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Obstetric services in the UK during the COVID-19 pandemic: A national survey

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Highlights

- Variation across United Kingdom in care delivered and adherence to guidelines during the COVID-19 pandemic.
- Alteration of guidelines and birth plans dependant on institution.
- Referral pathways are lacking to ensure COVID-19 vaccination during pregnancy

Abstract

Background: The management of obstetric patients with coronavirus disease 2019 (COVID-19) due to human-to-human transmission of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) requires unique considerations. Many aspects of labour and delivery practice required adaptation in response to the global pandemic and were supported by guidelines from the Royal College of Obstetrics and Gynaecologists. The adoption and adherence to these guidelines is unknown.

Methods: Participating centres in "Quality of Recovery in Obstetric Anaesthesia study - a multicentre study" (ObsQoR) completed an electronic survey based on the provision of services and care related to COVID-19 in October 2021. The survey was designed against the Royal College of Obstetricians and Gynaecologists COVID-19 guidelines.

Results: One hundred and five of the 107 participating centres completed the survey (98% response rate representing 54% of all UK obstetric units). The median [IQR] annual number of deliveries among the included sites was 4389 [3000-5325]. Ninety-nine of the 103 (94.3%) sites had guidelines for the management of peripartum women with COVID-19. Sixty-one of 105 (58.1%) had specific guidance for venous thromboembolism (VTE) prophylaxis. Thirty-seven of 104 (35.6%) centres restricted parturient birthing plans if a positive diagnosis of COVID-19 was made. A COVID-19 vaccination referral pathway encouraging full vaccination for all pregnant women was present in 63/103 centres (61.2%).

Conclusion: We found variability in care delivered and adherence to guidelines related to COVID-19. The clinical implications for this related to quality of peripartum care is unclear, however there remains scope to improve pathways for immunisation, birth plans and VTE prophylaxis.

Keywords: COVID-19, obstetric guidelines, survey, quality of recovery, vaccination, Personal Protective Equipment

Introduction

The management of obstetric patients with coronavirus disease 2019 (COVID-19) due to human-to-human transmission of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) requires unique considerations[1]. Those who are pregnant or recently postpartum and symptomatic with COVID-19 are at higher risk than those without the disease for requiring additional medical

care[2]. Furthermore, symptomatic infection during pregnancy is associated with maternal admission to critical care, preterm birth and neonatal admission[3 4].

Many aspects of labour and delivery practice required adaptation in response to the global pandemic[5]. Modifications and restructuring of obstetric care services across the National Health Service (NHS) were recommended to maintain standards in quality of care for all parturients. This included care for critically ill pregnant and postpartum women, and the implementation of new protocols designed to reduce exposure and transmission among patients, healthcare providers, staff and family members whilst in the hospital environment[6]. These changes in practice were supported by additional guidance from the Royal College of Obstetricians and Gynaecologists (RCOG)[7]. The Coronavirus (COVID-19) infection in pregnancy guideline includes updates in recommendations for testing for infection, vaccination in pregnancy, venous thromboembolism (VTE) prophylaxis, personal protective equipment (PPE) labour and delivery and clinical deterioration.

RCOG guidelines recommend that women should be offered testing for SARS-CoV-2 when they are admitted to maternity units to give birth and strongly recommend vaccination (two doses before delivery, or before entering the third trimester). In addition, a VTE risk assessment should be completed, with dosing of VTE prophylaxis determined on an individual basis. To reduce the risk of nosocomial infection, hospitals should consider guidance from Public Health England and local infection control policies, keeping visitors to a minimum and providing PPE for partners. Any alterations to birth plans for women who have tested positive for COVID-19 should follow maternal and neonatal assessment and multidisciplinary team discussion. The adoption and adherence to these published guidelines in UK obstetric units is unknown.

The “Quality of Recovery in Obstetric Anaesthesia, a multicentre study” (ObsQoR) was a prospective study conducted in the United Kingdom (UK) obstetric units, which aimed to evaluate the quality of

postpartum recovery in women following anaesthetic intervention in the NHS across England, Scotland, Wales and Northern Ireland. As part of this study, an institutional survey was sent to each site to evaluate site-level factors related to the quality of peripartum care and included specific questions related to compliance with COVID-19 specific guidelines. The study was conducted in October 2021 during the pandemic allowing for assessment of adherence to guidelines and the impact of COVID-19 on quality of care in the peripartum period.

