Supplementary Files

Supplementary File 1: Non-exhaustive list of maternal, fetal, newborn and child variables

Variables	Variables essential for study inclusion	Key data variables	Additional data variables of interest

Maternal outcomes	To be eligible, data should be available on at least 2 of the important maternal or neonatal outcome variables	• Gestational age at delivery
		• Preterm premature rupture of the membranes (PPROM)
		• Prolonged rupture of membranes (PROM)
		• Antepartum and postpartum hemorrhage estimated blood loss
		• Hypertensive disorders in pregnancy
		  - gestational hypertension
		  - preeclampsia
		  - preeclampsia with severe features
		  - eclampsia
		  - HELLP syndrome
		  - blood pressure (systolic/diastolic)
		  - proteinuria
		• Anaemia in pregnancy
		  - hemoglobin, mean cellular volume, hematocrit
		• Adverse events
		  - serious adverse events (SAEs)
		• Gestational Diabetes Mellitus (GDM)
		  - glucose level in pregnancy (hemoglobin A1c)
		  - Oral Glucose Tolerance Test (OGTT)
		• Health facility visits
		  - emergency department visits
		  - hospital admissions
		• Maternal mental health
		  - emotional stress, maternal global severity index (GSI)
		  - Life Event Scale for Pregnant Women
			• Duration of labor
			• Caesarean section
			  - emergency
			  - elective
			• Abortion
			  - spontaneous (miscarriage)
			  - threatened spontaneous
			  - induced
			• Oligohydramnios
			• Placental complications
			  - placental abruption
			  - placenta previa
			  - fetal growth restriction
			• Sexual and gender-based violence
			  - intimate partner violence
			• Maternal mortality (including cause)
			• Hyperemesis gravidarum
			• Maternal cardiovascular disease
			  - ischemic heart disease
			  - stroke
			  - heart failure
			• Cardiac arrest
			• Renal function
			  - Glomerular filtration rate (GFR), urea, creatinine
			• Liver function
			  - ALAT, ASAT, total bilirubin/conjugated bilirubin, GGT
			• Maternal peripartum infections

Variables	Variables essential for study inclusion	Key data variables	Additional data variables of interest

		- Patient Health Questionnaire-9 (PHQ-9)
		- Other validated scales/measures
			- pyelonephritis
			- puerperal sepsis
			- chorioamnionitis
			- Group B streptococcus
			- urinary tract infection/bacteriuria
			• Infectious disease
			  - malaria
			  - dengue
			  - TB
			  - Other
			• Maternal immunization
			• Maternal caregiving practices
			• Ectopic pregnancy
			• HIV status
			  - newly diagnosed, chronic
			  - CD4, viral load
			  - treatment

Fetal, neonatal and child outcomes	To be eligible, data should be available on at least 2 of the important maternal or neonatal outcome variables	• Prematurity (see also gestational age at delivery)
		• Mortality (including cause)
		  - stillbirth (fresh/macerated)
		  - neonatal
		  - perinatal
		  - child (first two years)
		• Mother-to-child transmission of HIV (MTCT)
		• APGAR score
		• Infant growth
		  - small for gestational age
		  - infant height (<2 years)
		  - failure to thrive
		  - stunting
		• Admission to neonatal intensive care units or paediatric ward
		• Intrauterine growth restriction
			• Birth
			  - singleton/multiple
			• Meconium staining
			• Infant sex
			• Infant feeding practices
			  - exclusive breastfeeding (if yes, duration)
			• Fetal distress, hypoxia
			• Infections
			  - neonatal sepsis
			  - TORCH (toxoplasmosis, other (syphilis, hepatitis B), rubella, cytomegalovirus, herpes simplex)
			  - group B streptococcus
			  - respiratory tract infection (lower/upper/pneumonia)
			  - diarrhea
			• Early Child Development (ECD)
			• Bayley's score (<2 years)

Variables	Variables essential for study inclusion	Key data variables	Additional data variables of interest
		• Ultrasound findings	• Neonatal jaundice • serum and/or transcutaneous bilirubin levels Congenital anomaly

