NMPA Measures Technical Specifications for births occurring from 1 April 2018

Contents

Potential outlier indicators[1]

Third or fourth degree perineal tears

Lowest level of reporting in NMPA clinical report for 2018-19 births: Trusts/boards with at least one obstetric unit (OU)[2]

Lowest level of reporting on NMPA website: Sites with an OU (where possible to report)

Relevant population (denominator): Number of women giving birth vaginally to a singleton baby with a cephalic presentation between 37+0 and 42+6 weeks of gestation

Exclusions:
Trust/board level:[3] Trusts/boards were excluded if they <u>did not</u> meet the following criteria:

Data item	Completeness check	Distribution check
Gestational age	If trust/board has at least one OU: • ≥70% complete within vaginal births • ≥70% complete within caesarean births • ≥70% complete overall If trust/board has no OUs: • ≥70% complete overall	If trust/board has at least one OU: • Gestational age at birth is between 37 and 42 weeks (inclusive) in ≥70% of births If trust/board has no OUs: • Gestational age at birth is between 37 and 42 weeks (inclusive) in ≥90% of births
Method of delivery	• ≥70% complete	If trust/board has at least one OU: • Caesarean birth rate is between ≥5% and ≤50% • Spontaneous vaginal rate >40% If trust/board has no OUs: • Caesarean birth rate is <5% • Spontaneous vaginal rate ≥90%
Perineal tears	N/A	3rd/4th degree tear rate is ≥0% and <15%
Number of infants	• ≥70% complete	N/A
Fetal presentation	• ≥70% complete within vaginal births	Cephalic rate ≥70%
Measure under denominator restrictions	N/A	3rd/4th degree tear rate is within +/- 5 SD of national mean

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[1] Outlier indicator reporting was not performed for clinical reports 2017-18 and 2018-19
[2] Pre-publication review of results by trusts and boards is performed at trust/board level
[3] The same exclusions are applied at site level for site level results

Record level:

Records were excluded if they were missing information on perineal tears, method of delivery, gestational age, number of infants (multiplicity) or fetal presentation

Numerator: Number of women giving birth vaginally to a singleton baby with a cephalic presentation between 37+0 and 42+6 weeks (inclusive) of gestation who have a third or fourth degree perineal tear

Case-mix factors: maternal age, parity, previous caesarean birth, birthweight, gestational age, diabetes, hypertension, preeclampsia, placental problems, poly/oligo/anhydramnios

Postpartum haemorrhage of 1500ml or more

Lowest level of reporting in NMPA clinical report for 2018-19 births: Trusts/boards with at least one OU

Lowest level of reporting on NMPA website: Sites with an OU (where possible to report)

Relevant population (denominator): Number of women giving birth to a singleton baby between 37+0 and 42+6 weeks of gestation

Exclusions:
Trust/board level: Trusts/boards were excluded if they <u>did not</u> meet the following criteria:

Data item	Completeness check	Distribution check
Gestational age	If trust/board has at least one OU: • ≥70% complete within vaginal births • ≥70% complete within caesarean births • ≥70% complete overall If trust/board has no OUs: • ≥70% complete overall	If trust/board has at least one OU: • Gestational age at birth is between 37 and 42 weeks (inclusive) in ≥70% of births If trust/board has no OUs: • Gestational age at birth is between 37 and 42 weeks (inclusive) in ≥90% of births
Estimated blood loss (ml)	• ≥70% complete	Blood loss of 0ml occurs in ≤5% of births Blood loss >500ml occurs in ≤60% of births
Number of infants	• ≥70% complete	N/A
Measure under denominator restrictions	N/A	Blood loss ≥1500ml rate is within +/- 5 SD of national mean

Record level: records were excluded if they were missing information on estimated blood loss, number of babies (multiplicity), or gestational age

Numerator: Number of women giving birth to a singleton baby between 37+0 and 42+6 weeks (inclusive) of gestation who have a postpartum haemorrhage of greater than or equal to 1500ml

Case-mix factors: maternal age, parity, previous caesarean birth, birthweight, gestational age, diabetes, hypertension, preeclampsia, placental problems, poly/oligo/anhydramnios

5-minute Apgar score less than 7

Lowest level of reporting in NMPA clinical report for 2018-19 births: Trusts/boards with at least one OU

Lowest level of reporting on NMPA website: Sites with an OU (where possible to report)

Relevant population (denominator): Number of singleton, liveborn infants born between 37+0 and 42+6 weeks (inclusive) of gestation

