

Supplementary files

Implementation of an individual-patient prospective database of hospital births in Sri Lanka and its use for improving quality of care

List of files

Appendix 1. Yellow Form

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Appendix 2. Missing variables

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Appendix 1. YELLOW FORM

Complete this chart AT DELIVERY (white part) and AT DISCHARGE (dotted part) Soysa Other

If other hosp, add name: _____

Adm (dd/mm/yy) Deliv Disch BHT 15-

Age (years) Education No schooling Primary (Grades 1-6) Secondary (Grades 6-10) Higher
 Working status No data Working Housewife Marital status Married Unmarried Unmarried living together

GA at delivery (wks/days) / GA estimated with US N Y Missing
 Gravida (pregnancies)¹ Para¹ Born alive¹ (¹ For para / born alive – exclude current pregnancy)
 BMI at booking Underweight (< 18.4) Normal (18.5 - 22.9) Overweight (23 - 27.4) Obese (> 27.5)

(Risk factors at time of delivery-check all)²

Multiple pregn	<input type="checkbox"/> N <input type="checkbox"/> Y	PreGes Hyperten ³	<input type="checkbox"/> N <input type="checkbox"/> Y	Ges Hyperten ³ no proteinur	<input type="checkbox"/> N <input type="checkbox"/> Y
Pre-ecl NOT SEV	<input type="checkbox"/> N <input type="checkbox"/> Y	Pre-ecl SEV	<input type="checkbox"/> N <input type="checkbox"/> Y	Eclampsia	<input type="checkbox"/> N <input type="checkbox"/> Y
Chorioamnionitis	<input type="checkbox"/> N <input type="checkbox"/> Y	Major fetal malformation/s	<input type="checkbox"/> N <input type="checkbox"/> Y	IUGR/SGA ⁴	<input type="checkbox"/> N <input type="checkbox"/> Y
Pregeste Diab	<input type="checkbox"/> N <input type="checkbox"/> Y	GDM in diet	<input type="checkbox"/> N <input type="checkbox"/> Y	GDM, in drug therapy	<input type="checkbox"/> N <input type="checkbox"/> Y
Maternal-cardiac disease ²	<input type="checkbox"/> N <input type="checkbox"/> Y	Maternal hypothyroidism	<input type="checkbox"/> N <input type="checkbox"/> Y	Polihydramnios	<input type="checkbox"/> N <input type="checkbox"/> Y
Olidramnion	<input type="checkbox"/> N <input type="checkbox"/> Y	APH/major plac previa/accret	<input type="checkbox"/> N <input type="checkbox"/> Y	Severe Anaemia (Hb<7)	<input type="checkbox"/> N <input type="checkbox"/> Y
Other	<input type="checkbox"/> N <input type="checkbox"/> Y				

If Other maternal conditions, specify _____

If Other fetal conditions, specify _____

If Other, specify _____

One tick only

Steroids ⁵	<input type="checkbox"/> N	<input type="checkbox"/> complete	<input type="checkbox"/> incomplete	<input type="checkbox"/> dose unclear
Previous CS	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> Missing	Number _____
If prev CS, trial of labour	<input type="checkbox"/> No previous CS	<input type="checkbox"/> N	<input type="checkbox"/> Y	
Presentation	<input type="checkbox"/> Cephalic	<input type="checkbox"/> Breech	<input type="checkbox"/> Other	<input type="checkbox"/> Missing
Labour onset	<input type="checkbox"/> Spont	<input type="checkbox"/> Induc (even if failed)	<input type="checkbox"/> PreLabCS ⁶	<input type="checkbox"/> Missing
Delivery mode	<input type="checkbox"/> Vag spont	<input type="checkbox"/> Vag forcep/ventuse	<input type="checkbox"/> CS	<input type="checkbox"/> Missing
If CS, type	<input type="checkbox"/> No CS	<input type="checkbox"/> Emerg	<input type="checkbox"/> Elect	<input type="checkbox"/> Missing

If IOL, main indication given (one tick only)

<input type="checkbox"/> 1 No IOL	<input type="checkbox"/> 2 Post-term	<input type="checkbox"/> 3 Prelab rupture memb	<input type="checkbox"/> 4 Diabetes on diet
<input type="checkbox"/> 5 Diabet on insulin/metform	<input type="checkbox"/> 6 Macrosomy at US ⁷	<input type="checkbox"/> 7 IUGR/SGA ⁴	<input type="checkbox"/> 8 Multiple pregnancies
<input type="checkbox"/> 9 Maternal Age > 40 y	<input type="checkbox"/> 10 Hypert/Preecl/Eclam	<input type="checkbox"/> 11 Cardiac disease	<input type="checkbox"/> 12 Oligoidramn
<input type="checkbox"/> 13 Other add _____	<input type="checkbox"/> 14 Prolonged latent phase/ painful contractions not in labour	<input type="checkbox"/> 0 Missing	

