

National Maternity and Perinatal Audit

Clinical Report 2022

Based on births in NHS maternity services in England and Wales
between 1 April 2018 and 31 March 2019



The National Maternity and Perinatal Audit (NMPA) is led by the Royal College of Obstetricians and Gynaecologists (RCOG) in partnership with the Royal College of Midwives (RCM), the Royal College of Paediatrics and Child Health (RCPCH) and the London School of Hygiene and Tropical Medicine (LSHTM).

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This report was prepared by the NMPA Project Team on behalf of the RCOG, RCM and RCPCH:

NMPA Project Team

Dr Fran Carroll, NMPA Research Fellow
Mr George Dunn, NMPA Lead
Ms Alissa Frémeaux, NMPA Statistician
Dr Ipek Gurol-Urganci, NMPA Senior Methodological Advisor
Dr Tina Harris, NMPA Senior Clinical Lead (Midwifery)
Ms Emma Heighway, NMPA Administrator
Ms Brinda Indusegaran, NMPA Administrator
Dr Amar Karia, NMPA Clinical Fellow (Obstetrics)
Professor Asma Khalil, NMPA Senior Clinical Lead (Obstetrics)
Dr Patrick Muller, NMPA Senior Methodologist
Professor Sam Oddie, NMPA Senior Clinical Lead (Neonatology)
Ms Louise Thomas, RCOG Head of Quality Improvement
Ms Lara Waite, NMPA Clinical Fellow (Midwifery)
Ms Kirstin Webster, NMPA Clinical Fellow (Neonatology)
Professor Jan van der Meulen, NMPA Senior Methodologist (Chair)

NMPA Women and Families Involvement Group

Claire Butterfield
Emma Crookes
Farzana Khanom
Ngawai Moss
Kirsty Sharrock
Laura-Rose Thorogood

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Foreword

This is the fourth clinical report from the National Maternity and Perinatal Audit (NMPA). I have been privileged to be part of the Women and Families involvement Group (WFIG) working with the NMPA team since the first report in 2017.

Much has changed, both for the NMPA and for the maternity services it represents. This report is the first to cover the majority of births in England and Wales using the new data source adopted for the 2021 report. It is a huge and powerful body of data, capturing 585 653 life-changing events.

But changes present new challenges. We do not currently have data from Scotland, and we are missing data on severe blood loss during birth for England. In common with previous reports, we have no information on sexual orientation and little on the crucial postnatal period. Yet we know, both from other research and from the experiences of WFIG members, that these factors can greatly alter the experience of giving birth.

Another constant in all the reports is the complexity of the data.

It is tempting to pick out a single measure or percentage and ask for simple answers. The overall caesarean rate* in this report is 27.6%, up from 25.0 % in the first clinical report on 2015/16 data, but alone such figures tell us very little. This report allows us to dig deeper and find, for example, that the rate of emergency caesareans is very different for first-time mothers than for those who have given birth before. Or, that the rate of induction varies hugely between different hospital trusts.

The reasons for such variations are likely to be complex. But, for the women and birthing people involved, they are crucial. I know first-hand the differences in safety and experience between emergency and planned caesarean births.

What this report gives us then is a complex, detailed audit of crucial areas of maternity services. It provides trusts and maternity professionals with a powerful tool for reflecting on their services. It is a call to action for anyone providing antenatal information, to ensure that those giving birth, especially for the first time, are empowered by accurate, relevant information.

Finally, it is a reminder of the complex lives and unique experiences of birth that together form this vast pool of data. I hope this report will be just a starting point for further examination of how we are cared for in what can be our most vulnerable and wonderful moments.

Kirsty Sharrock
NMPA Women and Families Involvement Group member

* NMPA: It is important to note that there is no 'ideal' rate for births by caesarean and these figures must not be used to assess the performance of a trust/board.

Abbreviations and glossary

AMU	Alongside midwifery unit, a maternity unit where midwives have primary responsibility for care during labour in women and birthing people generally at low risk of complications and which is located on the same site as an obstetric unit, so it has access to the same medical facilities if needed.
Apgar score	An Apgar score is determined by evaluating the baby's physiological condition at specific time points – often 1 minute and 5 minutes. Five criteria (appearance, pulse, grimace, activity and respiration) are scored between 0 and 2, with the resulting combined score ranging from 0 to 10. A score of 7–10 is considered within the 'normal range' and a score of less than 7 is a sign the baby needs medical attention.
Assisted vaginal birth	Birth with the assistance of either a ventouse cup or forceps. Also known as instrumental birth.
BMI	Body mass index, an estimate of body fat based on height and weight. Measured in kilograms of weight, divided by squared height in metres (kg/m ²).
Case mix	The demographic characteristics and state of health of the people using a particular health service.
Elective caesarean birth	Planned caesarean birth before labour onset.
Emergency caesarean birth	Unplanned caesarean birth (prior to, or during labour).
Episiotomy	A cut through the perineum (the area between the vagina and the anus) and skin to facilitate birth of the baby.
EDD	Estimated due date, the date given as an estimate for birth of the baby, calculated as 40 completed weeks of pregnancy. Methods for calculating are the addition of 280 days from the first day of the last menstrual period, or alternatively from an early-pregnancy ultrasound scan.
FMU	Freestanding midwifery unit, a maternity unit where midwives have primary responsibility for care during labour in women and birthing people at low risk of complications and which is not located on the same site as an obstetric unit.
Forceps	An instrument to assist vaginal birth.
HES	Hospital Episode Statistics, a dataset containing information about individuals admitted to NHS hospitals in England.
HQIP	Healthcare Quality Improvement Partnership.
IMD	Index of Multiple Deprivation, a within-country area-based measure of relative socio-economic deprivation.
Instrumental birth	Birth with the assistance of either a ventouse cup or forceps. Also known as assisted vaginal birth.
Labour augmentation	A process where the progress of labour is boosted by administration of an oxytocin infusion and/or by amniotomy (artificial breaking of the waters).
MBRRACE-UK	Mothers and Babies: Reducing Risk through Audits and Confidential Enquiries across the UK; the collaboration appointed by the HQIP to run the national Maternal, Newborn and Infant Clinical Outcome Review Programme, conducting surveillance and investigating the causes of maternal deaths, stillbirths and infant deaths.
Mids	Maternity Indicators dataset, managed by Digital Health and Care Wales. This captures a selected subset of data items from the maternity IT systems in Welsh health boards.
MSDS	Maternity Services Data Set, managed by NHS Digital. This gathers data about pregnancy and birth from maternity healthcare providers in England.

NCCHD	National Community Child Health Database (Wales).
NHS local health board ('boards')	In Wales, NHS services are provided by seven local health boards, which each include a number of hospitals and community services.
NHS trust ('trusts')	In England, NHS services are provided by NHS trusts (commissioned by clinical commissioning groups).
NMPA	National Maternity and Perinatal Audit.
OASI	Obstetric anal sphincter injury, which can extend from the vaginal wall and backwards through the perineum (the area between the vagina and the anus) to the muscle that controls the back passage (anal sphincter).
OU	Obstetric unit, a maternity unit where care is provided by a team of midwives and doctors to women and birthing people at low and at higher risk of complications. All women and birthing people will be cared for by midwives during pregnancy, birth and after the birth. Midwives have primary responsibility for providing care during and after labour to those at low risk of complications, while obstetricians have primary responsibility for those who are at increased risk of, or who develop, complications. Diagnostic and medical treatment services – including obstetric, neonatal and anaesthetic care – are available on site.
ONS	Office for National Statistics.
PEDW	Patient Episode Database for Wales, a routinely collected dataset of hospital care in Wales.
Perinatal	Related to events around the time of birth; may be used in general or in relation to pregnant and postpartum people, as in perinatal mental health, or to unborn and newborn babies, as in perinatal mortality and in the NMPA.
Primiparous	Primiparous is used to describe a woman or birthing person giving birth for the first time.
RCM	Royal College of Midwives.
RCOG	Royal College of Obstetricians and Gynaecologists.
RCPCH	Royal College of Paediatrics and Child Health.
Registrable birth	In UK law, a birth is registrable, meaning it will be recorded in national statistics and issued with a certificate of birth for all liveborn babies whatever the length of the completed pregnancy. A stillbirth is considered to be a registrable birth if it occurs after 24 completed weeks of gestation.
SBLCB	Saving Babies' Lives Care Bundle.
SGA	Small for gestational age. Babies who are born with a birthweight less than the 10th centile for their gestational age at birth, as defined by UK 1990 population centiles.
Stillbirth	The birth of a baby without signs of life at or after 24 weeks of gestation.
Term gestation	Between 37 ⁺⁰ and 42 ⁺⁶ weeks of gestation, as used in this report.
Third- and fourth-degree tear	A tear from childbirth that extends into the anal sphincter (third-degree tear) or mucosa (fourth-degree tear).
Unassisted vaginal birth	Vaginal birth without the use of instruments. This is not synonymous with 'freebirth'.
UNICEF UK	The UK committee for the United Nations Children's Fund (UNICEF).
VBAC	Vaginal birth after caesarean birth.
Ventouse	An instrument to assist vaginal birth using a vacuum cup applied to the baby's head.

Throughout this document we use the terms 'birthing people' and 'women'. It is important to acknowledge that it is not only women who access maternity, reproductive and gynaecology services.

Executive summary

Introduction to the NMPA

The National Maternity and Perinatal Audit (NMPA) is a large-scale project established to provide data and information to those working in and using maternity services.

The NMPA helps us understand the maternity journey by bringing together information about maternity care and information about hospital admissions.

This NMPA clinical audit report is an important step forward in understanding the way in which NHS maternity services care for women and birthing people, and it provides information on a number of measures, based on births in England and Wales from April 2018 to March 2019. This report follows on from the previous NMPA clinical audit reports and is one strategy used by the audit team to understand the care and outcomes experienced by women and birthing people, and to highlight areas of potential service improvement.