Exclusions:
Trust/board level: Trusts/boards were excluded if they <u>did not</u> meet the following criteria:

Data item	Completeness check	Distribution check
Gestational age	If trust/board has at least one OU: • ≥70% complete within vaginal births • ≥70% complete within caesarean births • ≥70% complete overall If trust/board has no OUs: • ≥70% complete overall	If trust/board has at least one OU: • Gestational age at birth is between 37 and 42 weeks (inclusive) in ≥70% of births If trust/board has no OUs: • Gestational age at birth is between 37 and 42 weeks (inclusive) in ≥90% of births
Apgar score at 5 minutes	• ≥70% complete	If trust/board has at least one OU: • Rate of Apgar scores less than 7 at 5 minutes is ≥0.5% If trust/board has no OUs: • Any rate of Apgar scores less than 7 at 5 minutes
Number of infants	• ≥70% complete	N/A
Fetus outcome	• ≥70% complete	If trust/board has at least one OU: • More than one stillbirth was recorded If trust/board has no OUs: • Any number of stillbirths
Measure under denominator restrictions	N/A	Rate of Apgar scores less than 7 at 5 minutes is within +/- 5 SD of national mean

Record level: records were excluded if they were missing information on Apgar score at 5 minutes, gestational age, number of infants (multiplicity), fetal outcome (stillbirth or livebirth)

Numerator: Number of singleton, liveborn infants born between 37+0 and 42+6 weeks (inclusive) of gestation with a 5-minute Apgar score less than 7

Case-mix factors: maternal age, parity, previous caesarean birth, birthweight, gestational age, diabetes, hypertension, preeclampsia, placental problems, poly/oligo/anhydramnios

Other measures

Induction of labour

Lowest level of reporting in NMPA clinical report for 2018-19 births: Trusts/boards with at least one OU

Lowest level of reporting on NMPA website: Sites with an OU (where possible to report)

Relevant population (denominator): Number of women giving birth to a singleton baby between 37+0 and 42+6 weeks of gestation

Exclusions:
Trust/board level: Trusts/boards were excluded if they <u>did not</u> meet the following criteria:

Data item	Completeness check	Distribution check
Gestational age	If trust/board has at least one OU: • ≥70% complete within vaginal births • ≥70% complete within caesarean births • ≥70% complete overall If trust/board has no OUs: • ≥70% complete overall	If trust/board has at least one OU: • Gestational age at birth is between 37 and 42 weeks (inclusive) in ≥70% of births If trust/board has no OUs: • Gestational age at birth is between 37 and 42 weeks (inclusive) in ≥90% of births
Number of infants	• ≥70% complete	N/A
Mode of labour onset	• ≥70% complete	If trust/board has at least one OU: • Induction of labour rate is ≥10% and <50% If trust/board has no OUs: • Induction of labour rate is <5% For all trusts/boards: • Where labour onset = '2' (caesarean birth), mode of delivery should be caesarean birth (or missing) in>70% of records
Measure under denominator restrictions	N/A	Induction of labour rate is within +/- 5 SD of national mean

Record level: Records were excluded if they were missing information on gestational age, number of infants (multiplicity) or mode of labour onset

Numerator: Number of women giving birth to a singleton baby between 37+0 and 42+6 weeks of gestation, who had their labour induced

Case-mix factors: maternal age, parity, previous caesarean birth, birthweight, gestational age, diabetes, hypertension, preeclampsia, placental problems, poly/oligo/anhydramnios

Small-for-gestational-age babies born at or after 40 weeks

Lowest level of reporting in NMPA clinical report for 2018-19 births: Trusts/boards with at least one OU

Lowest level of reporting on NMPA website: Sites with an OU (where possible to report)

Relevant population (denominator): Number of babies born small for gestational age (defined as less than the 10th birthweight centile using the WHO-UK 1990 charts)[4] between 37+0 and 42+6 weeks of gestation

Exclusions:

Trust/board level: Trusts/boards were excluded if they <u>did not</u> meet the following criteria:

Data item	Completeness check	Distribution check
Gestational age	If trust/board has at least one OU: • ≥70% complete within vaginal births • ≥70% complete within caesarean births • ≥70% complete overall If trust/board has no OUs: • ≥70% complete overall	If trust/board has at least one OU: • Gestational age at birth is between 37 and 42 weeks (inclusive) in ≥70% of births If trust/board has no OUs: • Gestational age at birth is between 37 and 42 weeks (inclusive) in ≥90% of births
Number of infants	• ≥70% complete	N/A
Fetus outcome	• ≥70% complete	If trust/board has at least one OU: • More than one stillbirth was recorded If trust/board has no OUs: • Any number of stillbirths
Birthweight	• ≥70% complete	Birthweight ≥2500g and ≤4500g in ≥80% of infants born between 37 and 42 weeks (inclusive)
Measure under denominator restrictions	N/A	SGA rate is within +/- 5 SD of national mean