If IOL, mode of induction (one tick only)⁸

<input type="checkbox"/> 1 No IOL	<input type="checkbox"/> 2 PGE	<input type="checkbox"/> 3 Oxytocin	<input type="checkbox"/> 4 Foley
<input type="checkbox"/> 5 ARM	<input type="checkbox"/> 6 PGE+ oxytocin ± ARM	<input type="checkbox"/> 7 Foley+ARM/oxytocin	<input type="checkbox"/> 8 Foley + PGE
<input type="checkbox"/> 9 ARM + oxytocin	<input type="checkbox"/> 10 Other add: _____	<input type="checkbox"/> 0 Missing	

If operative delivery, main indication (one tick only)

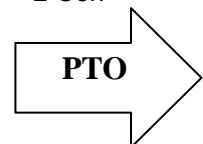
<input type="checkbox"/> 1 No operative del	<input type="checkbox"/> 2 CTG anom/suspected fetal distress	<input type="checkbox"/> 3 Failed induction
<input type="checkbox"/> 4 Distocya 1st	<input type="checkbox"/> 5 Distocya 2nd stage ¹⁰	<input type="checkbox"/> 6 Past CS
<input type="checkbox"/> 7 Breech/abnormal lie	<input type="checkbox"/> 8 History of subfertility	<input type="checkbox"/> 9 APH/major placenta previa
<input type="checkbox"/> 10 Cardiac disease	<input type="checkbox"/> 11 Prelab diagn CPD/short mother	<input type="checkbox"/> 12 Multiple pregnancies
<input type="checkbox"/> 13 IUGR	<input type="checkbox"/> 14 Pre term	<input type="checkbox"/> 15 Diab
<input type="checkbox"/> 16 Hypert/Preecl/Eclam	<input type="checkbox"/> 17 Maternal request	<input type="checkbox"/> 18 Other
<input type="checkbox"/> 0 Missing		

If other fetal cause specify _____

If other maternal specify _____

If other cause _____

Episiotomy	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> Missing			
Analges in labour ⁹	<input type="checkbox"/> N	<input type="checkbox"/> Petidine	<input type="checkbox"/> Epid	<input type="checkbox"/> Spin	<input type="checkbox"/> Mix	<input type="checkbox"/> Other
If CS, anaesthesia	<input type="checkbox"/> No CS	<input type="checkbox"/> Spinal/epid	<input type="checkbox"/> General			
3 rd Stage manag	<input type="checkbox"/> Active	<input type="checkbox"/> No active	<input type="checkbox"/> Missing			
Removal placenta	<input type="checkbox"/> Spont	<input type="checkbox"/> Manual	<input type="checkbox"/> ERPC	<input type="checkbox"/> Missing		
Operator del	<input type="checkbox"/> Nurse	<input type="checkbox"/> MW	<input type="checkbox"/> HO	<input type="checkbox"/> SHO	<input type="checkbox"/> Reg	<input type="checkbox"/> Con <input type="checkbox"/> Missing



Complications (one tick)

Perineal tears	<input type="checkbox"/> N/I-II d	<input type="checkbox"/> III d	<input type="checkbox"/> IV d	<input type="checkbox"/> Missing
PPH ¹¹	<input type="checkbox"/> N	<input type="checkbox"/> Minor	<input type="checkbox"/> Severe	<input type="checkbox"/> Massive
Blood transfusion	<input type="checkbox"/> N	<input type="checkbox"/> Y	Units (#)	_____
Cord prolapse	<input type="checkbox"/> N	<input type="checkbox"/> Y	Abruptio placentae	<input type="checkbox"/> N <input type="checkbox"/> Y
Uterine rupture	<input type="checkbox"/> N	<input type="checkbox"/> Y	Amn fluid embol	<input type="checkbox"/> N <input type="checkbox"/> Y
Admission to ICU/HDO	<input type="checkbox"/> N	<input type="checkbox"/> Y	Major organ dys ¹²	<input type="checkbox"/> N <input type="checkbox"/> Y
OT after deliv	<input type="checkbox"/> N	<input type="checkbox"/> Y	Hysterectomy	<input type="checkbox"/> N <input type="checkbox"/> Y
Sepsis/sev infect	<input type="checkbox"/> N	<input type="checkbox"/> Y	DVT/PE	<input type="checkbox"/> N <input type="checkbox"/> Y
Other Complications	<input type="checkbox"/> N	<input type="checkbox"/> Y	Other infections	<input type="checkbox"/> N <input type="checkbox"/> Y

