

Table S1. Candidate metrics scored in Phases 1 and 2 of the Delphi Process

	Metric	Definition or explanatory text
Antenatal Provision Metrics	Number of bookings	Number of women attending booking appointments
	Number of bookings by 12 weeks + 6 days	Number of women who attended for booking appointments by 12 weeks + 6 days
	Total number of babies born	Number of babies born, which includes all registerable live births and all still births
	Number of live births	All babies born of any gestation with outcome of live birth, i.e. all registered live births
	Number of live births at term	Number of live births \geq 37 weeks gestation
	Number of birth episodes (women delivered)	Number of women who gave birth (either registered live birth or still birth)
	Birth episode rate by place of birth	Proportion of women who gave birth this month (as above), in each of the following five places: Home (planned homebirths), alongside midwife-led unit, free-standing midwife-led unit, consultant-led delivery unit/labour ward, other.
	Number of planned home births	Number of women who are booked for home birth by the service
	Number of planned home births achieved	Number of women who achieved a planned home birth
	Number of unplanned home births	Number of women who gave birth at home who did not have a home birth planned. (This ensures the capture of hospital planned births and concealed pregnancies.)
	Water Births	Number of women giving birth in water
	Transfers of antenatal care between providers at any point - arising from the woman's choice	Number of women who transfer care at any stage in the antenatal period from one lead provider to another lead provider arising from maternal choice.
	Transfers of antenatal care between providers at any point - because of level of care needed (e.g. fetal medicine services needed)	Number of women who transfer care at any stage in the antenatal period from one lead provider to another lead provider because of level of care needed.
	Transfer of Care in Labour - planned homebirth to secondary care	Number of women who have a planned homebirth who are transferred to secondary care.
	Transfer of Care in Labour - due to an emergency or on maternal request (e.g. for epidural)	Number of women who are transferred in labour due to an emergency or on maternal request (e.g. for epidural).
	Transfer of Care in Labour - Low risk Women transferred to high risk facilities.	Number of women considered to be at low risk who are then transferred to high risk facilities. This could be in the same building or from free standing MLU.

	Transfer of Care in Labour - from one provider to another.	Number of women who are transferred from one provider to another due to lack of facilities e.g. neonatal services or unit closure.
	Midwife to birth ratio	Number of births per Whole Time Equivalent midwife as calculated locally by each Provider (Based on clinical midwifery contributions only; excluding midwives in a management, governance or service development role)
	Unit closures	The number of days in the month the maternity unit is closed to admissions.
	Capping of admissions	The number of days in the month capping of bookings to the maternity unit occurs.
Additional Metrics for Phase 2	Births in midwife led environments	Proportion of births in midwife led environments
	Women booking to midwife led environments	Proportion of women booking to midwife led environments
Perinatal Mental Health Metrics	Emotional Health and wellbeing screening at booking	Proportion of women who have been screened for emotional health and well-being at booking in line with the Maternal Mental Health Pathway based on NICE CG 192
	Information provided about emotional health and well-being at booking	Proportion of women who have been given information from the local maternity provider about emotional health and well-being at booking in line with the Maternal Mental Health Pathway based on NICE CG 192
	Information about emotional health and wellbeing at first post-natal contact	Proportion of women who have been given information from the local maternity provider about emotional health and well-being at first post-natal contact with health care professional, in line with the Maternal Mental Health Pathway based on NICE CG 192
	Women with severe mental illness - at least 2 planning meetings	In line with the Maternal Mental Health Pathway based on NICE CG 192, proportion of women with severe mental health illness to have received at least two planning meetings.
	Women with severe mental illness - birth plan in place by 35 weeks.	In line with the Maternal Mental Health Pathway based on NICE CG 192, proportion of women with severe mental health illness with a birth plan in place by 35 weeks.
Additional metric for Phase 2	Postnatal depression, psychosis and suicide	Proportion of women diagnosed with postnatal depression, psychosis or committing suicide
Maternal Metrics	Induction of labour rate	The proportion of women who gave birth that had their labour induced at ≥ 24 weeks gestation
	Inductions at term +12 days	The proportion of women who gave birth that had their labour induced ≥ 41 weeks +5 days gestation
	Non-instrumental vaginal birth rate	Proportion of babies born by non-instrumental, vaginal birth (i.e. not caesarean, forceps or ventouse) at ≥ 24 weeks gestation