Record level: Records were excluded if they were missing information on gestational age, number of infants, fetus outcome or birthweight

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[4] Cole TJ, Williams AF, Wright CM. Revised birth centiles for weight, length and head circumference in the UK-WHO growth charts. Annals of Human Biology. 2010 Jun 9;38(1):7–11.

Numerator: Number of babies born small for gestational age (defined as less than the 10th birthweight centile using the WHO-UK 1990 charts)[5] that are born on or after their estimated due date (between 40+0 weeks and 42+6 weeks (inclusive))

Case-mix factors: maternal age, parity, previous caesarean birth, diabetes, hypertension, preeclampsia, placental problems, poly/oligo/anhydramnios

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[5] Ibid

Mode of birth

Lowest level of reporting in NMPA clinical report for 2018-19 births: Trusts/boards with at least one OU

Lowest level of reporting on NMPA website: Sites with an OU (where possible to report)

Relevant population (denominator): Number of women who give birth to a singleton baby between 37+0 and 42+6 weeks of gestation

Exclusions:

Trust/board level: Trusts/boards were excluded if they <u>did not</u> meet the following criteria:

Data item	Completeness check	Distribution check
Gestational age	If trust/board has at least one OU: • ≥70% complete within vaginal births • ≥70% complete within caesarean births • ≥70% complete overall If trust/board has no OUs: • ≥70% complete overall	If trust/board has at least one OU: • Gestational age at birth is between 37 and 42 weeks (inclusive) in ≥70% of births If trust/board has no OUs: • Gestational age at birth is between 37 and 42 weeks (inclusive) in ≥90% of births
Number of infants	• ≥70% complete	N/A
Method of delivery	• ≥70% complete	If trust/board has at least one OU: • Caesarean birth rate is between ≥5% and ≤50% • Spontaneous vaginal rate >40% If trust/board has no OUs: • Caesarean birth rate is <5% • Spontaneous vaginal rate is ≥90%
Measure under denominator restrictions	N/A	Caesarean birth rate is within +/- 5 SD of national mean. Spontaneous vaginal rate is within +/- 5 SD of national mean. Instrumental rate is within +/- 5 SD of national mean.

Record level: Records were excluded if they were missing information on gestational age, number of infants, or method of delivery

Numerator:

Number of women who give birth to a singleton baby between 37+0 and 42+6 weeks of gestation who had the following method of delivery:

1. Spontaneous vaginal birth
2. Instrumental birth
3. Caesarean birth

Case-mix factors: maternal age, parity, previous caesarean birth, birthweight, gestational age, diabetes, hypertension, preeclampsia, placental problems, poly/oligo/anhydramnios

Vaginal birth after caesarean birth

Lowest level of reporting in NMPA clinical report for 2018-19 births: Trusts/boards with at least one OU

Lowest level of reporting on NMPA website: Sites with an OU (where possible to report)

Relevant population (denominator): Number of women having their second baby between 37+0 and 42+6 weeks of gestation, following a caesarean birth for their first baby and without an indication for repeat caesarean birth

Exclusions:
Trust/board level: Trusts/boards were excluded if they <u>did not</u> meet the following criteria:

Data item	Completeness check	Distribution check
Gestational age	If trust/board has at least one OU: • ≥70% complete within vaginal births • ≥70% complete within caesarean births • ≥70% complete overall If trust/board has no OUs: • ≥70% complete overall	If trust/board has at least one OU: • Gestational age at birth is between 37 and 42 weeks (inclusive) in ≥70% of births If trust/board has no OUs: • Gestational age at birth is between 37 and 42 weeks (inclusive) in ≥90% of births
Number of infants	• ≥70% complete	N/A
Method of delivery	• ≥70% complete	If trust/board has at least one OU: • Caesarean birth rate is between ≥5% and ≤50% • Spontaneous vaginal rate >40% If trust/board has no OUs: • Caesarean birth rate is <5% • Spontaneous vaginal rate is ≥90%
Parity	• ≥70% complete	If trust/board has at least one OU: • Proportion of births to primiparous women ≥25% and ≤55% If trust/board has no OUs: • Proportion of births to primiparous women ≥15% and ≤55%