Data

Data for births in England are provided by NHS Digital's Maternity Services Data Set (MSDS) version 1.5 as well as by Hospital Episode Statistics (HES) records.

Data for births in Wales are provided by Digital Health and Care Wales's Maternity Indicators dataset (MIDs), the Initial Assessment (IA) dataset, as well as Admitted Patient Care records from the Patient Episode Database for Wales (PEDW), and some data fields from the National Community Child Health Database (NCCHD).

The NHS trusts and boards included in the audit provided maternity care at one or more hospital sites.*

This report captures 89% of eligible births (88% in England and 97% in Wales). Data are included from over half a million women and birthing people, and their babies, born between 1 April 2018 and 31 March 2019 in England and Wales.

Key findings

One-third of women and birthing people with singleton pregnancies at term in England and Wales underwent an induction of labour.

Of all women and birthing people experiencing an instrumental birth by forceps, as many as 1 in 20 did so without an episiotomy; of these, 31% experienced a third- or fourth-degree tear. Of the women and birthing people opting for a vaginal birth after a previous caesarean birth, the proportion who experienced a vaginal birth was 61%. This is over 10 percentage points lower than overall proportions reported in national guidance (72–75%). Postnatal readmission rates were higher

* Where possible, site-level results are available on the [NMPA website](#). Guidance on using the data on the NMPA website can be found on the [Resources](#) page and in the [Frequently Asked Questions](#). A list of organisations and useful publications are also available within the [NMPA Quality Improvement](#) page to support those improving the quality of care locally. The NMPA is committed to engagement with anyone accessing the audit's outputs and we welcome feedback on how these can be made more useful (contact nmpa@rcog.org.uk).

following a caesarean birth compared with a vaginal birth in both England (4.3% vs 2.9%) and Wales (4.7% vs 3.3%).

Of the women and birthing people experiencing their first birth, 23% had an instrumental birth, 23% had an emergency caesarean birth and 44% of those who had a vaginal birth had an episiotomy.

Around half of babies born small for gestational age (SGA) were born after their due date. This is in contrast to national guidance recommending earlier induction be offered if there are concerns about a baby being small.

Data completeness issues remain for many NMPA measures, especially for anaesthesia, augmentation (helping the progress of labour), labour onset, episiotomy, maternal ethnicity, body mass index (BMI) and smoking status at birth. From our dataset, it is not always possible to tell which type of pain relief a woman or birthing person received during labour or whether they had an epidural or spinal, or general anaesthetic. National datasets in both England and Wales under-report rates of pre-pregnancy conditions such as high blood pressure.

Recommendations

- R1 Improve the availability and quality of information about possible interventions during labour and birth, by offering individualised evidence-based information in a language and format which is accessible and tailored to each woman or birthing person's circumstances. Consider using the IDECIDE decision-making and consent tool (when available).
- R2 All women and birthing people should be routinely counselled and offered an episiotomy prior to experiencing a forceps-assisted birth, to reduce the chance of an OASI.
- R3 Further information is required to better understand the underlying causes and patterns of variation in measures. Use local audit of measures to investigate differences in practice that may contribute to observed variation in rates.
- R4 Review all cases of postnatal maternal readmission to understand common indications, and identify changes in practice that may decrease the chance of readmission, especially among those having a caesarean birth.
- R5 Conduct reviews of data completeness, data capture software and practices including mandatory field requirements. Utilise user feedback to identify patterns in missing data and opportunities to support healthcare professionals to provide complete data without compromising clinical care.
- R6 Amend data fields to:
 - collect the availability and timeliness of epidural anaesthesia
 - separate the recording of intrapartum analgesia by type for both England and Wales
 - collect analgesia and anaesthesia into two separate fields and enhance anaesthesia coding granularity to capture epidural, spinal or general anaesthesia separately in Wales.
- R7 Develop strategies to ensure harmonisation between national maternity datasets, in particular that data are collected to:
 - record pre-existing conditions in the Welsh Initial Appointment dataset
 - include a 'number of infants' variable in the English MSDS v2.0
 - prevent the under-reporting of all diagnoses within HES and PEDW.
- R8 Review the appropriateness of routine perinatal and postnatal data to obtain a meaningful measure of care, such as duration of skin-to-skin, who with and reasons for non-occurrence.

Key findings, recommendations, report evidence and related national guidance

Key finding (KF) Recommendation (R) (Audience)	Report findings underlying this recommendation	Page	Related national guidance
KF1 One-third of women and birthing people with singleton pregnancies at term in England and Wales underwent an induction of labour. However, there was considerable variation in induction of labour rates between NHS boards and trusts, with many falling outside the expected range.	Table 4, Figure 1	6, 7	NHS England and NHS Improvement (2020) <i>Better Births Four Years On</i> , ¹ NHS England (2019) <i>The NHS Long Term Plan</i> , ² NHS England (2019) <i>Saving Babies' Lives Version Two</i> , ³ Welsh
KF2 Of women and birthing people experiencing their first birth, 23% had an instrumental birth, 23% had an emergency caesarean birth, and 44% of those who had a vaginal birth had an episiotomy.	Table 6	9	Government (2019) <i>Maternity Care in Wales: A Five Year Vision for the Future (2019–2024)</i> , ⁴ NHS England (2016) <i>Saving Babies' Lives: A Care Bundle for Reducing Stillbirth</i> , ⁵ National Institute for Health and Care Excellence (2017)
KF3 Of those women and birthing people opting for a VBAC for their second birth, the proportion experiencing a vaginal birth was 61%. This is over 10 percentage points lower than overall proportions reported by literature referenced in national guidance (72–75%).	Table 7, Discussion	10, 12	<i>Intrapartum Care for Healthy Women and Babies</i> , ⁶ Birthrights (2020) <i>IDECIDE – a new consent tool is on its way . . .</i> , ⁷ National Institute for Health and Care Excellence (2021) <i>Inducing Labour</i> , ⁸ Royal College of Obstetricians and Gynaecologists (2015) <i>Birth After Previous Caesarean Birth</i> , ⁹ National Institute for Health and Care Excellence (2021) <i>Caesarean Birth</i> , ¹⁰
KF4 As many as 1 in 20 vaginal births assisted by forceps occurred without an episiotomy. Of these, 31% resulted in an OASI.	Table 9, Discussion	13, 15, 16	Royal College of Obstetricians and Gynaecologists (2013) <i>The Investigation and Management of the Small-for-Gestational-Age Fetus</i> , ¹¹ Royal College of Midwives (2019) <i>Midwifery Care for Induction of Labour</i> ¹²
KF5 Around 50% of small-for-gestational-age (SGA) babies were born after their due date. This is in contrast to national guidance recommending earlier induction be offered if there are concerns about a baby being born SGA.	Table 5, Figure 2	6, 7, 8	
KF6 The majority of trusts in England had a proportion of babies with an Apgar score of less than 7 at 5 minutes within the expected range; however, for a few trusts the rates were more than twice the average.	Table 14, Figure 4	17, 18	
R1 Improve the availability and quality of information about possible interventions during labour and birth, by offering individualised evidence-based information in a language and format which is accessible and tailored to each woman or birthing person's circumstances. Consider using the IDECIDE decision-making and consent tool (when available). (Healthcare professionals working in maternity services, maternity services providers, general practitioners, primary care providers, integrated care systems)	KF1–5		

Key finding (KF) Recommendation (R) (Audience)	Report findings underlying this recommendation	Page	Related national guidance
R2 All women and birthing people should be routinely counselled and offered an episiotomy prior to experiencing a forceps-assisted birth, to reduce the chance of an OASI. <i>(Healthcare professionals working in maternity services, maternity services providers)</i>	KF4		Royal College of Obstetricians and Gynaecologists (2018) <i>OASI Care Bundle</i> , ¹³ Royal College of Obstetricians and Gynaecologists (2020) <i>Assisted Vaginal Birth</i> ¹⁴
R3 Further information is required to better understand the underlying causes and patterns of variation in measures. Use local audit of measures to investigate differences in practice that may contribute to observed variation in rates. <i>(Healthcare professionals working in maternity and neonatal services, maternity services providers, integrated care systems)</i>	KF1, KF6		
KF7 Postnatal readmission rates were higher following a caesarean birth compared with a vaginal birth in both England (4.3% vs 2.9%) and Wales (4.7% vs 3.3%).	Table 11	14	NHS England and NHS Improvement (2020) <i>Better Births Four Years On</i> , ¹ NHS England (2019) <i>The NHS Long Term Plan</i> , ² NHS England (2019) <i>Saving Babies' Lives Version Two</i> , ³ Welsh Government (2019) <i>Maternity Care in Wales: A Five Year Vision for the Future (2019–2024)</i> , ⁴ NHS England (2016) <i>Saving Babies' Lives: A Care Bundle for Reducing Stillbirth</i> , ⁵
R4 Review all cases of postnatal maternal readmission to understand common indications, and identify changes in practice that may decrease the chance of readmission, especially among those having a caesarean birth. <i>(Healthcare professionals working in maternity services, maternity services providers, general practitioners, primary care providers, integrated care systems)</i>	KF7		
KF8 Data completeness issues remained for many variables. There were notable missing or incomplete data in both England and Wales for anaesthesia, augmentation, and smoking at the time of birth. Insufficient data capture was also found for labour onset, episiotomy, BMI at booking and breast milk at discharge in England, and for ethnicity in Wales. There was inadequate reporting of analgesia and anaesthesia provision in labour. Current variables do not capture all the specific analgesic agents in labour for England and Wales. In Wales, the 'pain relief' variable covers both analgesia and anaesthesia but allows for only one code to be recorded.	Table 8, Table 9, Discussion	13, 14, 15	
R5 Conduct reviews of data completeness, data capture software and practices including mandatory field requirements. Utilise user feedback to identify patterns in missing data and opportunities to support healthcare professionals to provide complete data without compromising clinical care. <i>(Healthcare professionals working in maternity services, maternity service providers, primary care providers, integrated care systems, NHS Digital, NHS England, NHS Wales)</i>	KF8		NHS Digital (2021) <i>DCB3066 Digital Maternity Record Standard</i> ¹⁵