SVD physiological 3rd stage	Spontaneous Vertex Delivery physiological third stage.
Instrumental births	The proportion of babies born by instrumental delivery ≥ 24 weeks gestation.
Emergency caesarean section after failed instrumental delivery	The proportion of babies born by emergency C-section following a failed instrumental delivery at ≥ 24 weeks gestation.
Multiple births	Proportion of babies that are twins, triplets, or higher order multiples.
Total caesarean section rate	The proportion of babies born via caesarean section at ≥ 24 weeks
Elective caesarean section rate	The proportions of babies born via elective caesarean section (category 4) in the following two categories: ≥ 39 weeks gestational age and ≥ 24 but < 39 weeks.
Caesarean section rate in Robson group 1 women	The proportion of all women assessed to be in Robson group 1 who gave birth by caesarean section. (Robson group 1 = primips, singleton, cephalic, ≥ 37 weeks, spontaneous labour)
Maternal requests for c/s	Proportion of women delivered by C-section at maternal request ≥ 24 weeks gestational age
Number of LSCS at full dilation	Number of LSCS performed at full dilation
Emergency caesarean section rate	The proportions of babies born via emergency caesarean section (categories 1-3) in the following two categories: ≥ 39 weeks gestational age and ≥ 24 but < 39 weeks.
2nd degree tear rate	Proportion of all women who sustained a 2nd degree perineal tear at ≥ 24 weeks gestation
3rd & 4th degree tear rate in non-instrumental vaginal births	The proportion of all women with a non-instrumental vaginal method of birth (not instrumental or caesarean) who sustained a 3rd or 4th degree perineal tear ≥ 24 weeks gestation
3rd & 4th degree tear rate in assisted (instrumental or failed instrumental) births	The proportion of all women who had an assisted birth (instrumental or failed instrumental) who sustained a 3rd or 4th degree perineal tear ≥ 24 weeks gestation
Episiotomy rate	The proportion of all women who had an episiotomy at ≥ 24 weeks gestation
Postpartum haemorrhage ≥ 1500 ml	The proportion of all women giving birth who had an estimated blood loss at birth ≥ 1500 ml at any gestation
Postpartum haemorrhage ≥ 2000 ml	The proportion of all women giving birth who had an estimated blood loss at birth ≥ 2000 ml at any gestation
Level 3 Critical Care	Proportion of women who gave birth in the recording period (for whom Provider Organisation was intrapartum lead provider) AND who received Level 3 care (antenatally or postnatally) anywhere in the Provider Organisation in that same period at any gestation