Vaginal birth after caesarean birth

Data item	Completeness check	Distribution check
Previous caesarean birth	• ≥70% complete	If trust/board has at least one OU: • Previous caesarean birth rate is >1% among births to multiparous women • Rate of no previous caesarean is ≥78% and <95% If trust/board has no OUs: • Previous caesarean birth rate is <5% among births to multiparous women
Measure under denominator restrictions	N/A	Rate is within +/- 5 SD of national mean

Record level: Records were excluded if they were missing information on previous caesarean birth, gestational age, number of infants, method of delivery, or parity

Numerator: Number of women having their second baby between 37+0 and 42+6 weeks of gestation following a caesarean birth for their first baby, who give birth to their second baby vaginally

Case-mix factors: maternal age, birthweight, gestational age, diabetes, hypertension, preeclampsia, placental problems, poly/oligo/anhydramnios

Smoking cessation

Lowest level of reporting in NMPA clinical report for 2018-19 births and on NMPA website: All trusts/boards

Relevant population (denominator): Number of women recorded as being current smokers at their booking visit

Exclusions:
Trust/board level: Trusts/boards were excluded if they <u>did not</u> meet the following criteria:

Data item	Completeness check	Distribution check
Smoking at booking	• ≥70% complete	Current smokers ≥0.25% and ≤50%
Smoking at delivery	• ≥70% complete	Current smokers ≥0.25% and ≤50%

Record level: Records were excluded if they were missing information on smoking at booking or smoking at delivery

Numerator: Number of women recorded as being current smokers at their booking visit who were recorded as non-smokers or ex-smokers by the time of birth

Case-mix factors: none

Episiotomy

Lowest level of reporting in NMPA clinical report for 2018-19 births: Trusts/boards with at least one OU

Lowest level of reporting on NMPA website: Sites with an OU (where possible to report)

Relevant population (denominator): Number women giving birth vaginally to a singleton baby with a cephalic presentation 37+0 to 42+6 weeks (inclusive)

Exclusions:
Trust/board level: Trusts/boards were excluded if they <u>did not</u> meet the following criteria:

Data item	Completeness check	Distribution check
Gestational age	If trust/board has at least one OU: • ≥70% complete within vaginal births • ≥70% complete within caesarean births • ≥70% complete overall If trust/board has no OUs: • ≥70% complete overall	If trust/board has at least one OU: • Gestational age at birth is between 37 and 42 weeks (inclusive) in ≥70% of births If trust/board has no OUs: • Gestational age at birth is between 37 and 42 weeks (inclusive) in ≥90% of births
Number of infants	• ≥70% complete	N/A
Fetal presentation	• ≥70% complete within vaginal births	Cephalic rate ≥70%
Method of delivery	• ≥70% complete	If trust/board has at least one OU: • Caesarean birth rate is between ≥5% and ≤50% • Spontaneous vaginal rate >40% If trust/board has no OUs: • Caesarean birth rate is <5% • Spontaneous vaginal rate is ≥90%
Episiotomy	• ≥70% complete in vaginal births	Episiotomy rate >0% and <45% within vaginal births
Measure under denominator restrictions	N/A	Episiotomy rate is within +/- 5 SD of national mean

Record level: Records were excluded if they were missing information on gestational age, number of infants, fetal presentation, method of delivery, or episiotomy

Numerator: Number women giving birth vaginally to a singleton baby with a cephalic presentation 37+0 to 42+6 weeks (inclusive) who have an episiotomy

Case-mix factors: maternal age, parity, previous caesarean birth, birthweight, gestational age, diabetes, hypertension, preeclampsia, placental problems, poly/oligo/anhydramnios

Maternal readmissions

Lowest level of reporting in NMPA clinical report for 2018-19 births: Trusts/boards with at least one OU

Lowest level of reporting on NMPA website: Sites with an OU (where possible to report)

Relevant population (denominator): Number of women giving birth to a singleton baby between 37+0 and 42+6 weeks of gestation, excluding those who died before discharge or were not discharged within 42 days of delivery

Exclusions:
Trust/board level: Trusts/boards were excluded if they <u>did not</u> meet the following criteria:

Data item	Completeness check	Distribution check
Gestational age	If trust/board has at least one OU: • ≥70% complete within vaginal births • ≥70% complete within caesarean births • ≥70% complete overall If trust/board has no OUs: • ≥70% complete overall	If trust/board has at least one OU: • Gestational age at birth is between 37 and 42 weeks (inclusive) in ≥70% of births If trust/board has no OUs: • Gestational age at birth is between 37 and 42 weeks (inclusive) in ≥90% of births
Number of infants	• ≥70% complete	N/A
Type of readmission	• ≥70% of records could be linked with HES (England) or PEDW (Wales)	N/A
Measure under denominator restrictions	N/A	Readmission rate is within +/- 5 SD of national mean

Record level: Records were excluded if they were missing information on date of birth, gestational age, number of infants

Numerator: Number of women giving birth to a singleton baby between 37+0 and 42+6 weeks of gestation, excluding those who died before discharge or were not discharged within 42 days of delivery, who were readmitted to hospital within 42 days, excluding: planned readmissions, planned transfers, readmissions of less than one day and women accompanying an unwell baby.

Case-mix factors: maternal age, parity, previous caesarean birth, birthweight, gestational age, diabetes, hypertension, preeclampsia, placental problems, poly/oligo/anhydramnios

Skin-to-skin contact within one hour of birth

Lowest level of reporting in NMPA clinical report for 2018-19 births: All trusts/boards

Lowest level of reporting on NMPA website: All sites (where possible to report)

Relevant population (denominator): Number of liveborn babies born between 34+0 and 42+6 weeks of gestation

Exclusions:

Trust/board level: Trusts/boards were excluded if they <u>did not</u> meet the following criteria:

Data item	Completeness check	Distribution check
Gestational age	If trust/board has at least one OU: • ≥70% complete within vaginal births • ≥70% complete within caesarean births • ≥70% complete overall If trust/board has no OUs: • ≥70% complete overall	If trust/board has at least one OU: • Gestational age at birth is between 37 and 42 weeks (inclusive) in ≥70% of births If trust/board has no OUs: • Gestational age at birth is between 37 and 42 weeks (inclusive) in ≥90% of births
Fetus outcome	• ≥70% complete	If trust/board has at least one OU: • More than one stillbirth was recorded If trust/board has no OUs: • Any number of stillbirths
Skin-to-skin	• ≥70% complete within vaginal births • ≥70% complete within caesarean births	N/A
Measure under denominator restrictions	N/A	Rate is within +/- 5 SD of national mean

Record level: Records were excluded if they were missing information on gestational age, fetus outcome or skin-to-skin contact

Numerator: Number of liveborn babies born between 34+0 and 42+6 weeks of gestation who received skin-to-skin contact within one hour of birth

Case-mix factors: none

Breast milk at first feed, and at discharge

Lowest level of reporting in NMPA clinical report for 2018-19 births: All trusts/boards

Lowest level of reporting on NMPA website: All sites (where possible to report)

Relevant population (denominator): Number of liveborn babies born between 34+0 and 42+6 weeks of gestation

Exclusions:
Trust/board level: Trusts/boards were excluded if they <u>did not</u> meet the following criteria:

Data item	Completeness check	Distribution check
Gestational age	If trust/board has at least one OU: • ≥70% complete within vaginal births • ≥70% complete within caesarean births • ≥70% complete overall If trust/board has no OUs: • ≥70% complete overall	If trust/board has at least one OU: • Gestational age at birth is between 37 and 42 weeks (inclusive) in ≥70% of births If trust/board has no OUs: • Gestational age at birth is between 37 and 42 weeks (inclusive) in ≥90% of births
Fetus outcome	• ≥70% complete	If trust/board has at least one OU: • More than one stillbirth was recorded If trust/board has no OUs: • Any number of stillbirths
Breast milk at first feed	• ≥70% complete within vaginal births, • ≥70% complete overall	>1% breast milk at first feed rate
Breast milk at discharge	• ≥70% complete overall	>1% breast milk at discharge rate
Measure under denominator restrictions	N/A	Breast milk at first feed rate is within +/- 5SD of national mean. Breast milk at discharge rate is within +/- 5 SD of national mean

Record level: Records were excluded if they were missing information on gestational age, fetus outcome, or breast milk at first feed/breast milk at discharge, respectively

Numerator: Number of liveborn babies born between 34+0 and 42+6 weeks of gestation who received:

a)   Any breast milk for their first feed
b)   Any breast milk at discharge from the maternity unit