Key finding (KF) Recommendation (R) (Audience)	Report findings underlying this recommendation	Page	Related national guidance
R6 Amend data fields to: <ul style="list-style-type: none"> ● collect the availability and timeliness of epidural anaesthesia ● separate the recording of intrapartum analgesia by type for both England and Wales ● collect analgesia and anaesthesia into two separate fields and enhance anaesthesia coding granularity to capture epidural, spinal or general anaesthesia separately in Wales. <i>(Integrated care systems, NHS Digital, Digital Health and Care Wales)</i>	KF8		National Institute for Health and Care Excellence (2017) <i>Intrapartum Care for Healthy Women and Babies</i> , ⁶ Association of Anaesthetists of Great Britain & Ireland and Obstetric Anaesthetists' Association (2013) <i>OAA / AAGBI Guidelines for Obstetric Anaesthetic Services 2013</i> ¹⁶
KF9 There is a lack of consistency between data capture in English and Welsh maternity datasets across a number of key variables. This prevents comparison and generation of national data averages.	Throughout		
KF10 HES and PEDW data appears to underestimate rates of pre-existing hypertension in women and birthing people in both England (0.7%) and Wales (0.5%). Infilling with MSDS booking appointment data for England revealed a pre-existing hypertension rate of 1.4%. This option is not available for Welsh data.	Characteristics, Table 3	3–5	
R7 Develop strategies to ensure harmonisation between national maternity datasets, in particular that data are collected to: <ul style="list-style-type: none"> ● record pre-existing conditions in the Welsh Initial Appointment dataset ● include a 'number of infants' variable in the English MSDS v2.0 ● prevent the under-reporting of all diagnoses within HES and PEDW. <i>(NHS Digital, NHS England, Digital Health and Care Wales, NHS Wales, maternity services software developers)</i>	KF9, KF10		
KF11 There are differences in the choice of postnatal variables captured by English and Welsh maternity datasets with regard to breast milk and skin-to-skin measures. Current postnatal variables do not adequately capture the experience of women, birthing people and their babies after birth.	Table 12, Table 13	16	
R8 Review the appropriateness of routine perinatal and postnatal data to obtain a clinically meaningful measure of care, for example, duration of skin-to-skin, who with and reasons for non-occurrence. <i>(Healthcare professionals working in maternity services, maternity services providers, integrated care systems, NHS England, NHS Wales)</i>	KF11		National Institute for Health and Care Excellence (2017) <i>Intrapartum Care for Healthy Women and Babies</i> ⁶

Understanding the NMPA clinical report

Introduction to the NMPA clinical report

NHS healthcare services for women and birthing people, and their babies are the subject of increased attention and scrutiny following recent reports on the subject of maternity care and safety standards.^{2,17–20} Recommendations from these reports highlight an urgent need to improve quality of care and perinatal outcomes.

A vital tool in the analysis and evaluation of maternity care is data recorded routinely every day via information systems at the point of care by midwives, nurses, doctors, support workers and administrative staff. These data are critical to enable a good understanding of what is happening within maternity services, both at national and local level, and to create a process for implementation of improvement strategies.

This report continues to make use of centralised maternity datasets from the participating nations, including the English Maternity Services Data Set (MSDS) v1.5. The transition to a centralised data source simplifies acquisition and assimilation of maternity data; however, this is not without challenges, particularly around data completeness and quality.

This report presents measures of maternity and perinatal care based on births in English and Welsh NHS services between 1 April 2018 and 31 March 2019. The report presents findings on a specific set of maternity and perinatal measures, depicts an average of England and Wales combined, and identifies variation in care and outcomes. It also provides contextual information describing the characteristics of women and birthing people, and their babies, cared for during this time period and whose data have been included in this report. During this piece of work, the NMPA's Women and Families Involvement Group (WFIG) has contributed to the interpretation of the results of the analysis, and their thoughts and experiences have been integrated throughout the document.

How to use the clinical report

The NMPA aims to produce accessible and relevant outputs to a variety of stakeholders including those who commission, provide and access maternity and perinatal healthcare services.

Women and birthing people can use the findings from the NMPA to inform themselves about the likelihood or chance of experiencing a particular outcome as described in the NMPA measures. This information can be used to support their decision-making and stimulate conversations between women and birthing people and their healthcare providers about how the findings presented by the NMPA relate to their individual circumstances.

The NMPA findings cannot inform women and birthing people about the experience of the care they might receive at a particular trust or board site. Resources from the [Care Quality Commission \(CQC\)](#) and the [NHS's Friends and Family Test](#) can be used to gain insight into the care experience and may be used in conjunction with the NMPA clinical report findings. As not all women and birthing people are able to choose the trust or board site where they can register for maternity care, these resources may inform how they engage with local services and advocate for themselves.

Healthcare commissioners can use the findings from the NMPA to better plan services based on case-mix demand and demographics of the women and birthing people in their area. They can identify individual services whose findings vary more than would be expected from the country or national average, highlighting specific areas for which services may need support to investigate or address unwarranted variation.

Healthcare professionals can use the findings from the NMPA to explore their local data, making comparisons with national averages and comparable units, and prompt audit into observed variation. The interactive data available [online](#) can be used to facilitate local quality improvement initiatives.

“It is important to remember, with a big data project like this, that each data point is a woman, birthing person or baby, and while their experience is a tiny contribution to the NMPA it’s likely a huge and life-changing event for them.”
(Kirsty Sharrock, WFIG member)

Has anything changed since the previous report?

Unlike previous NMPA clinical reports, this report does not include data from Scottish NHS boards. The Scottish Government, on behalf of NHS Scotland and other stakeholders, worked with the Healthcare Quality Improvement Partnership (HQIP) to try to identify a mutually agreeable legal basis that would support Scotland’s continued participation in the National Clinical Audit and Patient Outcomes Programme (NCAPOP – a collection of national quality improvement programmes commissioned by HQIP). That solution is now in place and Scotland is again participating in the NCAPOP, however that agreement was not in place in time for the preparation of this report, which means that maternity services in Scotland were not participants in the NMPA for the period of this report.

The NMPA’s clinical report methods

Going forward, both the NMPA methods and technical specifications will be available as complementary documents available on the NMPA website. Outlined below is a brief description of their contents:

- **NMPA Methods**, covering:
 - selection of audit measures
 - the NMPA’s outlier reporting
 - the NMPA’s approach to data collection
 - data sources used (including a link to the NMPA’s data flow diagram)
 - levels of reporting
 - data quality (including a link to a data completeness overview)
 - data analysis (including detailed explanation on funnel plots)
- **NMPA Measures – Technical Specification**, covering:
 - list of all measures included in the audit, alongside their data quality requirements and case-mix model definition
 - data item definition as well as the source dataset used for each.

Full results for the clinical report are made available online at site level and at trust/board level, as well as at country and national levels.

Findings

NHS trusts and boards included in the audit

Table 1 Trusts/boards and type of unit included in the audit, for births in NHS maternity services in England and Wales between 1 April 2018 and 31 March 2019

	England	Wales	Total
Total number of trusts/boards	130	7	137
Total number of trusts/boards included in this report	130	7	137
Number of trusts/boards with OUs only	26	0	26
Number of trusts/boards with OUs and AMUs	66	2	68
Number of trusts/boards with OUs, AMUs and FMUs	29	4	33
Number of trusts/boards with OUs and FMUs	7	0	7
Number of trusts/boards with FMUs only	2	1	3

AMU = alongside midwifery unit; FMU = freestanding midwifery unit; OU = obstetric unit.

Case ascertainment

Evaluating case ascertainment (the proportion of births captured in our dataset) in Wales and England is challenging because births are recorded (by the Office for National Statistics (ONS)) by parental place of residence rather than by place of birth, and there are a number of births that occur across the English–Welsh border in this regard. In addition to this, ONS reports annual figures on a calendar year basis whereas the NMPA annual report covers financial years. Our case ascertainment is therefore provided as an estimate only.

The case ascertainment improved in England compared with the 2017/18 report, where it had dropped to 77% with the first introduction of the MSDS v1.5 dataset.

Table 2 Estimated proportion of births captured, by country

Country	Births analysed by the NMPA (babies born in 2018/19)	Total registrable births in 2018 (from ONS ^a)	Estimated proportion of births captured (%)
England	555 206	628 171	88%
Wales	30 447	31 412	97%
Total	585 653	659 583	89%

^a Tables for ONS data are available from the [ONS website](#).

Characteristics of women and birthing people in the audit

Table 3 lists the overall characteristics of women and birthing people in England and Wales in 2018/19. 2.9% of births in England and Wales occurred in women and birthing people under the age of 20, with this proportion being higher in Wales (3.8% vs 2.8% for England). While there has been a decrease in teenage pregnancy rates in all areas of England and Wales over the last 20 years, the NMPA data highlight existing variation by geographical and socio-economic parameters.²¹ The associations between pregnancy in young people and major health consequences are well documented, as is the increased likelihood of greater long-term infant, parental and intergenerational disparities.²²

4.2% of births in England and Wales occurred in women and birthing people aged 40 or above, with this proportion being greater in England (4.3% vs 3.1% in Wales). ONS data show that a birthing age of 40 or above is becoming increasingly common, influenced by lifestyle choices and the wider availability of assisted reproductive technology.²¹ These pregnancies are often more complex, with a higher chance of requiring greater obstetric and perinatal care.²³

In 2018/19, around 54% of women and birthing people had a body mass index (BMI) outside of the 18.5–24.9 kg/m² range at the time of pregnancy booking. The rates of having a BMI of 30 kg/m² or above were higher in Wales (28.1%) than in England (22.4%). According to NMPA data, these rates appear to be increasing. The NMPA has previously published a sprint audit focused on pregnancy outcomes for women and birthing people with a BMI of 30 kg/m² or above, exploring the implications and birthing outcomes and providing recommendations.²⁴

Our results show an apparent difference in reported rates of pre-existing hypertension among women and birthing people in Wales (0.5%) and those in England (1.4%), but this is probably due to differences in data capture and coding strategies. The Welsh rate is derived solely from Patient Episode Database for Wales (PEDW) Admitted Patient Care (APC) data, whereas the English rate is derived from in-filling Hospital Episode Statistics (HES) data with an MSDS variable recording pre-pregnancy comorbidities. This method identified a greater incidence of pre-existing hypertension in England compared with the rate of 0.7% identified through HES alone. Unfortunately, there is no equivalent field capturing pre-pregnancy conditions in the Welsh maternity dataset to allow such in-filling. This means that the actual prevalence of pre-existing hypertension in Wales is likely to be underestimated.