Level 2 Critical Care	Proportion of women who gave birth in the recording period (for whom Provider Organisation was intrapartum lead provider) AND who received Level 2 care (antenatally or postnatally) anywhere in the Provider Organisation in that same period at any gestation
All Maternal Deaths	Number of maternal deaths
Cases of Eclampsia	Number of women with eclampsia
Number of women transferred in utero at gestational age <34 weeks who don't deliver	The proportion of women who are transferred as inpatients whilst still pregnant (in utero transfers) at gestational age <34 weeks who do not give birth on the admission following transfer.
Number of women transferred in utero at gestational age ≥34 weeks who don't deliver	The proportion of women who are transferred as inpatients whilst still pregnant (in utero transfers) at gestational age ≥34 weeks who do not give birth on the admission following transfer.
Admission for maternal reasons within 42 days following birth	Number of women admitted postnatally for reasons relating to pregnancy/delivery/breast feeding within 42 days of delivery
Number of women who return to theatre after a previous theatre episode within 48 hours.	Number of women who return to theatre post caesarean section within 48 hours of delivery
Shoulder dystocia	Proportion of babies born with shoulder dystocia
Brachial plexus injuries	Proportion of babies born with brachial plexus injuries
Postpartum hysterectomies including caesarean hysterectomies	Number of women having a hysterectomy within 6 weeks of giving birth (including caesarean hysterectomy).
Epidurals requested	Proportion of women requesting epidural analgesia for labour
Epidurals administered	Proportion of women who received epidural analgesia in labour
Vaginal breech deliveries in singleton pregnancies: a) <37 weeks and b) ≥37 weeks	Proportion of Vaginal breech deliveries in singleton pregnancies in the following categories: ≥24 and <37 weeks and ≥37 weeks
VBAC deliveries - Offered VBAC after single previous LSCS	Proportion of women offered vaginal birth after a single previous caesarean delivery.
VBAC deliveries - Attempted VBAC delivery after single previous LSCS	Proportion of women attempted vaginal birth after a single previous caesarean delivery.
VBAC deliveries - Achieved VBAC delivery after single previous LSCS	Proportion of women achieved vaginal birth after a single previous caesarean delivery.
VBAC deliveries - complete uterine rupture	Number of women with complete uterine rupture.

	GA for Category 1 Caesarean Section	Percentage of Category 1 Caesarean Sections which were performed under general anaesthesia.
	GA for Category 1-3 Caesarean Section	Proportion of Category 1-3 Caesarean Sections which were performed under general anaesthesia.
	GA for Category 4 Caesarean Section	Proportion of Category 4 Caesarean Sections which are performed under general anaesthesia.
	WHO checklist	Proportion of women delivered in theatre who have a WHO surgical safety checklist fully completed at all appropriate stages.
	Blood transfusions ≥ 4 units	Number of women who were transfused ≥ 4 units of packed red cells
	Maternal sepsis	Number of women diagnosed with Maternal Sepsis
	Transfer home from DS	Proportion of women transferred home directly from the delivery suite after giving birth
	Average postnatal stay	Average postnatal stay (days, hours)
	Labour augmentation	Proportion of women undergoing labour augmentation
Additional Metrics for Phase 2	Maternal 'experience' of birth	Maternal view of her birth experience
	Spinal or Epidural anaesthetics for caesarean section that are converted to a general anaesthetic	Proportion of Spinal or Epidural anaesthetics for caesarean section that are converted to a general anaesthetic
	VTE assessment and intervention	Proportion of women undergoing VTE assessment and receiving appropriate interventions
	Instrumental births requiring more than one type of instrument for successful delivery	Proportion of instrumental births requiring more than one type of instrument for successful delivery
	Fetuses at risk of IUGR monitored with GROW chart	Proportion of fetuses at risk of IUGR who are monitored using a GROW chart
Neonatal Metrics	Born Before Arrival	Number of babies born before arrival (BBA)
	Spontaneous Preterm live birth rate <37 weeks	The proportion of live born babies who were born spontaneously at <37 weeks
	Iatrogenic Preterm live birth rate <37 weeks	The proportion of live born babies who were born for iatrogenic reasons at <37 weeks
	Spontaneous Preterm live birth rate <34 weeks	The proportion of live born babies who were born spontaneously at <34 weeks
	Iatrogenic Preterm live birth rate <34 weeks	The proportion of live born babies who were born for iatrogenic reasons at <34 weeks