Other variables	To be eligible, data should be available on:
	
	• Date of delivery of the newborn OR date of maternal outcome
	• Location, at a minimum: city of delivery, or city of follow-up (data on location of household, birth facility, or study clinic are preferable)
		• Maternal age
		• Gravidity, parity
		• Study intervention or exposure
		• Maternal anthropometry
		   - Maternal weight, height, BMI, MUAC
		• Date of interviews or examination
		• Mode of delivery
		• Facility of delivery location, or catchment area of facility
		• Location of research site
		• Type of facility (community health center/hospital)
		   -
			• Time of delivery
			• Location
			   - home address
			   - rural/urban/peri-urban
			• Housing type
			   - apartment, house, informal
			   - no. of people in household
			   - air-conditioning access
			• Socio-economic status or income
			   - personal income
			   - household income
			• Race, ethnicity
			• Substance use
			   - Smoking, alcohol, or illicit substances
			• Employment status
			• Maternal co-morbidities
			   - chronic medication
			• Education (highest level achieved)
			• Marital status
			• Birth attendant (skilled/unskilled)
			• Religion
			• Lost to follow-up
			• Temperature in healthcare facility, incubator, crib, room

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Supplementary File 2: PubMed search strategy

2012/09/01:2020/10/07[Date - Create] AND (("cohort studies"[MeSH Terms:noexp] OR "longitudinal studies"[MeSH Terms:noexp] OR "follow up studies"[MeSH Terms:noexp] OR "prospective studies"[MeSH Terms:noexp] OR "retrospective studies"[MeSH Terms:noexp] OR "cohort"[Title/Abstract] OR "longitudinal"[Title/Abstract] OR "prospective"[Title/Abstract] OR "retrospective"[Title/Abstract] OR ((("Clinical Trial"[Publication Type] OR "Clinical Trials as Topic"[MeSH Terms] OR "clinical trials"[All Fields]) AND "Clinical Trial"[Publication Type:noexp]) OR "clinical trial, phase i"[Publication Type] OR "clinical trial, phase ii"[Publication Type] OR "clinical trial, phase iii"[Publication Type] OR "clinical trial, phase iv"[Publication Type] OR "controlled clinical trial"[Publication Type] OR "multicenter study"[Publication Type] OR "randomized controlled trial"[Publication Type] OR "Clinical Trials as Topic"[MeSH Terms:noexp] OR "clinical trials, phase i as topic"[MeSH Terms:noexp] OR "clinical trials, phase ii as topic"[MeSH Terms:noexp] OR "clinical trials, phase iii as topic"[MeSH Terms:noexp] OR "clinical trials, phase iv as topic"[MeSH Terms:noexp] OR "controlled clinical trials as topic"[MeSH Terms:noexp] OR "randomized controlled trials as topic"[MeSH Terms:noexp] OR "early termination of clinical trials"[MeSH Terms:noexp] OR "multicenter studies as topic"[MeSH Terms:noexp] OR "Double-Blind Method"[MeSH Terms] OR (("randomised"[Title/Abstract] OR "randomized"[Title/Abstract]) AND ("trial"[Title/Abstract] OR "trials"[Title/Abstract])) OR (("single"[Title/Abstract] OR "double"[Title/Abstract] OR "doubled"[Title/Abstract] OR "triple"[Title/Abstract] OR "tripled"[Title/Abstract] OR "treble"[Title/Abstract] OR "treble"[Title/Abstract]) AND ("blind*"[Title/Abstract] OR "mask*"[Title/Abstract])) OR ("4 arm"[Title/Abstract] OR "four arm"[Title/Abstract]) OR "incidence"[MeSH Terms:noexp] OR "incidence"[Title/Abstract])) AND ("angola"[MeSH Terms] OR "benin"[MeSH Terms] OR "botswana"[MeSH Terms] OR "burkina faso"[MeSH Terms] OR "burundi"[MeSH Terms] OR "cabo verde"[MeSH Terms] OR "cameroon"[MeSH Terms] OR "central african republic"[MeSH Terms] OR "chad"[MeSH Terms] OR "comoros"[MeSH Terms] OR "democratic republic of the congo"[MeSH Terms] OR "congo"[MeSH Terms] OR "cote d ivoire"[MeSH Terms] OR "djibouti"[MeSH Terms] OR "equatorial guinea"[MeSH Terms] OR "eritrea"[MeSH Terms] OR "eswatini"[MeSH Terms] OR "ethiopia"[MeSH Terms] OR "gabon"[MeSH Terms] OR "gambia"[MeSH Terms] OR "ghana"[MeSH Terms] OR "guinea"[MeSH Terms] OR "guinea bissau"[MeSH Terms] OR "kenya"[MeSH Terms] OR "lesotho"[MeSH Terms] OR "madagascar"[MeSH Terms] OR "malawi"[MeSH Terms] OR "mali"[MeSH Terms] OR "mauritania"[MeSH Terms] OR "mozambique"[MeSH Terms] OR "namibia"[MeSH Terms] OR "niger"[MeSH Terms] OR "nigeria"[MeSH Terms] OR "rwanda"[MeSH Terms] OR "senegal"[MeSH Terms] OR "sierra leone"[MeSH Terms] OR "somalia"[MeSH Terms] OR "south africa"[MeSH Terms] OR "south sudan"[MeSH Terms] OR "sudan"[MeSH Terms] OR "tanzania"[MeSH Terms] OR "togo"[MeSH Terms] OR "uganda"[MeSH Terms] OR "zambia"[MeSH Terms] OR "zimbabwe"[MeSH Terms] OR "africa south of the sahara"[MeSH Terms] OR "africa, central"[MeSH Terms] OR "africa, southern"[MeSH Terms] OR "africa, eastern"[MeSH Terms] OR "africa, western"[MeSH Terms] OR ("angola"[Text Word] OR "benin"[Text Word] OR "botswana"[Text Word] OR "bechuanaland"[Text Word] OR "burkina faso"[Text Word] OR "burkina fasso"[Text Word] OR "upper volta"[Text Word] OR "burundi"[Text Word] OR "urundi"[Text Word] OR "cabo verde"[Text Word] OR "cape verde"[Text Word] OR "cameroon"[Text Word] OR "cameron"[Text Word] OR "cameroun"[Text Word] OR "central african republic"[Text Word] OR "ubangi shari"[Text Word] OR "chad"[Text Word] OR "congo"[Text Word] OR "zaire"[Text Word] OR "cote d ivoire"[Text Word] OR "cote d ivoire"[Text Word] OR "cote d ivoire"[Text Word] OR "ivory coast"[Text Word] OR "djibouti"[Text Word] OR "french somaliland"[Text Word] OR "equatorial guinea"[Text Word] OR "eritrea"[Text Word] OR "eswatini"[Text Word] OR "swaziland"[Text Word] OR "ethiopia"[Text Word] OR "gabon"[Text Word] OR "gabonese republic"[Text Word] OR "gambia"[Text Word] OR "ghana"[Text Word] OR "gold coast"[Text Word] OR "guinea"[Text Word] OR "kenya"[Text Word] OR "lesotho"[Text Word] OR "basutoland"[Text Word] OR "liberia"[Text Word] OR "madagascar"[Text Word] OR "malawi"[Text Word] OR "nyasaland"[Text Word] OR "mali"[Text Word] OR "mauritania"[Text Word] OR "mozambique"[Text Word] OR "portuguese east africa"[Text Word] OR "namibia"[Text Word] OR "niger"[Text Word] OR "nigeria"[Text Word] OR "rwanda"[Text Word] OR "ruanda"[Text Word] OR "senegal"[Text Word] OR "sierra leone"[Text Word] OR "somalia"[Text Word] OR "south africa"[Text Word] OR "south sudan"[Text Word] OR "sudan"[Text Word] OR "tanzania"[Text Word] OR "tanganyika"[Text Word] OR "togo"[Text Word] OR "togolese republic"[Text Word] OR "tonga"[Text Word] OR

