.org.uk/ethics/docs/Algorithm%20-%20Does%20my%

20project%20require%20REC%20review%20v2.0%2020200304.pdf. Accessed August 2021.
14. Erlingsson GA, Brysiewicz P. A hands-on guide to doing content analysis. *Afr J Emerg Med*. 2017;2017:93-99. doi:10.1016/j.afjem.2017.08.001
15. Carter N, Bryant-Lukosius D, Dicenso A, Blythe J, Neville AJ. The use of triangulation in qualitative research. *Oncol Nurs Forum*. 2014;41(5):545-547. doi:10.1188/14.ONF.545-547
16. Edwards S, Williams J. *A Nurse's Survival Guide to Critical Care*. 1st ed. Elsevier; 2019.
17. Chapa DW. *Psychologic Issues in the ICU: Critical Care Nursing Clinics*. Vol 31. Elsevier; 2019:1.

SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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