Spontaneous Preterm live birth rate <28 weeks	The proportion of live born babies who were born spontaneously at <28 weeks
Iatrogenic Preterm live birth rate <28 weeks	The proportion of live born babies who were born for iatrogenic reasons at <28 weeks
Spontaneous Preterm live birth rate <26 weeks	The proportion of live born babies who were born spontaneously at <26 weeks
Iatrogenic Preterm live birth rate <26 weeks	The proportion of live born babies who were born for iatrogenic reasons at <26 weeks
Low birth weight at term (≥ 37 weeks) in live born babies	The proportion of babies live born at term or over (≥ 37 weeks) with a birth weight below the 10th centile
Low birth weight at term (≥ 37 weeks) in stillborn babies	The proportion of all babies stillborn at term (≥ 37 weeks) with a birth weight below the 10th centile.
Babies born at term (≥ 37 weeks) with Apgar < 4 at 5 minutes	The proportion of all babies born at term (≥ 37 weeks) with an Apgar score <4 at 5 minutes.
Babies born at term (≥ 37 weeks) that are actively cooled	Proportion of all babies born at term that are actively cooled.
NICU admissions at term (≥ 37 weeks)	The proportion of babies born at term (≥ 37 weeks) requiring neonatal admission, regardless of source.
Total NICU admissions	The proportion of all babies born requiring neonatal admission, regardless of source.
Stillbirths - Total	The proportion of babies born at ≥ 24 weeks gestation without signs of life (exclude late terminations or fetocide).
Stillbirths at term (≥ 37 weeks)	Proportion of babies born at term (≥ 37 weeks) without signs of life (exclude late terminations or fetocide).
Intrapartum stillbirths	Proportion of babies ≥ 24 weeks gestation known to be alive at the start of labour who are born without signs of life.
Antenatal stillbirths	The proportion of babies born at ≥ 24 weeks gestation without signs of life (exclude late terminations or fetocide), who were known to have died prior to onset of care in labour
Antenatal stillbirths - adjusted to exclude lethal abnormalities	The proportion of babies born at ≥ 24 weeks gestation without signs of life (exclude late terminations or fetocide), who were known to have died prior to onset of care in labour, excluding those with lethal abnormalities incompatible with life.
Total Stillbirth rate – adjusted to exclude lethal abnormalities	The proportion of babies born at ≥ 24 weeks gestation without signs of life (exclude late terminations or fetocide), excluding those with lethal abnormalities incompatible with life.
Meconium aspiration	Proportion of babies diagnosed with meconium aspiration syndrome
Neonatal deaths (<28 days)	Proportion of live-born babies dying within the first 28 days following birth.
Early neonatal deaths (<7 days)	Proportion of liveborn babies dying within the first 7 days following birth.

	Late neonatal deaths (7-28 days)	Proportion of liveborn babies dying between 7 and 28 days following birth.
	Babies delivered in non-Neonatal Intensive Care Unit between >23 weeks + 0 days and < 27 weeks + 6 days	Percentage of extreme preterm infants (>23 weeks + 0 days to < 27 weeks +6 days) delivered outside a hospital with a neonatal intensive care unit.
	Number of term neonates with diagnosis of HIE graded 2 or 3	Number of neonates with a diagnosis of neonatal encephalopathy grade 2 or 3 born at ≥ 37 weeks
	Cord ph. < 7.05	Number of babies born with a Cord ph. < 7.05
	Number of neonates admitted to children's ward within 30 days of discharge from maternity ward	Number of neonates admitted to paediatric ward within 30 days of discharge from maternity ward
Additional Metrics for Phase 2	Babies born at term (≥ 37 weeks) with Apgar < 7 at 5 minutes	Babies born at term (≥ 37 weeks) with Apgar < 7 at 5 minutes
	Baby check completed prior to discharge	Proportion of babies having a completed baby check prior to discharge
	Transfer to named Health Visitor	Proportion of infants who are transferred to a named Health Visitor
	Newborn sepsis	Proportion of babies diagnosed with sepsis
Public Health Metrics	Breastfeeding initiation rate (including home births)	The proportion of babies born who received any breast milk in the first 48 hours of life
	Breastfeeding rate on transfer to health visitor (at 10-14 days)	The proportion of babies born who were recorded as being totally or partially breastfed at time of transfer to the Health Visitor (10-14 days).
	Breastfeeding rate at 6-8 weeks	The proportion of babies born who were recorded as being totally or partially breastfed at 6-8 weeks.
	Carbon monoxide (CO) testing	Proportion of women CO tested at booking
	Smoking at delivery	Proportion of women who gave birth who reported themselves as smoking at the time of delivery
	Smoking at booking	Proportion of women who gave birth who reported themselves as smoking at the time of booking
	Obesity rates	Proportions of women with a Body Mass Index at the time of booking in the following categories: 30 to 34.9, 35 to 39.9, 40 to 49.9, 50 or more
	Rate of birth resulting from conceptions at under 18 years of age	Proportion of women giving birth who were under 18 years of age when the baby was conceived
	Rate of birth resulting from conceptions at under 20 years of age	Proportion of women giving birth who were under 20 years of age when the baby was conceived