Methods

NHS obstetric units with anaesthetic services across England, Wales, Scotland and Northern Ireland were invited to participate in the ObsQoR study via National Institute for Health Research (NIHR) clinical research networks and anaesthesia trainee research networks. The study was designed to assess the quality of postpartum inpatient and outpatient recovery following anaesthetic or analgesic intervention during the peripartum period. The aims included evaluation of demographic, obstetric, anaesthetic and institutional factors, which may impact the quality of postpartum recovery.

The ObsQoR study included an institutional survey, developed based on best currently available evidence, guidelines and expert opinion to identify site-level differences in care that may affect the quality of postpartum recovery. Using the RCOG COVID-19 guideline version 14 (July 2021), supplementary questions related to COVID-19 were developed to assess the impact of the pandemic on peripartum care. The survey was piloted in 6 hospitals and modified in an iterative fashion. The paper survey was distributed electronically via email to all participating principal investigators of the ObsQoR study, requesting completion at the start of the initial data collection period.

Surveys were completed with input from clinical leads for obstetrics, anaesthesia and midwifery and responses uploaded to a web-based platform (FormAssembly; www.formassembly.com

Bloomington, IN, USA). Data were collected by local investigators and then collated centrally. A list of all obstetric units known to have anaesthetic services was collated from the National Maternity and Perinatal Audit Organisational Survey and from the Northern Ireland Maternity System metadata (n = 194) [8 9] Responses to survey questions were analysed as one group and the data reported using frequencies and percentages. The data were exported and checked using Microsoft Excel (v.16.5 Redmond, WA, USA). Any errors or missing data were verified and clarified with site study teams. Statistical analyses were performed using Stata Version 14.0 (StataCorp., College Station, TX, USA). The additional free text responses were examined using a method of thematic analysis for trends and categorised by two authors.

Results

Survey responses were received from 105 of 107 study centres. This represents a 98% response rate for the 54% of all 194 institutions in the UK with consultant-led maternity units, which participated in this study (**Table 1**). A list of collaborating units is available in Appendix A. The median [IQR] reported annual number of deliveries among the included sites was 4389 [3000-5325]. Hospital sites consisted of 77 English NHS Trusts, 3 Scottish NHS Boards, 4 Welsh Health Boards, and 4 Northern Irish Health and Social Care Trusts. Results relating to guidelines, isolation, birthing partners, birth plans, personal protective equipment, VTE and vaccination pathways are summarised in **Table 2**.

Table 1: Summary of included sites

Country and region	Total number of participating sites	Total number of deliveries per annum			
		Under 2500	2500-3999	4000-5999	6000 or more
England					

North-East and Yorkshire	16	4	5	5	2
Midlands	11	1	1	5	4
North-West	13	2	4	5	2
East of England	10	1	1	8	0
London	20	0	3	12	5
South-East	14	1	10	3	0
South-West	8	3	3	2	0
Scotland	3	0	0	2	1
Wales	6	4	1	1	0
Northern Ireland	4	0	2	1	0

Table 2: Summary of survey question and responses

Survey Question	Number responding "yes"/ total response (%)
Does your hospital have guidelines for how to manage the COVID-19 positive parturient?	99/105 (94.3)
Isolation precautions: are COVID-19 positive parturients kept in an isolated room throughout their entire admission? (incl. admission, labour & delivery, recovery and postnatal experience)	101/105 (96.2)
Birthing partners: is the birthing partner allowed to be present if the parturient is COVID-19 negative?	103/105 (98.1)
Birthing partners: is the birthing partner allowed to be present if the parturient is COVID-19 positive?	79/104 (76.0)
Birthing partners: if a parturient's partner is COVID-19 positive but asymptomatic, are they allowed to be present?	29/105 (27.6)
Birthing plans: if a parturient is COVID-19 positive at the time of labour, does this limit her birth plan options?	37/104 (35.6)
PPE: are parturients instructed to wear any form of PPE during their labour and delivery (*e.g.*: facemask), even if they are COVID-19 negative?	42/104 (40.4)
VTE prophylaxis: is there a guideline for VTE prophylaxis specifically for COVID-19 positive parturients that you follow within your hospital?	61/105 (58.1)
Vaccination: is there a referral pathway or process to encourage COVID-19 vaccination in all pregnant women?	63/103 (61.2)

