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Demand for regional level III neonatal services is not reduced during national COVID lockdowns

I. Kenney [a], N. Maalouf [d], G. Adams [a,b], K. Grayson [a], N. Brown [a], C.N. Howarth [a,c], N. Aladangady [a,c], P.F. Fleming [a,c,*]

[a] Homerton University Hospital NHS Foundation Trust, London E9 6SR, UK
[b] Moorfields Eye Hospital NHS Foundation Trust, London EC1V 2PD, UK
[c] Department of Genomics and Child Health, Queen Mary University of London, E1 2AT, UK
[d] University of Oxford, Oxford, UK

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ABSTRACT

Following the first peak of the COVID-19 pandemic, reports from around the world suggested a reduction in preterm deliveries during lockdown periods. We reviewed preterm admissions to a large tertiary neonatal unit in inner North East London during two United Kingdom (UK) national lockdowns in 2020 and 2021. We found no evidence of difference in admissions during two national lockdowns compared to previous years. Based on these findings, we recommend that neonatal services remain as vigilant and prepared as ever for the unpredictable nature of preterm birth, and their staff protected to provide this highly specialist care.

1. Introduction

During the early phase of the global pandemic caused by severe acute respiratory distress syndrome coronavirus 2 (SARS-CoV-2), several countries reported a decrease in preterm births. Regional data from Ireland showed a 73% reduction in the rate of very low birth weight deliveries [1], whilst data from Denmark noted an approximate 90% reduction in extremely preterm birth rates during their nationwide lockdown [2]. This prompted some high profile reports in the media [3], though subsequent larger datasets have refuted earlier reports [4]. Service provision has also come under significant pressures during lockdowns caused by shielding, staff sickness and the need for isolation and redeployment, but there are few reports relating to demand for high level neonatal intensive care during lockdown periods.

The neonatal unit at Homerton University Hospital NHS Foundation Trust is a large regional tertiary centre based in Inner North East London, United Kingdom (UK) admitting approximately 900 babies each year. The hospital is situated in an area with high rates of socioeconomic deprivation and sadly, since the beginning of the pandemic, some of the surrounding local authorities have recorded amongst the highest rates of SARS-CoV-2 related age-standardised mortality in England and Wales (www.ONS.gov.uk).

Our aim was to examine preterm admission rates, as a marker of service demand for tertiary neonatal service provision, at a large regional NICU during two national lockdowns and compare these to previous year on year admission trends.

2. Methods

In order to assess the impact of lockdown on our service, we analysed the number of preterm admissions to our NICU from 23rd March to 1st June 2020 (coinciding with the UK's first national lockdown) and compared these to admissions during the same time period for the years 2016–2019. We conducted a second analysis of preterm admissions during the UK's second national lockdown from January 4th to March 8th 2021 and compared these to admissions during the same period in 2017–2020.

All admissions were identified through the Badgernet platform (Clevermed Ltd), a standardised and widely-employed national medical database in the UK. Formal consent and patient and public involvement (PPI) were not sought for this analysis of service provision. Chi squared tests were used to analyse these data using IBM SPSS Statistics v. 26 (IBM, Armonk, NY, US).

* Corresponding author at: Homerton University Hospital NHS Foundation Trust, London E9 6SR, UK.
E-mail address: paulfleming1@nhs.net (P.F. Fleming).

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3. Results

Descriptive statistics of the two lockdown periods are shown in Tables 1 and 2: respectively. We found no significant difference in preterm admissions between categories of gestational age (GA) by year for the period of Lockdown 1 ($x^2 = 7.927$, $df = 8$, $p = 0.441$). Similarly, there was no significant difference in preterm admissions between categories of GA by year for the period of Lockdown 2 ($x^2 = 3.929$, $df = 8$, $p = 0.863$). Furthermore, there were no significant differences found in three 1 × 5 Chi-Square tests run for each GA category by year during lockdowns 1 and 2.