	Rate of birth resulting from conceptions in women aged 40 years or over	Proportion of women giving birth who were aged 40 years or over (40+) when the baby was conceived
	Proportion of women asked about female genital mutilation at booking	Proportion of women at booking questioned about personal history of any form of female genital mutilation (FGM)
	Female genital mutilation rate - identified at booking	Proportion of women giving birth who had a personal history of any form of female genital mutilation (FGM) which was identified during booking.
	Female genital mutilation rate - identified at delivery	Proportion of women giving birth who had a personal history of any form of female genital mutilation (FGM) which was identified during delivery.
	Universal maternal Pertussis immunisation programme	Proportion of women offered pertussis (whooping cough) information at booking
	Universal maternal Influenza Immunisation Programme	Proportion of women offered Influenza information at booking
Additional Metrics for Phase 2	Pre-existing diabetes	Proportion of women with pre-existing diabetes at booking
	Gestational diabetes	Proportion of women that develop gestational diabetes mellitus
	Postnatal follow up of gestational diabetes	Proportion of women diagnosed with gestational diabetes mellitus who are followed up postnatally for development of type 2 diabetes
	Interpretation services for non-English speaking women	Are interpretation services for non-English speaking women available?
	Alcohol consumption	Proportion of women asked about alcohol consumption at booking and given appropriate advice
Workforce Metrics	Friends and family score - Antenatal	Percentage of negative responses to the antenatal Friends and Family test
	Friends and family score - Postnatal	Percentage of negative responses to the postnatal Friends and Family test
	1:1 care during labour	Percentage of women who receive 1:1 care during established labour
	Weekly hours of Consultant cover on labour ward	Average Weekly hours of Consultant cover on labour ward
	Midwifery workforce vacancies	Average number of midwife vacancies in whole time equivalent (WTE)
	Sickness rate - Midwives	Average number of midwives off sick (WTE)
	Sickness rate - Medical Staff	Average number of medical staff off sick (WTE)
	Complaints in relation to maternity services	Number of complaints made
Reportable STEIS incidents	Number of serious incidents reported	

Midwifery supervision

Average midwife to supervisor ratio

Additional Metrics for Phase 2

Continuity of midwifery through antenatal, intra-partum and post-partum care

Proportion of women who received their intra-partum and post-partum care from the same midwives that delivered their antenatal care

Complaints upheld

Number of complaints related to the quality of clinical care that are upheld

Stratification factors for Phase 2

Stratification by parity groups

Importance of stratifying appropriate indicators by parity groupings (e.g. primiparous, multiparous)

Stratification by multiplicity

Importance of stratifying appropriate indicators by multiplicity (singletons, twins, triplets etc.)

Stratification by gestational age

Importance of stratifying appropriate indicators by gestational age at delivery (e.g. Pre-term, term)

Stratification by Robson group

Importance of stratifying appropriate indicators by Robson group