One hundred and three sites provided responses to questions regarding testing, with variations in how routine testing for COVID-19 was performed at participating centres. Ninety (87.4%) sites had provider performed Polymerase Chain Reaction (PCR) testing, 18 (17.5%) sites relied on provider performed lateral flow antigen testing. Self-testing by PCR and lateral flow were performed by 7 and 16 institutions, respectively.

Thirty-seven centres out of 104 (35.6%) had routine restrictions on birthing plans, for example birthing location or changes to labour and delivery preferences if a positive diagnosis of COVID-19 was made. Isolation precautions were present in 101/105 (96.2%) of centres, with COVID-19 positive parturients isolated on labour and delivery, recovery and postnatal wards throughout their

admission. One hundred and three out of 105 (98.1%) centres allowed birthing partners to be present during delivery if the parturient was COVID-19 negative, however only 79/104 (76%) allowed birthing partners to be present if the parturient was COVID-19 positive. If birthing partners were COVID-19 positive but asymptomatic, 29/105 (27.6%) of centres allowed them to be present. Requirements for parturients to wear personal protective equipment (*e.g.*, facemask), during their labour and delivery were reported by 42/104 (40.4%) centres, irrespective of infection status.

Specific guidelines pertaining to VTE prophylaxis were found in 61/105 (58.1%) institutions. Of these 61 centres with VTE guidelines, 36 (59.0%) aligned with the RCOG guidance in terms of prophylaxis dose and duration of low molecular weight heparin (LMWH). Seven centres advocated the use of enhanced or intermediate dosing of LMWH, and it was unclear (including no information provided) in 13 centres. Two centres routinely advocated discussing the case with a haematologist.

A COVID-19 vaccination referral pathway was present in 63/103 centres (61.2%) encouraging full vaccination for all pregnant women. Fifty-three sites described their vaccination referral protocol, which varied in its approach from local advertising, drop-in clinics, community engagement and dedicated vaccination midwifery services.

Discussion

The main finding from this study is the variation among UK institutional guidelines, adherence to guidance and inpatient care delivered to peripartum women during the COVID-19 pandemic. Almost all centres have guidelines in place for the management of COVID-19 positive peripartum women. However, there is variability in the management of patients with regard to testing, isolation precautions and personal protective equipment for patients or birthing partners, irrespective of infection status. In addition, there is inconsistency in the approach to birthing plans for the parturient who tests positive. Whilst there are specific guidelines for VTE prophylaxis in pregnancy with COVID-19 in 58.1% of institutions, there is variation in the dosing and duration of

LMWH. There are various strategies employed to increase the rate of vaccinations against COVID-19 in the pregnant population.

To our knowledge, this is the first survey assessing institutional guideline adherence and clinical practices relating to COVID-19 across a large number of centres. This sample is likely to be a representative sample of peripartum care in the UK. It provides insight into the variability of guidelines or implementation of recommendations present across the range of centres caring for women in the peripartum period. The data collection occurred between surges of COVID-19, when centres were in position to focus on guideline implementation and ensuring continuity of care. In addition, it highlights the feasibility of making widespread changes and the degree to which national guidance has resulted in modifications to local practice.

There is rapidly evolving evidence as to what constitutes best practice related to the management and prevention of COVID-19 infection. This survey provides a contemporary snapshot of peripartum practice; however, we acknowledge that amendments to guidelines may have subsequently occurred. We acknowledge that guidance in this area is dynamic and there may have been a lag between guidance change and local practice at the time of survey completion. We also relied on self-reporting and are not able to verify that all patients receive the care outlined in survey responses.