Case-mix factors: none

Data item definitions and data sources used

Data item	Coding and data source(s)	
	England	**Wales**
Data items used for indicator construction		
Site code	MSDS v1.5: sitecodeactualdelivery If sitecodeactualdelivery was missing in MSDS, we first used 'org_code' from the ONS-PDS spine OR else we used 'sitetret' from HES.	CHE: hospitalsitecodebirthche
Singleton	N/A: NumberInfants is not available in MSDS v1.5, therefore we had to derive a proxy for it.	CHE: Number_BornCHE = 1. If Number_BornCHE was missing we used MIds's LabourOnsetFoetusNumberMI
Term	MSDS v1.5: GestationLengthBirth = 37+0 weeks to 42+6 weeks inclusive. If MSDS' gestational age was different to the gestational age recorded in the ONS-PDS spine dataset by ≥1 week, for ≥10% of the total records of a given trust and it showed important data quality issues, then for that trust we used the gestational age from the ONS-PDS spine instead of MSDS. If gestational age was missing in MSDS (or ONS-PDS) we used gestational age as recorded in HES (gestat_1)	CHE: Gestational_Ageche = 37+0 weeks to 42+6 weeks inclusive. If gestation was missing in CHE, we used MIds's LabourOnsetGestationWeeksMI.
Cephalic	MSDS v1.5: Fetal presentation at delivery: LabourOnsetPresentation = 01 (Cephalic) If presentation was missing, we used method of delivery (DeliveryMethodBaby) to determine presentation where possible (e.g. if spontaneous vertex delivery, recoded as 01 (Cephalic)).	MIds: Fetal presentation at delivery: LabourOnsetFoetalPresentationCodeMI = 1 (Cephalic) If presentation was missing, we used method of delivery (BirthModeCodeMI (MIds) or Mode_Of_DeliveryCHE (CHE)) to determine presentation where

Data item	Coding and data source(s)	
	England	**Wales**
		possible (e.g. if spontaneous vertex delivery, recoded as 01 (Cephalic)).
Induction of labour	MSDS v1.5: LabourInductionMethod:1,2,3,4	MIds: LabourOnsetModeCodeMI = 3, 4 or 5. If mode of labour onset was missing in MIds, we used Onset_Of_LabourCHE = 2 (Induced)
Augmentation of labour	MSDS v1.5: LabourInductionMethod: 4, OR OxytocinAdministeredDateTime not = missing, OR ROMReason = 02 (Augmentation of labour).	MIds: LabourAugmentationCodeMI=1
Anaesthesia	MSDS v1.5: LabourAnaesthesiaType = 01 (General anaesthetic), 02 (Epidural or caudal anaesthetic), or 03 (Spinal anaesthetic).	MIds: LabourEpiduralStatusCodeMI=1, supplemented with CHE's Pain_Relief_DuringCHE = 3 (General anaesthetic), 4 (Epidural or caudal), 5 (Spinal), or combinations of these (6, 7, 8).
Vaginal birth	MSDS v1.5: DeliveryMethodBaby = 0 (Spontaneous Vertex), 1 (Spontaneous, other cephalic), 2 (Low forceps, not breech), 3 (Other forceps, not breech) or 4 (Ventouse, vacuum extraction). If method of delivery was missing in the MSDS we used method of delivery as recorded in HES (delmethd).	We used information from CHE, MIds and PEDW as follows: CHE: Mode_Of_DeliveryCHE)= 0 (Spontaneous vertex), 1 (Spontaneous other cephalic), 2 (Low forceps, not breech), 3 (Other forceps, not breech), 4 (Ventouse, vacuum extraction), 5 (Breech) or 6 (Breech extraction) MIds: DeliveryMethodBaby = 1 (Spontaneous Vaginal Birth), 2 (Ventouse), 3 (Forceps). PEDW: PEDW Main Operation Description: Normal […], Cephalic […], Breech […], Other breech […], Forceps […] or Vacuum […].