4. Discussion

Our data do not suggest a decrease in preterm admissions to a large regional tertiary neonatal service during two national lockdowns in the UK. Whist we accept that data from the wider population over extended periods of time are needed, our observations highlight a sustained demand for neonatal service provision during periods of high community prevalence with SARS-CoV-2 disease. Factors that may contribute to this demand are likely to relate to staff shortages resulting from service reconfiguration and redeployment, COVID related illness and isolation, and the need to provide one to one nursing care for babies admitted to NICU and born to COVID positive mothers. These factors highlight some of the acute pressures the pandemic has placed on neonatal services over the last 20 months.

There have been inconsistent reports regarding reductions in preterm birth rates throughout the pandemic but seasonal variations in preterm birth rates are well recognised [6]. In this present report, we sought to examine admissions over two lockdown periods to try to account for seasonal variation. Our findings are consistent with other regional reports in the UK [5] and although we report data from a single institution, we believe they highlight the importance of examining trends over several time periods rather than single discreet episodes.

Any conclusions drawn from a sudden decrease in preterm births must be matched with reviews of other population based mortality data; especially rates of stillbirths and late fetal losses, though some studies have not suggested a reduction in these indices [7]. Whilst there are many theoretical benefits to the socioenvironmental impact of lockdowns (focus on hygiene and social distancing; reduced physical demands [1]; and reduced maternal infection load [2]), there are also many potential adverse effects that have a wider impact on society [8]. These include difficulty accessing healthcare services; increased stress and mental health problems; delayed maternal presentation to hospital; and potential for missed or late detection of fetal or maternal conditions. It is only with time, that the true impact of lockdowns on maternal health and wellbeing and on infant outcomes will become apparent.

Although severe disease with SARS-CoV-2 occurs less frequently in children, neonates appear to be more severely affected than older children [9]. Based on our data and on other large population-based trends supporting no reduction in preterm births during lockdowns [4], neonatal services must remain prepared as ever, for the unpredictable nature of preterm birth and for the potential additional burden of severe SARS-CoV-2 disease in babies. Our highly skilled neonatal workforce should be protected so that appropriate staffing numbers are maintained to deliver the highest and safest standards of neonatal care.

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Ethics

This evaluation of service provision does not require formal ethics approval.

Table 1
First lockdown period 2020, compared with the same time period for years 2016 to 2019.

Year	GA categories						
	23–27 + 6		28–31 + 6		32–36 + 6		Total
	N	%	N	%	N	%	N
2016	15	21.1%	15	21.1%	41	57.7%	71
2017	22	31.9%	14	20.3%	33	47.8%	69
2018	21	30.0%	12	17.1%	37	52.9%	70
2019	26	38.2%	7	10.3%	35	51.5%	68
2020	17	25.4%	11	16.4%	39	58.2%	67

Lockdown 1 = 2020: Mar 23 - Jun 01.

Table 2
Second lockdown period 2021, compared with the same time period for years 2017 to 2020.

Year	GA categories						
	23–27 + 6		28–31 + 6		32–36 + 6		Total
	N	%	N	%	N	%	N
2017	21	30.9%	7	10.3%	40	58.8%	68
2018	18	31.0%	6	10.3%	34	58.6%	58
2019	23	31.5%	12	16.4%	38	52.1%	73
2020	14	21.9%	9	14.1%	41	64.1%	64
2021	17	28.8%	9	15.3%	33	55.9%	59

Lockdown 2 = 2021: Jan 04 - Mar 08.

CRediT authorship contribution statement

- I Kenney: Conception; methodology; data acquisition; writing - original draft, review & editing
- N Maalouf: Data acquisition, writing - review & editing
- G Adams: Conception; validation; writing - review & editing
- K Grayson: Methodology; validation; data analysis and interpretation
- N Brown: Data acquisition
- CN Howarth: Conception; validation; writing - review & editing
- N Aladangady: Validation; writing - review & editing; supervision
- PF Fleming: Conception; data acquisition, methodology; validation; data analysis and interpretation; writing -review & editing; supervision

Declaration of competing interest

The authors have no conflicts of interest to declare.

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