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"uganda"[Text Word] OR "zambia"[Text Word] OR "zimbabwe"[Text Word] OR "northern rhodesia"[Text Word] OR "africa south of the sahara"[Text Word] OR "sub saharan africa"[Text Word] OR "subsaharan africa"[Text Word] OR "central africa"[Text Word] OR "sahara"[Text Word] OR "southern africa"[Text Word] OR "east africa"[Text Word] OR "eastern africa"[Text Word] OR "west africa"[Text Word] OR "western africa"[Text Word])) AND (("non-pregnancy"[All Fields] AND ("family"[MeSH Terms] OR "family"[All Fields] OR "relation"[All Fields] OR "relatability"[All Fields] OR "relatable"[All Fields] OR "related"[All Fields] OR "relates"[All Fields] OR "relating"[All Fields] OR "relational"[All Fields] OR "relations"[All Fields]) AND ("infections"[MeSH Terms] OR "infection"[All Fields] OR "communicable diseases"[MeSH Terms] OR ("communicable"[All Fields] AND "diseases"[All Fields]) OR "communicable diseases"[All Fields])) OR "non pregnancy related"[Title] OR (("maternal"[Title] OR "pregnant"[Title] OR 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Supplementary File 3: Table of primary and secondary hypotheses and expected outcomes

	Hypotheses	Outcome variable	Unit of measurement
Primary hypotheses	The rates of preterm birth are increased when maximum temperatures are above the 90th percentile in the week prior to childbirth.	Preterm birth	Increased odds/risk/relative risk (compared to baseline) of preterm birth with exposure to temperatures above the 90th percentile for lags 0-7 days.
	Exposure to maximum temperatures above the 90th percentile in the three days before childbirth and during childbirth increases the risk of maternal morbidities.	Antepartum and postpartum haemorrhage Infections in pregnancy or postpartum Duration of labour Premature rupture of membranes	Increased odds/risk/relative risk of maternal morbidities associated with exposure to temperature above the 90th percentile for lags 0-3 days.
	Exposure to a higher number of hot days during pregnancy is associated with intrauterine growth restriction and low birth weight.	Intrauterine growth restriction (e.g., head circumference, femur length, abdominal circumference, biparietal diameter, umbilical artery doppler)	Increased odds/risk/relative risk/cumulative relative risk of intrauterine growth restriction and low birth weight with increased exposure to hot days.

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		Low birth weight	
	A higher number of hot day exposures during pregnancy and the first two years of childhood is associated with stunting in children under the age of two.	Stunting (e.g., z scores for weight and height)	Increased odds/risk/relative risk/cumulative relative risk of stunting with increased exposure to hot days.
Secondary hypotheses	High ambient temperatures and heatwaves during pregnancy and intrapartum on maternal and child health, vary across key population sub-groups, including maternal age, socio-economic status, geographical area, and climate zone.	Demographic variables: Maternal age, socioeconomic status, geographical area, climate zone Health outcomes: maternal and neonatal adverse health outcomes	Evidence of effect modification by age, socioeconomic status, geographical area, and climate zone
	Exposure to high ambient temperatures increases the burden on health systems due to increased rates of caesarean sections and out- and in-patient health facility visits.	Emergency caesarean section rate Maternal health facility visits Maternal out-patient visits Maternal hospital admissions	Increased odds/risk/relative risk/cumulative relative risk of emergency caesarean sections, health facility visits, out-patient visits, and hospital admissions associated with

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			exposure to high ambient temperature.
	High ambient temperature exposure during the first two years of childhood increases the risk of diarrhoea, pneumonia, all-cause out- and in-patient health facility visits, and all-cause mortality.	Gastroenteritis Pneumonia Out-patient visits Health facility visits Hospital admissions All-cause mortality	Increased odds/risk/relative risk/cumulative relative risk of gastroenteritis, pneumonia, health facility visits, out-patient visits, hospital admissions, and all-cause mortality associated with exposure to high ambient temperature

This table presents the expected outcomes based on the primary and secondary hypotheses. However, it is important to note that additional anticipated results will emerge from the inclusion of supplementary variables obtained from individual participant data (IPD) and through the utilisation of machine learning-informed covariate selection.