Table 3 Characteristics of women and birthing people, and babies

Characteristic ^a	England		Wales		Total	
	n	%	n	%	n	%
Total number	547 370		30 003		577 373	
Age						
<20	15 233	2.8%	1 145	3.8%	16 378	2.9%
20–24	74 616	13.9%	5 387	18.0%	80 003	14.2%
25–29	147 868	27.6%	9 073	30.2%	156 941	27.8%
30–34	173 898	32.5%	8 878	29.6%	182 776	32.3%
35–39	100 479	18.8%	4 571	15.2%	105 050	18.6%
40+	23 094	4.3%	944	3.1%	24 038	4.2%
Missing (% of total)	12 182	(2.2%)	5	(0.02%)	12 187	(2.1%)
Ethnic group						
White	371 238	77.1%	24 536	90.0%	395 774	77.8%
South Asian	56 330	11.7%	903	3.3%	57 233	11.2%
Black	22 698	4.7%	320	1.2%	23 018	4.5%
Mixed	9 604	2.0%	1 237	4.5%	10 841	2.1%
Other	21 640	4.5%	276	1.0%	21 916	4.3%
Missing (% of total)	65 860	(12.0%)	2 731	(9.1%)	68 591	(11.9%)
Index of Multiple Deprivation^b						
1 = least deprived	78 826	14.8%	4 623	15.6%	83 449	14.8%
2	90 670	17.0%	4 933	16.7%	95 603	17.0%
3	100 784	18.9%	5 910	20.0%	106 694	18.9%
4	119 040	22.3%	6 424	21.7%	125 464	22.3%
5	144 533	27.1%	7 722	26.1%	152 255	27.0%
Missing (% of total)	13 517	(2.5%)	391	(1.3%)	13 908	(2.4%)
BMI at booking (kg/m²)						
<18.5	12 744	2.8%	633	2.2%	13 377	2.8%
18.5–24.9	208 412	46.3%	11 571	40.7%	219 983	46.0%
25–29.9	128 204	28.5%	8 245	29.0%	136 449	28.5%
≥30	100 795	22.4%	8 002	28.1%	108 797	22.7%
Missing (% of total)	97 215	(17.8%)	1 552	(5.2%)	98 767	(17.1%)
Obstetric history						
<i>Parity</i>						
Primiparous	225 016	42.4%	12 212	40.7%	237 228	42.4%
Multiparous	305 125	57.6%	17 791	59.3%	322 916	57.6%
Missing (% of total)	17 229	(3.1%)	0	(0%)	N/A	N/A
<i>Previous caesarean birth among multiparous women and birthing people</i>						
Yes	77 724	25.6%	4 303	24.2%	82 027	25.5%
Pre-existing comorbidities						
Hypertension (% of total)	7 434	1.4%	142	0.5%	7 576	1.4%
Diabetes (% of total)	44 296	8.6%	1 886	6.4%	46 182	8.5%
Multiplicity						
Singleton	538 250	98.4%	29 568	98.6%	567 818	98.4%
Twins or more	8 551	1.6%	435	1.4%	8 986	1.6%
Missing (% of total)	569	(0.1%)	0	(0%)	N/A	N/A
Gestation at birth						
0–23 ⁺⁶ weeks	361	0.1%	19	0.1%	380	0.1%
24–33 ⁺⁶ weeks	10 418	1.9%	601	2.0%	11 019	1.9%
34–36 ⁺⁶ weeks	27 927	5.2%	1 565	5.2%	29 492	5.2%
37–41 ⁺⁶ weeks	492 095	90.9%	26 622	88.8%	518 717	90.8%
42+ weeks	10 615	2.0%	1 167	3.9%	11 782	2.1%
Missing (% of total)	5 954	(1.1%)	29	(0.1%)	5 983	(1.0%)

^a For each characteristic, the proportions of its categories are calculated only among records for which complete information about that characteristic is available.

^b The IMD quintile is derived from the recorded standardised socio-economic IMD rank of the individual's local area based on their postcode.

Measures of care before, during and after birth

Timing of birth

Induction of labour

What is measured: The proportion of women and birthing people with a singleton baby between 37⁺⁰ and 42⁺⁶ weeks of gestation who have an induction of labour.

Table 4 Proportion of women and birthing people with a singleton baby at term who have an induction of labour

	England	Wales	Total
Number of trusts/boards included in analysis	106	6	112
Number of women and birthing people included in analysis	368 712	25 736	394 448
Number of women and birthing people who have induction of labour	122 956	9 035	131 991
Proportion of women and birthing people who have induction of labour	33.3%	35.2%	33.5%

⁶Country-level results are adjusted for case mix (unadjusted rates can be obtained using the numerators and denominators provided in the table).

Small-for-gestational-age babies, who are born at or after their estimated due date

What is measured: Of term singleton babies born small for gestational age (defined as below the 10th birthweight centile using UK 1990 charts),²⁵ the proportion who are born at or after their estimated due date (40 weeks of gestation).

Table 5 Proportion of term singleton babies born small for gestational age at or after their estimated due date (40 weeks of gestation)

	England	Wales	Total
Number of trusts/boards included in analysis	118	6	124
Number of babies included in analysis	29 929	1 575	31 504
Number of all term babies with birthweight <10th centile who are born at or after their estimated due date	14 491	914	15 405
Proportion of term babies with birthweight <10th centile	6.6%	5.8%	6.5%
Proportion of term babies with birthweight <2nd centile	0.8%	1.0%	0.8%
Proportion of all term babies with birthweight <10th centile who are born at or after their estimated due date	48.4%	57.9%	48.9%

Country-level results are adjusted for case mix (unadjusted rates can be obtained using the numerators and denominators provided in the table).

Discussion

Induction of labour

Approximately one-third of women and birthing people giving birth in hospitals England and Wales underwent induction of labour as part of their childbirth. This reflects an increasing prevalence of induced labour compared with findings from our previous reports. Initiatives highlighted in the

Saving Babies’ Lives Care Bundle (SBLCB) version 1 (March 2016) placed greater emphasis on factors such as assessment of fetal movements and improved detection of fetal growth restriction.⁵ The implementation of this care bundle may be contributing to the rise in rates of induction compared with previous NMPA reports. However, it is also possible that the true rate of induction offered as an intervention is higher, as women and birthing people may decline induction of labour in favour of fetal surveillance.

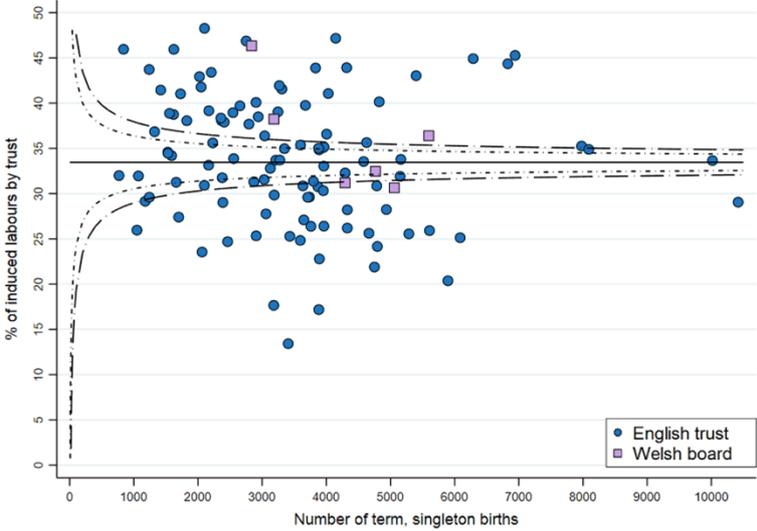


Figure 1 Trust/board level proportions of women and birthing people who have induction of labour of a singleton pregnancy at term

Induction of labour is most commonly offered where there are concerns that a problem could worsen if a pregnancy were to continue beyond a certain point. However, decisions may be multifactorial and often more complex than initially apparent. There are many trusts and boards that fall outside the expected range (Figure 1). For a handful of trusts and one board, the rate of induction was 45% or higher. The variation observed in induction of labour rates is more than can be attributed to chance alone, despite adjusting for case-mix factors. Other explanatory factors could include data quality differences or differences in clinical practice and protocols around labour induction. An NMPA sprint audit report on induction of labour will be published later in 2022.

“It’s a big difference, isn’t it [the wide range of induction of labour rates]? And there would be scope for a really substantial discussion about what could be causing that and how women could have a conversation with the people that are providing their care if that’s something that’s concerning them . . . it really needs a whole other bit of research, to find out what’s going on there, ’cause it’s a really big difference.” (Kirsty Sharrock, WFIG member)

Small-for-gestational-age babies

Nearly half of small-for-gestational-age (SGA) babies (<10th centile) were born at or after their due date. The rate of SGA births after 40 completed weeks of gestation was higher in Wales than England (Figure 2).