Data item	Coding and data source(s)	
	England	**Wales**
	If DeliveryMethodBaby had an implausible distribution in MSDS for a given trust, then we used the delivery method recorded in HES for that entire trust.	
Livebirth	MSDS v1.5: FetusOutcome = 10 (Live birth).	MIds: BirthOutcomeCodeMI = 1 (Live birth).
3rd or 4th degree perineal tear	MSDS v1.5: GentialTractTraumaticLesion = 6 (Third degree tear) or 7 (Fourth degree tear), <u>OR</u> HES: OPCS = R32.2/R32.5 OR ICD10 = O70.2/O70.3.	MIds: LabourPerinealStatusCodeMI = 1 (Yes) <u>OR</u> PEDW: OPCS = R32.2/R32.5 OR ICD10 = O70.2/O70.3.
Obstetric haemorrhage ≥1500ml	N/A. Cannot derive rate ≥1500 ml due to missing <500 ml category in MaternalCriticalIncidentType	MIds: LabourEstimatedBloodLossML ≥1500ml
Maternal readmission	HES admission date>= delivery date. HES admission date<=delivery date +42. Excluded HES admission methods corresponding to non-emergency admissions (admission methods<20, admission methods greater than 80 and less than 90). Excluded HES admissions not due to illness (any diagnosis code of Z763). Excluded any HES admissions within the delivery spell. Excluded transfers (admission source of 30, between 48 and 53 inclusive and 87). When missing, MSDS delivery date was infilled with HES operation date of the HES operation corresponding to a delivery OPCS code.	PEDW Admission date >= delivery date. PEDW admission date <= delivery date +42. Only PEDW admissions methods corresponding to emergency admissions were included (admission method codes: 30, 31, 32, 33, 34, 35, 36). Excluded PEDW admissions not due to illness (any diagnosis code of Z763). Excluded any PEDW admissions within the delivery spell. Excluded transfers (admission methods: 81, 18, 24, 40, 41, 42, 43, 44 / discharge methods: 8, 49, 51, 52, 53, 54, 55, 56, 57, 98). When missing, MIds delivery date was infilled with PEDW admission

Data item	Coding and data source(s)	
	England	**Wales**
	Excluded readmissions of less than one day (discharge date=admission date and there were no other records within the same spell as this record with a later discharge date).	date of the PEDW operation corresponding to a delivery OPCS code. Excluded readmissions of less than one day (discharge date=admission date and there were no other records within the same spell as this record with a later discharge date).
Apgar score <7 at 5 min	MSDS v1.5: ApgarScore5 of 0 to 6.	CHE: Apgar score at 5 minutes: Apgar_2CHE of 0 to 6. When Apgar_2CHE is missing, Apgar score at 5 minutes was infilled with MIds' BirthApgarScoreMI of 0 to 6.
Breast milk at first feed	MSDS v1.5: BabyFirstFeedBreastMilkStatus = 1 (Maternal breast milk) or 2 (Donor breast milk).	CHE: BreastFeedingAtBirthCombinedCodeCHE= 1 (Exclusive Milk) or 2 (Combined Milk – Predominantly Breast) or 3 (Combined – Patially Brest).
Breast milk at discharge	MSDS v1.5: BabyBreastMilkStatusDischarge = breast milk at discharge = 1 (Exclusively breast milk feeding) or 2 (Partially breast milk feeding)	N/A
Episiotomy	MSDS v1.5: GenitalTractTraumaticLesion = 08 (Episiotomy), <u>OR</u> MAT404 EpisiotomyReason not = missing.	MIds: LabourEpisiotomyCodeMI = 1 (Yes)
Skin-to-skin contact within one hour	MSDS v1.5: SkinToSkinContact1Hour ='Y' (Yes).	N/A
Smoking status at delivery	MSDS v1.5: EoPSmokingStatus, categorised as: Yes, No, and unknown.	Used both CHE (Mothers_Smoking_HabitCHE) and MIds (SmokerStatusCodeMI) as sources for smoking status at delivery: categorised as: Yes, No, and unknown.

Data item	Coding and data source(s)	
	England	**Wales**
Maternal age	MSDS v1.5: Derived from mother's date of birth at delivery: PersonBirthDateMother, in completed years of age and categorised as: 12-15; 16-19; 20-24; 25-29; 30-34; 35-39; 40-44; 45-49; 50+, and unknown.	CHE: derived from mother's date of birth (MotherBirthDateCHE) at delivery, in completed years of age and categorised as: 12-15; 16-19; 20-24; 25-29; 30-34; 35-39; 40-44; 45-49; 50+, and unknown.
Parity	MSDS v1.5: Number of previous registerable births: PreviousLiveBirths + Previous StillBirths), categorised as 0 (primiparous); 1 (parous), and unknown. We also checked for evidence of previous births in HES and infilled parity with 1 if we found one or more previous delivery records for that woman. If the quality (completeness & distribution) of parity in MSDS was insufficient for a site/trust, it was replaced with parity from HES for that entire site/trust (subject to HES parity being of sufficient quality).	IA: Number of previous registerable births:ParityCodeIA, categorised as 0 (primiparous); 1 (parous), and unknown. If parity was missing in IA we used CHE's ParityCHE, recategorised as above. We also checked for evidence of previous births in PEDW and infilled parity with 1 if we found one or more previous delivery records for that woman. If the quality (completeness & distribution) of parity in MSDS was insufficient for a site/trust, it was replaced with parity from PEDW for that entire site/trust (subject to PEDW parity being of sufficient quality).
Previous caesarean birth (CS)	MSDS v1.5: Number of previous caesarean sections: PreviousCaesareanSections. We also used code 16 (Caesarean section) of PreviousComplicatingDiagTypeMother We also checked for evidence of previous caesarean sections in HES and categorised this as: 0 (no previous CS) and 1 (one or more previous CS), unknown.	IA: Number of previous caesarean sections: PreviousCaesareansIA. We also checked for evidence of previous caesarean sections in PEDW and categorised this as: 0 (no previous CS) and 1 (one or more previous CS), unknown.