Final outcome (one tick)

Discharged Disc with disab due to preg complic ¹³ Death Referred LAMA
Near Miss ¹⁴ N Y

If NM or death, cause (select main; if more than one, write in Notes)

- | | | |
|--|---|------------------------------------|
| <input type="checkbox"/> 1 Pre-exist cardiac dis | <input type="checkbox"/> 2 Other pre-existing medic con | <input type="checkbox"/> 3 Suicide |
| <input type="checkbox"/> 4 Hypertension | <input type="checkbox"/> 5 Preeclampsia/Eclampsia | <input type="checkbox"/> 6 PPH |
| <input type="checkbox"/> 7 Amniotic fluid embolism | <input type="checkbox"/> 8 Sepsis/infection | <input type="checkbox"/> 9 DVT/PE |
| <input type="checkbox"/> 10 Complic anaesthesia | <input type="checkbox"/> 11 Other | <input type="checkbox"/> 0 Missing |

If Others specify _____
 Notes _____

Post delivery duration stay (days) ¹⁵

If stay >24 h, reason maternal newborn both hospital regulations Missing

-----NEWBORN (N1)-----

Born Alive ¹ Dead ² **If stillbirth ³** noSB Macerated Fresh Intrapartum Missing

Sex Female Male Missing **BW (gr) ⁴** **Apgar1/5 /10** / /

Ventilated in delivery room ⁵ N Y Missing **Asphyxia ⁶** N Y Missing

Postdelivery With mother SCBU NICU Referred Obitorio Missing
Reason for referral medical complication surgical complication No beds Other Missing

If baby in NICU /SCBU, add here BHT code

COMPLICATIONS

RDS ⁷ N Y **Jaundice with ET** N Y **Sepsis** N Y

Other Infect (incl NEC) N Y **Major birth trauma ⁸** N Y **Major malformation ⁹** N Y

Neurol (seizure, IVH, HIE) N Y **Phototherapy > 24 h** N Y **Other** N Y

If other, add _____

Final Discharged Disc with disabilities Death Referred LAMA

-----NEWBORN (N2 if twins)-----

Born Alive ¹ Dead ² **If stillbirth ³** noSB Macerated Fresh Intrapartum Missing

Sex Female Male Missing **BW (gr) ⁴** **Apgar1/5 /10** / /

Ventilated in delivery room ⁵ N Y Missing **Asphyxia ⁶** N Y Missing

Postdelivery With mother SCBU NICU Referred Obitorio Missing
Reason for referral medical complication surgical complication No beds Other Missing

If baby in NICU /SCBU, add here BHT code

COMPLICATIONS

RDS ⁷ N Y **Jaundice with ET** N Y **Sepsis** N Y

Other Infect (incl NEC) N Y **Major birth trauma ⁸** N Y **Major malformation ⁹** N Y

Neurol (seizure, IVH, HIE) N Y **Phototherapy > 24 h** N Y **Other** N Y

If other, add _____

Final Discharged Disc with disabilities Death Referred LAMA

*DEFINITIONS (WOMAN)