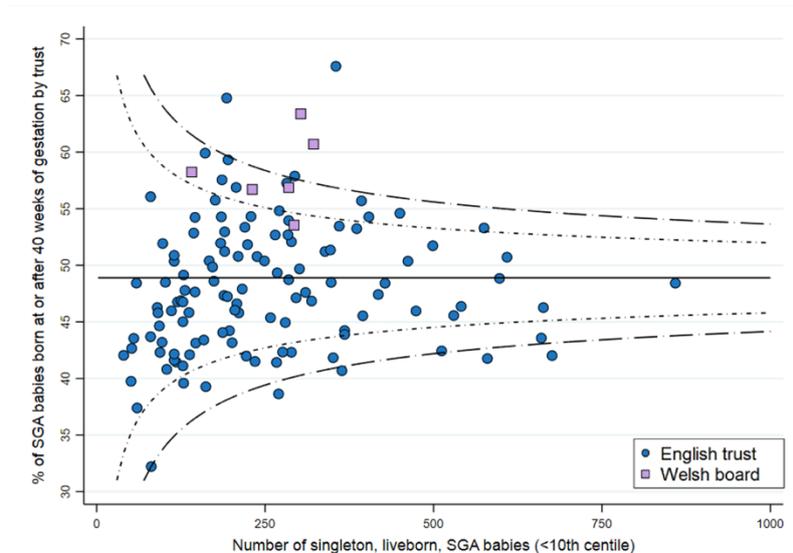


Figure 2 Trust/board level proportions of babies born at term with weight below the 10th centile who are born at or after their estimated due date (40 weeks of gestation)

When concerns of SGA have been identified, national guidance, published prior to the SBLCB, advises an induction of labour be offered at 37 weeks of gestation. This was developed further by the SBLCB version 2, which advises that an induction of labour be offered at 39 weeks of gestation in uncomplicated cases of SGA.^{3,11} The birth of an SGA baby after 40 weeks of gestation is either reflective of SGA having not been identified, or individual decision-making around the choice of management, with the former being recognised as a major challenge and key focus for decreasing stillbirth rates.^{3,5}

Errors in ultrasound estimations of fetal weight compared with birthweight are well recognised, with an estimated error rate of around 10% persisting, despite improvements in ultrasound technology in recent decades.²⁶ Therefore it is possible that a proportion of SGA births will be undetected despite growth scans, leaving women and birthing people without the opportunity to choose an induction of labour before their estimated due date.

When concerns of SGA have been identified, the decision-making process to determine whether the birth should be brought forward or the pregnancy should continue must take into account the potential effects on the baby of being born before their due date, compared with being born SGA. Perinatal risks associated with being born SGA include stillbirth, as well as hypoglycaemia (low blood sugar), hypothermia (low temperature) and polycythaemia (too many red blood cells); the latter three conditions are also commonly associated with being born in the early term period (37–39 weeks of gestation). Additional risks of early term birth include infection, requiring respiratory support and feeding difficulties, all of which lead to increased monitoring and potential neonatal practitioner input.^{3,27–30}

In the years between the publication of the SBLCB in 2016 and this report, there has been a small decrease in the proportion of SGA pregnancies being born after 40 weeks of gestation.⁵ It is unclear whether these marginal decreases are due to a lag in the implementation of improved antenatal screening pathways or whether the national recommendations have reached peak implementation and are insufficient to facilitate further reductions in this rate.

Modes of birth

What is measured: Of women and birthing people who give birth to a singleton baby between 37⁺⁰ and 42⁺⁶ weeks of gestation, the proportion with each mode of birth:

- unassisted vaginal birth: vaginal birth without the use of instruments
- assisted vaginal birth: vaginal birth with the assistance of instruments
- caesarean birth (both elective* and emergency).

Table 6 Proportion of women and birthing people giving birth to a singleton baby at term who have an unassisted vaginal birth, assisted vaginal birth, or caesarean birth

		England	Wales	Total
Number of trusts/boards included in analysis		127	6	133
Number of women and birthing people included in analysis		497 566	27 178	524 744
Number of women and birthing people who have an unassisted vaginal birth		297 726	17 031	314 757
Number of women and birthing people who have an assisted vaginal birth		61 384	2 951	64 335
Number of women and birthing people who have a caesarean birth		137 453	7 181	144 634
Overall rate	Unassisted vaginal birth ^a	59.9%	60.8%	60.0%
	Assisted vaginal birth ^b	12.3%	11.3%	12.3%
	Forceps	7.3%	8.1%	7.3%
	Ventouse	5.1%	3.2%	5.0%
	Caesarean birth ^{c,d}	27.6%	27.8%	27.6%
	Elective caesarean birth	12.1%	12.0%	12.1%
Emergency caesarean birth	15.5%	15.8%	15.5%	
Rate in primiparous women and birthing people	Unassisted vaginal birth ^a	48.6%	51.7%	48.8%
	Assisted vaginal birth ^b	22.7%	20.4%	22.6%
	Elective caesarean birth	6.0%	4.3%	5.9%
	Emergency caesarean birth	22.6%	22.2%	22.5%
Rate in multiparous women and birthing people	Unassisted vaginal birth ^a	68.5%	67.7%	68.5%
	Assisted vaginal birth ^b	4.3%	4.3%	4.3%
	Elective caesarean birth	16.9%	15.9%	16.8%
	Emergency caesarean birth	10.2%	10.5%	10.3%

^a The definition of 'unassisted vaginal birth' in this table is a birth without the use of instruments, it is not synonymous with 'freebirth'.

^b The definition of 'assisted vaginal birth' in this table is a birth with the assistance of either a ventouse cup or forceps.

^c The proportions of elective and emergency caesarean birth do not add up exactly to the overall proportion as some caesarean births in the dataset are not recorded as being elective or emergency.

^d Reporting the proportions of caesarean birth, overall and by type, is for information only. There is no 'ideal' rate, and these results must not be used to assess trust/board performance.

Country-level results are adjusted for case mix (unadjusted rates can be obtained using the numerators and denominators provided in the table).

* In this context, 'elective' means a planned operation. This can be for a broad variety of indications, including but not limited to placental problems such as placenta praevia, factors related to the baby such as breech presentation, previous caesarean birth or other operation on the womb, or maternal medical or psychological health conditions. A small proportion of 'elective' caesarean births are performed at the request of the woman and birthing person without another medical, surgical or psychological indication.

Vaginal birth after caesarean birth (VBAC)

What is measured: Of women and birthing people having their second baby after having had a caesarean birth for their first baby,* the proportion who give birth to their second baby vaginally.

Table 7 Proportion of women and birthing people giving birth to their second baby at term who had their first baby by caesarean and their second vaginally

	England	Wales	Total
Number of trusts/boards included in analysis	127	6	133
Number of women and birthing people eligible for VBAC and included in analysis	46 853	2 313	49 166
Number of women and birthing people who gave birth vaginally	10 533	531	11 064
Rate of women and birthing people who attempted VBAC (among those eligible)	37.8%	40.1%	38.0%
Of those who attempted VBAC, rate of women and birthing people who gave birth vaginally	60.7%	61.1%	60.7%
Overall VBAC rate (among those eligible)	22.6%	21.6%	22.5%

Country-level results are adjusted for case mix (unadjusted rates can be obtained using the numerators and denominators provided in the table).

Discussion

Modes of birth

Mode of birth rates continue to be a topic of focus among clinicians, researchers, and women and birthing people. Since the NMPA clinical report for births in 2016/17, there has been a decrease from 61.9% to 59.9% in England and from 64.5% to 60.8% in Wales in women and birthing people experiencing unassisted vaginal birth (that is a birth without the use of instruments). This finding is countered by an increase from 25.5% to 27.6% in England and from 24.1% to 27.8% in Wales for overall caesarean birth. However, there is no 'ideal' rate for caesarean birth and these results must not be used to assess trust/board performance. All mode of birth rates should be scrutinised alongside other outcome measures that indicate whether the quality of care or complications experienced by women and birthing people, and by their babies, are affected by these changes.

The results show that the rate of assisted vaginal birth (that is a birth with the use of instruments) for women and birthing people having their first birth in England was 22.7% and in Wales was 20.4%. In England, 22.6% of women and birthing people had their first birth by emergency caesarean, and in Wales this figure was 22.2%. These two modes of birth are associated with higher levels of physical and psychological harm, as reported by women and birthing people, in comparison with unassisted vaginal birth or elective caesarean birth.³¹ The unexpectedness and anxiety surrounding these modes of birth can lead to a negative birthing experience. For these reasons, women and birthing people should receive appropriate counselling in the antenatal period about the relative likelihood of experiencing an assisted vaginal birth or emergency caesarean birth with their first birth.

“Yeah, I agree that it’s useful because I think even if it’s just preparing women for the birthing process because [although] you’ve got all your antenatal classes . . . they never cover this. They say all this can happen, but you don’t know how likely it is and I think it just makes people go into their birth a little bit more prepared.”

(Claire Butterfield, WFIG member)

* The measure is restricted to women and birthing people giving birth for the second time because of the limitations of historical records, and because this is the largest group of women and birthing people considering VBAC (vaginal birth after caesarean birth). The rate presented here may therefore be smaller than other commonly reported VBAC rates, as it does not include those women and birthing people who previously had a vaginal birth as well as a caesarean birth.

Women and birthing people need to be made aware of the possible interventions that may be offered to them during birth to appropriately prepare their expectations and their preferences for planning their own experience. Responsibility lies with care providers, clinicians and external organisations supporting women and birthing people antenatally to ensure that the information they receive is individualised and includes the choices that may be available during pregnancy and labour.

Birth without intervention

The ‘birth without intervention’ composite measure was first reported by the NMPA in an effort to capture a full suite of measures that cover a broad range of experiences during birth. The measure has, however, come with its challenges – primarily due to data availability and quality.

The validity of any composite measure is dependent on the data quality and completeness of its underlying components.³² Because of data availability issues, in previous NMPA reports two definitions* were developed (including or excluding labour augmentation with oxytocin), which can complicate interpretation. Ultimately, the data quality of all component data items has proved inconsistent across the participating nations, and has impacted the number of trusts and boards for which this measure can be reported. For these reasons, rates for birth without intervention are not included in this report.