Data item	Coding and data source(s)	
	England	**Wales**
	If the quality (completeness & distribution) of previous caesarean birth in MSDS was insufficient for a site/trust, it was replaced with previous caesarean birth from HES for that entire site/trust (subject to HES's previous caesarean birth being of sufficient quality).	If the quality (completeness & distribution) of previous caesarean birth in IA was insufficient for a site/trust, it was replaced with previous caesarean birth from PEDW for that entire site/trust (subject to PEDW's previous caesarean birth being of sufficient quality).
Birthweight	MSDS v1.5: BirthWeight, categorised as: <2500g; 2500-4000g; >4000g, and unknown. If birthweight was missing in MSDS we used birthweight as recorded in HES (birweit_1).	CHE: Weight_At_BirthCHE categorised as: <2500g; 2500-4000g; >4000g, and unknown. If birth weight was missing in CHE, we used MIds'sBabyWeightGramsMI, categorised as above.
Gestational age	MSDS v1.5: GestationLengthBirth, categorised in completed weeks: 37; 38; 39; 40; 41; 42, and unknown. If MSDS' gestational age was different to the gestational age recorded in the ONS-PDS spine dataset by ≥1 week, for ≥10% of the total records of a given trust, then for that trust we used the gestational age from the ONS-PDS spine dataset instead of MSDS. If gestational age was missing in MSDS (or ONS-PDS) we used gestational age as recorded in HES (gestat_1).	CHE: gestational age at birth: Gestational_AgeCHE, categorised in completed weeks: 37; 38; 39; 40; 41; 42, and unknown. If gestation was missing in CHE, we used MIds's LabourOnsetGestationWeeksMI.
BMI [6]	MSDS v1.5: Mother's BMI at booking: PersonWeight / PersonHeight^2, categorised as: <18.5; 18.5 to 25; >25 to <30; >=30, and unknown.	IA: Mother's BMI at booking (MotherWeightKgIA / MotherHeightIA ^{2}), categorised as: <18.5; 18.5 to 25; >25 to <30; >=30, and unknown.

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[6] BMI not included in case-mix adjustment for clinical reports 2017-18 and 2018-19

Data item	Coding and data source(s)	
	England	**Wales**
Smoking status at booking [7]	MSDS v1.5: SmokingStatusBooking, categorised as: Yes, No, and unknown.	IA: SmokerStatusCodeIA, categorised as: Yes, No, and unknown.
Pre-existing / gestational Diabetes[8]	HES: ICD-10 codes O24; E10;E11; E13; E14 MSDS: ComplicatingDiagTypeMother code 08 PregnancyMedicalDiagType code 19 PregnancyObstetricDiagType code 06	PEDW: ICD-10 codes O24; E10; E11; E13; E14
Hypertensive diseases[8]	HES: ICD-10 codes O10-O11; I10-I15 MSDS: ComplicatingDiagTypeMother code 01	PEDW: ICD-10 codes O10-O11; I10-I15
Pre-eclampsia / Eclampsia[8]	HES: ICD-10 codes O14-O15 MSDS: PregnancyObstetricDiagType codes 01; 03; 20	PEDW: ICD-10 codes O14-O15
Placental problems	HES: ICD-10 codes O44-O45 MSDS: PregnancyObstetricDiagType code 19	PEDW: ICD-10 codes O44-O45
Poly/oligo/anhydramnios	HES: ICD-10 codes O40; O41.0	PEDW: ICD-10 codes O40; O41.0

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[7] Smoking not included in case-mix adjustment for clinical reports 2017-18 and 2018-19
[8] Derived from current pregnancy records