- ¹ **Gravida /Para/ Born alive:** fill this excluding current pregnancy/delivery (example: 3 pregnancies, 2 children, 1 stillbirth will be gravida 3, para 2, born alive 1)
- ² **Risk factors at time of delivery:** consider here the risk factors present at time of delivery and that can affect the delivery outcome. Examples:
- If the mother had severe anaemia but this was corrected before delivery, do not tick the severe anaemia box).
 - If the mother had hypertension, pre-eclampsia, eclampsia, or hypothyroidism during current pregnancy, still tick the box even if the situation is under control
 - If relevant cardiac problems present or even in the past, still tick the box.
- ³ **Hypertension:** this is defined with a BP > 140/90
- ⁴ **IUGR/SGA:** defined as weight < 10 centile of estimated weight-for-GA or < 10 centile for abdominal circumference (Bangladesh growth chart). IUGR/SGA is based on US estimate (if there was an indication for US, such as clinical signs suggesting IUGR, but US was not performed or uncertain, collect this information under "other or uncertain".
- ⁵ **Steroids:** Complete dose is Dexametason 8 mg /12 hrs for 3 doses –can you double if this is your national standard ? (last GL 6mg/ 12 h 48 h)
- ⁶ **Induction:** as labour onset should be selected even in the case of **failed IOL** and subsequent CS, not "prelabour caesarean section" (note that this is accordingly to Robson classification)
- ⁷ **Macrosomy at US:** defined as weight > 3500 grams or 90 Centile weight-for-GA
- ⁸ **If IOL, mode of induction:** record here only procedures for IOL, i.e. until 4 cm dilatation
- ⁹ **Analg:** record only drugs actually given (not just prescribed). Record paracetamol under "other"
- ¹⁰ **Distocya 2nd stage:** CS at full dilatation
- ¹¹ **PPH Minor** (not severe not massive) Severe PPH (≥ 1000 ml or any bleeding with hypotension or tachycardia or blood transfusion) Massive (lost of $\geq 40\%$ of blood volume, blood volume= body weight(kg)/12)
- ¹² **Major organ dysfunction:** as for Near miss definition -do not consider diabetes as major organ dysfunction (see following ANNEX 1)
- ¹³ **Disabilities from pregnancy complications:** include here stroke, anaemia, post partum depression or other psychiatric disorders and other disabilities (not include preexisting problems such as GDM, hypertension, or hysterectomy)
- ¹⁴ **Near Miss=** A maternal near-miss case is defined as "a woman who nearly died but survived a complication that occurred during pregnancy, childbirth or within 42 days of termination of pregnancy" (*WHO 2011*). This implies either severe disease (severe PPH, severe pre-eclampsia, Eclampsia, sepsis, uterine rupture, severe complications of abortion), or critical interventions (admission UTI, intervention radiology, lapartotomy, blood transfusion) or organ dysfunction (see ANNEX 1)
- ¹⁵ **Post delivery duration stay:** count this in days. If admitted on 2 April and out day 3 April count this as 1 day if it is less than 24 h. If more than 24h, count this as 2 days

DEFINITIONS (NEWBORN)

- ¹ **Born alive=** fetus/baby of any GA and any birth weight showing any sign of vital activity (breath, cardiac, movements)
- ² **Born dead=** when not born alive; it includes stillbirth
- ³ **Stillbirth =** macerated are fresh are based on clinical evaluation; intrapartum is a fetus where heart rate was perceived before delivery (and than lost after delivery)
- ⁴ **Birth weight=** avoid approximation (use weight in grams)
- ⁵ **Ventilated in delivery room=** not just stimulated, but ventilated (with bag or CPAP) for more than *10 seconds*
- ⁶ **Asphyxia=** no spontaneous start of breathing, ventilation for at least *30 sec* and/or thoracic compressions as in international guidelines or any drug
- ⁷ **RDS (Respiratory Distress Syndrome)=** tick this box for a baby with respiratory distress lasting more than 24 hours
- ⁸ **Major birth trauma=** include here brachial plexus injury/arm palsy, fractures at any site, sub-aponeurotic (subgaleal) hemorrhage. Do NOT include here cephaloematoma and caput succedaneum
- ⁹ **Major Malformation=** do not include here minor malformation such as skin tags and pits, syndactyly, polydactyly, additional finger, PDA even if persistent.
- ¹⁰ **Day of death=** for still birth use day zero

¹² ANNEX 1 DEFINITIONS ORGAN DYSFUNCTION (SOURCE: WHO MANUAL)

Organ dysfunction / life-threatening conditions

- C0 Cardiovascular dysfunction**
[shock, use of continuous vasoactive drugs, cardiac arrest, cardio-pulmonary resuscitation, severe hypoperfusion (lactate >5 mmol/L or >45 mg/dL) or severe acidosis (pH <7.1)]
- C1 Respiratory dysfunction**
[acute cyanosis, gasping, severe tachypnea (respiratory rate >40 bpm), severe bradypnea (respiratory rate <6 bpm), severe hypoxemia (PAO₂/F_iO₂ <200 O₂ saturation $<90\%$ for ≥ 60 min) or intubation and ventilation not related to anaesthesia]
- C2 Renal dysfunction**
[oliguria non responsive to fluids or diuretics, dialysis for acute renal failure or severe acute azotemia (creatinine ≥ 300 umol/ml or ≥ 3.5 mg/dL)]
- C3 Coagulation/hematologic dysfunction**
[failure to form clots, massive transfusion of blood or red cells (≥ 5 units) or severe acute thrombocytopenia ($<50,000$ platelets/ml)]
- C4 Hepatic dysfunction**
[jaundice in the presence of pre-eclampsia, severe acute hyperbilirubinemia (bilirubin >100 umol/L or >6.0 mg/dL)]
- C5 Neurologic dysfunction**
[prolonged unconsciousness / coma (lasting >12 hours), stroke, status epilepticus / uncontrollable fits, total paralysis]
- C6 Uterine dysfunction / Hysterectomy**
[haemorrhage or infection leading to hysterectomy]