The survey findings demonstrate the variability and disparity in obstetric practice received by patients and safety to healthcare workers in the context of the COVID-19 pandemic. It highlights the heterogeneous alterations to care in the peripartum period, modifications to care were required in order to balance risk and a rapidly changing evidence base, with two previous surveys of maternity services highlighting staffing changes and modification in care related to COVID-19 [5] [6]. The full impact these changes will have on maternal and neonatal health is unclear. However, it is recognised

the pandemic has impacted the quality of care delivery, anaesthesia, maternal psychological wellbeing and breastfeeding [5 10–14].

Many institutions introduced restrictions on maternity services including prohibiting attendance of a birth partner during labour, with concerns regarding the balance between reducing risk of infection and maintaining optimum maternal care [15]. All women should have the right to a safe and positive childbirth experience, irrespective of infection status for COVID-19 and this includes birth companion of choice [16]. We note the variation in this practice across the UK particularly related to birth partner presence and use of PPE in the context of COVID-19 infection.

COVID-19 increases the risk of thrombotic complications, which are associated with increased mortality and morbidity [17]. The RCOG-issued guidance is in line with non-pregnant patients admitted to hospital with COVID-19. We report variability in the presence of local guidelines and recommendations with regards to dosing strategy and duration of LMWH therapy. Therefore, adherence to national guidance appears to be inconsistent.

Routine testing for COVID-19 should be used to prevent nosocomial infections, allow isolation precautions, limit staff exposure and for patient risk stratification. This is particularly applicable in the pregnant population as evidence suggests that there is significant asymptomatic carriage [18]. The routine testing was recommended in the UK for all parturients and their birthing partners, we have highlighted various methods obstetric units use for the routine testing at, or prior to admission of parturients. These considerations are important to protect other patients including staff and maintain safe services. This inconsistency in practice means that staff and hospitals in certain areas may be disadvantaged by the lack of systems in place to protect them. This in turn may have had an adverse impact on that hospital's other services. Appropriate testing before admission can ensure

appropriate surveillance, assess the effectiveness of vaccinations and risk mitigation for the higher risk obstetric population.

Immunisation against SARS-CoV-2 with mRNA vaccines remains the most effective way of preventing COVID-19-related morbidity and mortality, with efficacy of two doses of mRNA vaccination lasting at least 6 months[19]. Vaccination can occur at any time during pregnancy and the postpartum period[20]. Despite strong recommendations, the rates of vaccination remain low and this is particularly true for women who are younger, non-White ethnicity, and from lower socioeconomic backgrounds [22,23]. There are different approaches employed to encourage vaccination, and there is an absence of consistency among pathways to ensure that those unvaccinated are informed and referred to vaccine centres. Further work is required to highlight the most appropriate methods to ensure full vaccination in groups with low uptake. This is particularly true as the pandemic evolves, new variants of concern emerge, and time-dependent decreases in immunity following previous infections or vaccinations [23–25].

Conclusions

Overall, this survey highlights the feasibility of widespread implementation of change. Despite the urgency of the pandemic and the high likelihood of buy-in from stakeholders, variability was observed across the UK. This finding suggests a further in-depth analysis to identify the barriers to implementation success. The provision of care varies amongst obstetric units in the UK. As the COVID-19 pandemic continues, it is important that obstetric care and teams deliver the best evidence-based quality of care possible. There should be a standardised care that follows national recommendations for the management of the parturient with COVID-19 infection. In addition, maintenance of equity in the care delivered irrespective of location and infection status must be prioritised.

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Authors Contributions:

JOC, LZ, and EW conceived the idea and plan for the COVID-19 survey. JOC, LZ, EW designed the institutional survey and PS. JOC distributed the survey to all site leads. JOC and NG conducted the analysis. All co-authors actively drafted, reviewed and commented on the final manuscript.

Declarations:

Ethics approval and consent

The ObsQoR study received ethical approval from the UK National Research Ethics Service (South Central - Berkshire B REC ref. 19/SC/0333) and trial registration was obtained prospectively (ClinicalTrials.gov Identifier: NCT04192045.)

Competing Interests:

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