Furthermore, the meaning of the ‘birth without intervention’ measure is difficult to interpret. For some, a birth without intervention may represent a positive birthing experience, but for others this may reflect unavailability of intervention that is desired or needed and may be accompanied with adverse outcomes such as stillbirth or maternal or perinatal morbidity. Whether to interpret low intervention measures as something ‘good’ or ‘bad’ varies depending on other outcomes not captured within this measure as well as the experience for the individual women and birthing people. With recent maternity reviews highlighting poor outcomes resulting from clinical practice styles that aim to avoid intervention, countered alongside evidence for and a narrative of rising intervention globally, intervention in obstetrics and its use is under scrutiny.^{17,33,34}

“... a ‘birth without intervention’ isn’t necessarily a wholly good thing. A trust with a high % here may not be ‘better’ than one with a lower %... It tells you about one particular selection of measures, not the experiences or outcomes for the birthing people behind the data.” (Kirsty Sharrock, WFIG member)

NHS trusts and boards may consider auditing local availability and waiting times for epidural administration. Unavailability or missed opportunities for epidural are a source of distress and dissatisfaction among women and birthing people.³⁵ While the absence of epidural administration was captured in the ‘birth without intervention’ measure, it could not tell us whether this was a preference of the birthing person or whether an epidural was requested but not received. Incorporating such data by NHS Digital and Digital Health and Care Wales into routinely collected maternity datasets would provide context for reporting birth without intervention.

* Definition 1: spontaneous onset, progress and birth, without epidural/spinal/general anaesthesia or episiotomy.
Definition 2: spontaneous onset and birth, without epidural/spinal/general anaesthesia or episiotomy.

VBAC

The Royal College of Obstetricians and Gynaecologists (RCOG) guideline provides a rate of 72–75% of eligible women and birthing people experiencing a VBAC;⁹ however, the figures presented in this report are on average 10% lower than this.

There is also considerable variation in the proportion of women and birthing people opting for and subsequently experiencing VBAC between different NHS boards and trusts. This could be due to several reasons. Women and birthing people may begin the process of labour with the desire for a VBAC but subsequently change their mind and proceed with an emergency caesarean birth instead. It may also reflect greater levels of precaution taken around the potential risks associated with VBAC, including uterine rupture.

“I had the planned caesarean booked and then I wanted to try VBAC from the beginning and I did but I went through all this pain and for nothing because I had to have an emergency caesarean anyway. So I think if I had these results beforehand I would just gone ahead with my planned caesarean rather than go through their trauma of the VBAC. So definitely these are quite useful [figures].”

(Farzana Khanom, WFIG member)

Limitations in data granularity prevent NMPA data from identifying potential contraindications such as factors related to previous caesarean birth, and a short between-pregnancy interval. This may lead to an overestimation of cases deemed eligible for VBAC, and therefore an underestimation of the proportion of those who opt for VBAC.

Differences in clinical practice may also influence the choice of mode of birth in this instance. A clinician’s beliefs, opinions and previous experiences of VBAC births may influence their approach to counselling a woman and birthing person more than evidence-based practice. Experiences shared by our WFIG highlighted that many clinicians may present VBAC as a preferable option to a repeat caesarean birth.

“I see these figures and the assumption is that a higher rate of VBAC would be better. We are asking why people aren’t choosing VBAC and how can we encourage people to do it more. But that is such an assumption to make – that it would be better if more people did have a VBAC . . . A VBAC isn’t the right decision for everybody and we shouldn’t just be focusing on ‘why is this happening and how can we make more people have a VBAC’.” (Kirsty Sharrock, WFIG member)

Qualitative research exploring women and birthing people’s experiences of decision-making and choices for mode of birth following a previous caesarean birth has highlighted the uncertainty and complexities involved. Previous birth experiences as well as feelings of fear and anxiety influenced their decision-making but with no obvious preference for a VBAC or planned caesarean birth. A clear conclusion was the need for targeted information and individually tailored VBAC counselling.^{36–38} The availability of local-level rates of experiencing a vaginal birth could be valuable to informing the decision-making process. Maternity services should therefore interrogate their own vaginal birth rates after previous caesarean birth to better counsel women and birthing people about their chance of experiencing a vaginal birth. Each woman or birthing person’s history should be taken into account as well as other factors, such as up-to-date outcomes of previous comparable births at that site.

Maternal measures

Smoking cessation

What is measured: Of those women and birthing people who are recorded as being current smokers at their booking visit, the proportion who are no longer smokers by the time of birth.

Table 8 Proportion of women and birthing people smoking at birth, and the proportion of women and birthing people who stopped smoking during pregnancy

	England	Wales	Total
Number of trusts/boards included in smoking at birth analysis	48	6	54
Number of women and birthing people included in smoking at birth analysis	158 711	28 217	186 928
Number of women and birthing people smoking at birth	15 930	4 283	20 213
Proportion of women and birthing people smoking at birth ^a	10.0%	15.2%	10.8%
Number of trusts/boards included in smoking cessation analysis	44	6	50
Number of women and birthing people included in smoking cessation analysis	18 404	5 012	23 416
Number of women and birthing people not smoking at birth, who were smoking at booking	5 404	729	6 133
Proportion of women and birthing people not smoking at birth, among those who were smoking at booking	29.4%	14.5%	26.2%

^a This was derived from smoking status in late pregnancy or at the time of birth, as available.

Episiotomy

What is measured: Of women and birthing people who give birth vaginally to a singleton baby in the cephalic position between 37⁺⁰ and 42⁺⁶ weeks of gestation, the proportion who have an episiotomy.

Table 9 Proportion of women and birthing people who have an episiotomy among those who have a vaginal birth of a singleton, cephalic baby at term

	England	Wales	Total
Number of trusts/boards included in analysis	104	6	110
Number of women and birthing people included in analysis	249 366	19 434	268 800
Number of women and birthing people who have an episiotomy	62 554	3 698	66 252
Episiotomy rate			
Overall	25.0%	20.3%	24.6%
Unassisted vaginal birth ^a	9.9%	7.3%	9.7%
Assisted vaginal birth ^b	88.9%	85.8%	88.7%
Forceps	94.9%	92.1%	94.7%
Ventouse	80.2%	70.2%	79.8%
In primiparous women and birthing people	44.6%	36.5%	44.1%
In women and birthing people giving birth for the second time	8.9%	7.2%	8.7%

Country-level results are adjusted for case mix (unadjusted rates can be obtained using the numerators and denominators provided in the table).

^a The definition of 'unassisted vaginal birth' in this table is a birth without the use of instruments, it is not synonymous with 'freebirth'.

^b The definition of 'assisted vaginal birth' in this table is a birth with the assistance of either a ventouse cup or forceps.

Third- and fourth-degree tears

What is measured: Of women and birthing people who give birth vaginally to a singleton baby in the cephalic position between 37⁺⁰ and 42⁺⁶ weeks of gestation, the proportion who sustain a third- or fourth-degree tear.

Table 10 Proportion of women and birthing people who sustain a third- or fourth-degree tear among those who have a vaginal birth of a singleton, cephalic baby at term

		England	Wales	Total
Number of trusts/boards included in analysis		127	6	133
Number of women and birthing people included in analysis		358 132	19 914	378 046
Number of women and birthing people sustaining a third- or fourth-degree tear		11 192	577	11 769
Proportion overall sustaining a third- or fourth-degree tear		3.1%	3.0%	3.1%
Primiparous women and birthing people	Unassisted vaginal birth ^a	4.5%	4.3%	4.5%
	Assisted vaginal birth ^b	6.8%	7.3%	6.9%
Multiparous women and birthing people	Unassisted vaginal birth ^a	1.4%	1.2%	1.3%
	Assisted vaginal birth ^b	4.0%	4.2%	4.0%

Country-level results are adjusted for case mix (unadjusted rates can be obtained using the numerators and denominators provided in the table).

^a The definition of 'unassisted vaginal birth' in this table is a birth without the use of instruments, it is not synonymous with 'freebirth'.

^b The definition of 'assisted vaginal birth' in this table is a birth with the assistance of either a ventouse cup or forceps.

Unplanned maternal readmission

What is measured: Of women and birthing people giving birth to a singleton baby between 37⁺⁰ and 42⁺⁶ weeks of gestation, those who have an unplanned, overnight readmission to hospital within 42 days of giving birth, excluding those accompanying an unwell baby.

Table 11 Proportion of women and birthing people who have an unplanned, overnight readmission to hospital within 42 days of giving birth to a singleton baby at term

	England	Wales	Total
Number of trusts/boards included in analysis	126	6	132
Number of women and birthing people included in analysis	406 174	23 400	429 574
Number of women and birthing people with unplanned maternal readmissions within 42 days	13 323	871	14 194
Overall rate	3.3%	3.7%	3.3%
Proportion among women and birthing people who had a vaginal birth	2.9%	3.3%	2.9%
Proportion among women and birthing people who had a caesarean birth	4.3%	4.7%	4.3%

Country-level results are adjusted for case mix (unadjusted rates can be obtained using the numerators and denominators provided in the table).

Discussion

Smoking

In order to assess the impact and cost effectiveness of interventions at a local, or national, level, complete data on smoking status at birth is a necessity. While data completeness for smoking status at booking and at birth was sufficient for Wales (96% and 94% respectively), data completeness for smoking status at birth in England was only 52% (and 92% for smoking status at booking).

Consequently, smoking cessation rates could only be derived for a selected few trusts and was therefore removed from the case-mix adjustment model. It is hoped that with the transition to electronic healthcare records at NHS trusts, these figures will be better reported in future years.

Smoking has been recognised as one of the biggest modifiable risk factors in pregnancy, contributing to outcomes including fetal growth restriction, stillbirth, preterm birth and sudden infant death syndrome.³⁹ The NMPA data show that rates of smoking at pregnancy booking were 50% higher in Wales than in England (15.2% vs 10.0%); however, data quality appears to be superior in Wales compared with England. Overall smoking rates for adults aged 18 and over in the UK in 2019 were 14.1%,⁴⁰ which is in line with rates of smoking at booking in Wales.