Appendix 2. Missing variables

	Total	Missing	% Missing
Maternal variables			
Age	7504	34	0.4
Work	7504	38	0.5
Education	7504	37	0.4
Para (number of children)	7504	34	0.4
Marital status	7504	38	0.5
Gravidas (pregnancies, including the ongoing)	7504	34	0.4
Born alive	7504	34	0.4
Gestational age at delivery	7504	47	0.6
Gestational age estimated with ultrasounds	7504	53	0.7
BMI	7504	53	0.7
Discharge	7504	35	0.4
Delivery	7504	32	0.4
Multiple pregnancies	7504	34	0.4
Pregestetional hypertension	7504	33	0.4
Gestetional hypertension (no proteinuria)	7504	35	0.4
Pre-eclampsia not severe	7504	35	0.4
Pre-eclampsia severe	7504	35	0.4
Eclampsia	7504	34	0.4
Chorionamnionitis	7504	36	0.4
Major fetal malformation	7504	36	0.4
IUGR/SGA	7504	36	0.4
Pregestetional diabetes	7504	35	0.4
Gestetional diabetes mellitus in diet	7504	35	0.4
Gestetional diabetes mellitus in drug therapy	7504	36	0.4
Maternal cardiac disease	7504	34	0.4
Maternal hypothyroidism	7504	37	0.4
Polihydramnios	7504	36	0.4
Oligohydramnios	7504	38	0.4
APH/major placentia previa	7504	37	0.4
Severe anaemia	7504	38	0.5
Other (risk factors)	7504	63	0.8
Steroids	7504	37	0.4

Previous CS	7504	38	0.5
If previous CS, trial of labour	7504	39	0.4
Presentation	7504	37	0.4
Labour onset	7504	36	0.4
Delivery mode	7504	37	0.4
If CS, type	7504	37	0.4
Indication of labour	7504	36	0.4
Mode of induction	7504	42	0.5
If operative delivery, indication	7504	38	0.5
Episiotomy	7504	43	0.5
Analgesia in labour	7504	43	0.5
3 rd stage management	7504	39	0.5
Removal of placenta	7504	39	0.5
Operator delivery	7504	41	0.5
Perineal tears	7504	36	0.4
PPH	7504	38	0.5
Blood transfusion	7504	36	0.4
Cord collapse	7504	42	0.5
Uterine rupture	7504	42	0.5
Admission to ICU	7504	22	0.2
OT after delivery	7504	43	0.5
Sepsis/several infections	7504	44	0.5
Other complications	7504	45	0.6
Abruption placentae	7504	42	0.5
Amniotic fluid embolism	7504	42	0.5
Major organ dysfunction	7504	37	0.4
Hysterectomy	7504	36	0.4
DVT	7504	46	0.6
Final outcome	7504	42	0.5
Near miss	7504	20	0.2
Newborn variables ¶			
Born	7504	43	0.5
If stillbirth, fresh or macerated	7504	75	1.0

Sex	7504	51	0.6
Birth weight	7504	68	0.9
Apgar at 1'	7504	168	2.2
Apgar at 5'	7504	168	2.2
Apgar at 10'	7504	166	2.2
Ventilated in delivery room	7504	119	1.5
Asphyxia	7504	124	1.6
Post-delivery	7504	44	0.5
Respiratory distress syndrome	7504	114	1.5
Other infections	7504	110	1.4
Neurological complications (seizure, IVH, HIE)	7504	114	1.5
Jaundice with ET	7504	112	1.4
Major birth trauma	7504	120	1.6
Phototherapy for over 24 hours	7504	121	1.6
Sepsis	7504	113	1.5
Major malformation	7504	120	1.6
Other complications	7504	172	2.3
Final	7504	108	1.4

Abbreviations: APH= ante-partum haemorrhage; BMI= body Mass index; CS= caesarian section; DVT= deep vein thrombosis; ET= exchange transfusion; HIE= Hypoxic Ischemic Encephalopathy; ICU= Intensive care unit; IUGR=Intra-uterine growth restriction; IVH= intra-ventricular haemorrhage; OT=operating theatre; PPH= post-partum haemorrhage; SGA= small for gestational age.

[†] For multiple pregnancies, only data on the first newborn provided