OASI

Obstetric anal sphincter injury (OASI) is estimated to affect around 1 in 50 women and birthing people in the UK.⁴¹ There is considerable variation in European OASI rates, with many countries achieving lower rates of OASI.⁴² This may be due to detection of OASI, variation in modes of birth, perineal support techniques, use of episiotomy and differences in maternal characteristics. The use of episiotomy at instrumental births, to mitigate the increased risk of OASI, is widely practised in the UK, with our results showing that episiotomy usage is greater in England than in Wales.

Steps to reduce OASI include manual perineal protection, warm perineal compress, and use of episiotomy when appropriate, as indicated by the RCOG’s *OASI Care Bundle* and *Assisted Vaginal Birth* guidelines.^{12–14,43,44} The risk of OASI is highest with the use of forceps: NHS HES evidence suggests a 6-fold increase of OASI when forceps-assisted births are performed without an episiotomy.⁴⁵ Further observational data support the use of episiotomy if forceps are required,^{46,47} while smaller prospective and pilot randomised control trials have not identified a benefit of episiotomies in births assisted by forceps.^{48,49} Despite this, 2018/19 data show that approximately 1 in 20 births with the assistance of forceps in England and Wales are performed without an episiotomy, only slightly higher than rates from 2011.⁴⁵

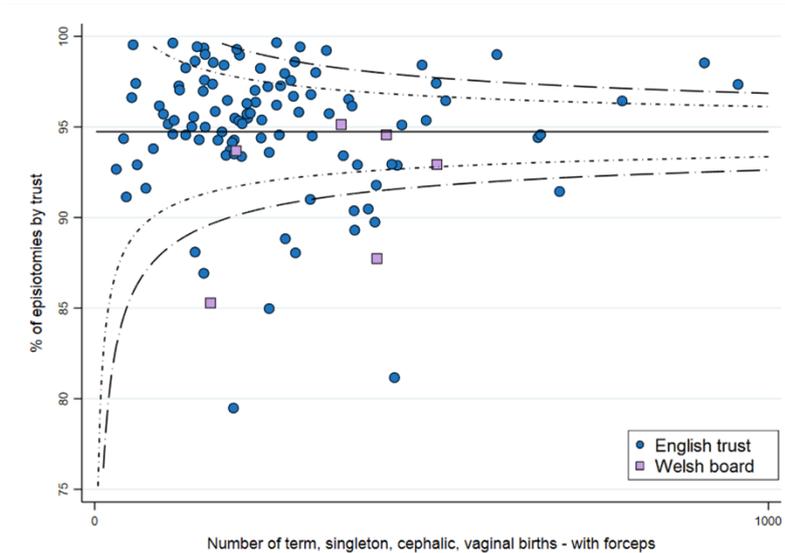


Figure 3 Trust/board level proportions of women and birthing people who had a forceps-assisted birth accompanied by an episiotomy

Figure 3 demonstrates this pattern across England and Wales, with the use of episiotomy in forceps-assisted births being less common in only a handful of NHS trusts and boards. More consistent use of episiotomy for forceps-assisted births occurred in the majority of English and Welsh maternity units.

Of 30 409 forceps-assisted births performed for term, cephalic labours in 2018/19 with complete data, the rate of OASI was 7.1% among the 95% of women and birthing people who received an episiotomy (2 032 of 28 807), whereas it was 31.3% among the 5% of women and birthing people who did not receive an episiotomy (501 of 1 602). It is therefore plausible that reducing the number of forceps-assisted births conducted without an episiotomy will lead to a reduction in overall OASI rates. Although this may only lead to a small reduction in the overall OASI rate, it may avoid the long-term impact of severe tears for the individual women and birthing people who are affected.

Measures of care for the newborn baby

Skin-to-skin contact within 1 hour of birth

What is measured: Of liveborn babies born between 34⁺⁰ and 42⁺⁶ weeks of gestation, the proportion who receive skin-to-skin contact within 1 hour of birth.

Table 12 Proportion of babies born between 34⁺⁰ and 42⁺⁶ weeks of gestation who receive skin-to-skin contact within 1 hour of birth

	England ^a
Number of trusts/boards included in analysis	97
Number of babies included in analysis	374 561
Number of babies receiving skin-to-skin contact within 1 hour of birth	299 465
Proportion of babies receiving skin-to-skin contact within 1 hour of birth	80.0%
Proportion in babies born between 34 ⁺⁰ and 36 ⁺⁶ weeks of gestation	56.3%
Proportion in babies born between 37 ⁺⁰ and 42 ⁺⁶ weeks of gestation	81.4%

^a Information about skin-to-skin contact is only available for babies born in England because it is not captured in the Welsh national dataset.

Breast milk at first feed, and at discharge

What is measured: Of liveborn babies born between 34⁺⁰ and 42⁺⁶ weeks of gestation, the proportion who receive any breast milk for their first feed, and at discharge from the maternity unit.*

Table 13 Proportion of babies born between 34⁺⁰ and 42⁺⁶ weeks of gestation who receive breast milk at their first feed and at discharge

	England	Wales ^a	Total
Number of trusts/boards included in analysis	113	7	120
Number of babies included in breast milk at first feed analysis	426 042	28 401	454 443
Number of babies receiving breast milk at first feed	319 028	17 487	336 515
Number of babies included in breast milk at discharge analysis	360 725	N/A	N/A
Number of babies receiving breast milk at discharge	256 285	N/A	N/A
Overall proportion receiving breast milk at first feed	74.9%	61.6%	74.0%
Overall proportion receiving breast milk at discharge	71.0%	N/A	N/A
Proportion of babies born between 37 ⁺⁰ and 42 ⁺⁶ weeks of gestation who receive breast milk			
At first feed	75.6%	62.1%	74.7%
At discharge	71.6%	N/A	N/A
Proportion of babies born between 34 ⁺⁰ and 36 ⁺⁶ weeks of gestation who receive breast milk			
At first feed	61.9%	52.3%	61.2%
At discharge	59.5%	N/A	N/A

Breast milk at discharge information is not recorded in the Welsh datasets, and therefore cannot be measured.

* This measure uses only data available from the maternity dataset and does not include additional information that may be available for babies admitted to a neonatal unit.

5 minute Apgar score of less than 7

What is measured: Of liveborn, singleton babies born between 37⁺⁰ and 42⁺⁶ weeks of gestation, the proportion who are assigned an Apgar score of less than 7 at 5 minutes of age.

Table 14 Proportion of singleton babies born at term assigned an Apgar score of less than 7 at 5 minutes of age

	England	Wales	Total
Number of trusts/boards included in analysis	113	6	119
Number of babies included in analysis	432 248	27 032	459 280
Number of babies with Apgar score <7 at 5 minutes	4 800	337	5 137
Proportion of babies with Apgar score <7 at 5 minutes	1.11%	1.25%	1.12%

Country-level results are adjusted for case mix (unadjusted rates can be obtained using the numerators and denominators provided in the table).

Discussion

Skin-to-skin

The practice of skin-to-skin is recommended and incorporated into routine care in the UK.⁶ UNICEF UK describes skin-to-skin contact, a key component of their Baby Friendly Initiative (BFI) standards, as the practice where a baby is dried and laid directly on the mother or birthing person's bare chest after birth and left for at least an hour or until after the first feed.⁵⁰ However, it is difficult to determine whether the proportion recorded in the data is meaningful and fully capturing the experience.

Our results show that 81.4% of babies born between 37⁺⁰ and 42⁺⁶ weeks received skin-to-skin contact, which is a high proportion. However, further data items are required to determine whether this experience is one that lasts an appropriate amount of time. For some families, an uninterrupted hour of skin-to-skin with their newborn is possible whereas, for others, clinical procedures such as suturing or remaining in theatre may interfere with or distract from the skin-to-skin experience. There is evidence to support the benefits of skin-to-skin with a partner or family member, and healthcare providers should support and promote this practice where appropriate.⁵¹ A consensus definition is needed on what makes skin-to-skin contact the most beneficial and meaningful experience for families.

The following vignettes demonstrate that skin-to-skin contact immediately after birth is not always a positive experience for women or birthing people but may still be a valuable and pleasant experience once distractions are removed and the environment made more comfortable.

“I had skin-to-skin but did not feel safe holding my baby and was distracted by the ongoing surgery until I was in recovery, which was more than an hour after birth so wouldn't count in the data. I'm not sure there was much benefit to skin-to-skin in theatre in that case – it just seemed to be assumed it should happen. Later on, once everything was over, I was able to enjoy it and focus on my baby.”

(Kirsty Sharrock, WFIG member)

“I felt so unwell after having my first baby by emergency caesarean and they wanted to give her to me in theatre when she was born, but I just couldn't. My partner had her instead. So she did have skin-to-skin, it just wasn't with me.”

(Anonymous, WFIG member)

Breast milk

The UK is reported to have one of the lowest breastfeeding rates in Europe. The benefits of breastfeeding to both mothers or birthing people and babies, in reducing childhood illnesses and improving longer-term outcomes, are well documented.⁵² There is large variation between England and Wales in babies receiving breast milk at their first feed. Rates also differ by ethnic group and by Index of Multiple Deprivation (IMD) quintile.⁵³

Rates of babies receiving breast milk at discharge are captured by English trusts but not by boards in Wales. This measure gives some indication of the variation that exists among trusts in their infant-feeding support services. Healthcare providers and commissioners of services who note that their breastfeeding rates are lower than would be expected should focus attention on how best to support the choices of women and birthing people in their local areas.

A key initiative to support improvement of breastfeeding rates is UNICEF UK's BFI, which offers English trusts and Welsh boards the opportunity to be assessed as eligible for accreditation. Maternity units not already accredited were due to start the process in 2019/20.² As more NHS trusts and boards become accredited or aligned with breastfeeding initiatives, variation between countries and trusts/boards for skin-to-skin contact at birth and measures related to breastfeeding should better reflect the informed choices of women and birthing people.

Apgar score

An Apgar score of less than 7 at 5 minutes has been associated with an increased chance of cerebral palsy, epilepsy, developmental delay and death.^{54,55} However, there are many factors that can influence the score, such as intrapartum analgesia or anaesthesia, congenital abnormalities, trauma, gestational age and mode of birth (emergency caesarean birth and assisted vaginal birth).^{56,57} The majority of trusts are within the expected range (Figure 4); but, for a handful of trusts, the rate is more than twice the national average. The variation between trusts and boards may be explained by differences in data reporting, in clinical practice or in the application of Apgar scoring.

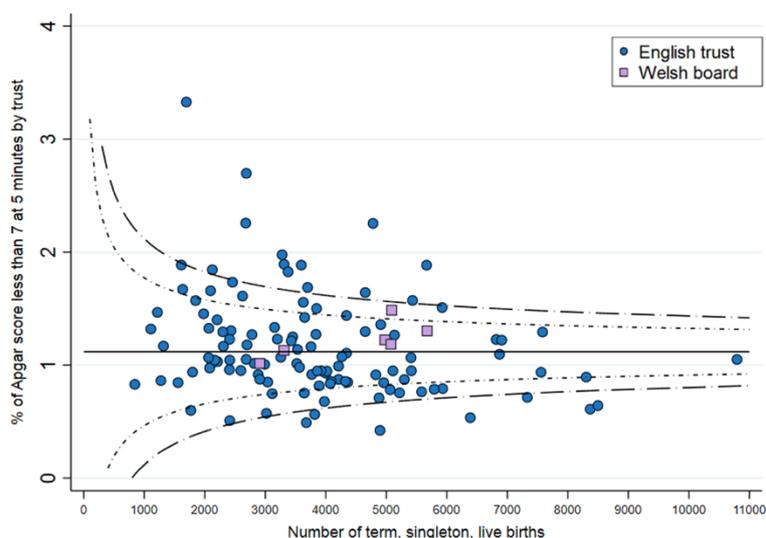


Figure 4 Trust/board level proportions of babies who had an Apgar score of less than 7 at 5 minutes

Discussion on the current NMPA dataset

Data completeness and quality

The recent centralisation of English maternity data – in line with the other devolved nations – has the promise of transforming analysis and national audit of maternity services. MSDS's first release, which covered births in 2017/18, had incomplete records submission from many trusts, and overall data completeness was often insufficient for the purpose of our clinical report – a limitation that was reflected in the number of trusts we were able to include in the analysis. For the current report on 2018/19 births, this has improved greatly and no English trust was excluded on the sole basis of insufficient records submitted to MSDS. However, there is scope for further data quality improvement within both the English and Welsh datasets.

There remains a significant number of variables that have missing data (a data completeness overview by sites and trusts/boards can be found on the NMPA website), and there are different patterns of 'missingness' between England and Wales. For example, high levels of missing data identified for smoking status at the time of giving birth in both England and Wales makes it impossible to derive smoking cessation rates during pregnancy for many trusts and boards. This is important to determine the effectiveness of individual smoking cessation strategies, which is essential to working towards overall reductions of smoking in pregnancy. Therefore, the presence of large proportions of missing data has implications for trusts/boards and healthcare commissioners in service planning.

“When we see or hear that there's 'missing data', I think many would automatically think that someone's not doing their job properly or possibly avoiding the 'paperwork' side of things. But could it be a system error? Do staff not have sufficient time to complete their admin? Also, sometimes people may not be sure which code to use. It all has an effect and our data needs recording properly.”

(Emma Crookes, WFIG member)

While it is important to take action to improve data input, it is recognised that those providing routine data are often also those providing frontline clinical care or are clinical coders reliant on retrospective patient records. Requirements for data entry should never be allowed to compromise patient care. Feedback from clinical coding and frontline staff may help to understand when and how missing data occurs, how data collection requirements contribute to incomplete data, and how the data collection process can be improved without increasing the burden on clinical staff.

With a higher level of records submission to the MSDS dataset for 2018/19, a more robust identification of site- and trust-level data quality issues could be achieved. This revealed a few cases where a trust's data quality was insufficient for a key measure to be used and therefore – where possible – an alternative source was used as a substitute for that measure for the entire trust.

Trusts/boards affected by this are notified and, for the 2018/19 report, it involved the following measures:

- gestational age at birth (7 English trusts: ONS-PDS spine used as the substitute data source)
- mode of birth (1 English trust: HES used as the substitute data source)
- previous caesarean birth (2 Welsh sites and 10 English sites: PEDW/HES used as the substitute data source)
- previous total births (1 Welsh site and 3 English sites: PEDW/HES used as the substitute data source).

More detail on the substitution criteria can be found in the [Technical Specifications](#) document.

A notable disadvantage of a centralised data system compared with previous methods is the separation of communication between trusts and data analysts, and the lack of a formal pathway to support feedback relating to data quality issues. It is important for feedback mechanisms to exist within the stream of data collection and processing, to facilitate corrections and improvement in data quality. Assessments of data quality by individual trusts and intermediary recipients with targeted feedback will allow for more timely amendments. Such pathways will support improvements in subsequent data analyses. The NMPA also recognises its role within this process and will be writing to selected trusts to highlight data quality concerns and the potential implication on audit results.

Availability of data items

There is a need for better alignment in the availability of essential measures within the maternity datasets between countries. For example, *'onset of labour'*, which is available in MIDs in Wales, is unavailable in MSDS v1.5 and has to be sourced from the HES dataset in England. The variable *'number of infants'* is also missing from MSDS v1.5. This means that a proxy for this measure has to be derived in order to identify singleton births, but this will be affected by whether all the records within a multiple birth are captured or not. While it is believed that *'onset of labour'* will become available in MSDS v2.0,* it is unclear whether *'number of infants'* will.

There is also limited consistency between English and Welsh datasets with regard to postnatal measures. For example, data for skin-to-skin care and receiving breast milk at discharge are not routinely collected in Wales. Moreover, the NMPA is only able to report on a small number of postnatal measures overall, and therefore interpretation of care and outcomes in the postnatal period is challenging.

“We really need a lot more measures of postnatal care and the postnatal experience. As a mum it’s such a big part of the experience and yet we’ve got very little data about what is happening to mums in this period, or about the long-term impacts . . .” (Kirsty Sharrock, WFIG member)

“. . . the maternity journey doesn’t end when you’ve had your baby and either you’re left at home if you’ve had a home birth or you’re discharged from hospital . . .” (Emma Crookes, WFIG member)

* Version 1.5 of MSDS was used for the clinical reports on 2017/18 and 2018/19 data. Version 2.0 of MSDS will be used from the next clinical report on 2019/20 data.

Data items design

The current design of certain variables within the NMPA dataset does not always facilitate clinical interpretation. We previously reported on the inadequacy of the variable capturing blood loss in MSDS v1.5 in our clinical report on 2017/18 data, but we know the issue should be resolved with the release of MSDS v2.0 and so we are hopeful that this outlier indicator may be reintroduced for England soon. However, there are currently other data items that could also benefit from a redesign, in both nations. In Wales, the '*pain relief*' variable from the NCCHD dataset covers both analgesia and anaesthesia but allows for only one code to be recorded, when in reality women and birthing people often receive more than one form of analgesia and/or anaesthesia. The '*epidural status*' variable in the Welsh MIDs dataset also has its limitations as it only reports on the use of an epidural, when other forms of anaesthesia should also be reported on. Additionally, neither the English nor Welsh dataset allows the coding of all commonly used analgesics during labour, including paracetamol, codeine, diamorphine, pethidine and local anaesthetics. It is possible that those coded as receiving no pain relief – or with missing data – may have in reality received one of these options, despite the existence of the 'other' category. This is important for women and birthing people to understand the choices available to them and for maternity units to better understand the demands placed on them.

Conclusion

This NMPA annual report presents results from maternity records of births in England and Wales from 1 April 2018 to 31 March 2019, with further resources available on the [NMPA website](#) containing results at the level of NHS trusts, boards and individual sites. Comparisons between individual trusts, boards or sites and the national averages may help identify specific areas where reflection, review and adaptation may lead to improvements in clinical practice.

There are noticeable differences between this report and previous NMPA clinical reports in terms of reported results, data completeness and data quality, meaning that performing historical comparisons should be undertaken with caution. The loss of access to Scottish data for this report has prevented the reporting of overall rates for Great Britain, but an improvement in MSDS v1.5 data has allowed for higher levels of English case ascertainment and reporting for a greater number of English NHS trusts than the clinical report on 2017/18 data. Welsh maternity data remains of stable quality, yet the aim of being able to present a complete 'state of the nation maternity care report' remains a goal the NMPA is committed to.

Nonetheless, important findings have been made in this report. The voices of our Women and Families Involvement Group have helped to steer this report and have also been woven in throughout, providing women and birthing peoples' perspectives on themes important to them, alongside those of data quality and data analysis. The funnel plots included clearly show variation in practice and outcome in England and Wales with data derived solely from country-level centralised datasets. Centralised datasets represent the future of national audit, decreasing workloads for trusts and boards as well as for analysts by promoting the flow of pseudonymised data. There is huge potential in the ability to analyse high-quality, detailed, population-level data and, as demonstrated in this report with episiotomy rates during forceps-assisted births, we have been able to highlight the consequences and geographical distribution of variation in practice.

However, there are also many instances in this report where data 'missingness' and data quality and data granularity problems have prevented such high-quality, meaningful analyses from being performed. Responsibility for driving improvements does not solely rest with trusts, boards and the staff who enter the clinical data. Changes are required by those who design and manage maternity datasets, involving women, birthing people and their families to give careful consideration about which data would be meaningful and important for analysis, how the data should be collected, and the best approach to code these data. Centralisation and harmonisation of data are merely steps on the journey towards optimisation of maternity and perinatal care.

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