

Table S1. Overview of the data extraction for generating a preliminary MIC from the literature review

First author and year of publication	Geographic area	Study design	Objective	Category/domain	Class	Midwifery interventions
Alliman et al., 2019 [41]	USA	Descriptive analysis	To explore the medical and social risk factors, care processes, and quality outcomes of Medicaid beneficiaries in the AABC Strong Start sample compared with publicly reported US data in order to inform future research and Medicaid policy reform	Ancillary Services	//	Laboratory tests Social services and nutrition consultants Notification and referral for pediatric care
				Birth center/Primary care	//	Registration and orientation Informed consent History and physical Antepartum care Counseling/Education Continuous screening Admission to the birth center for labor Birth center Postpartum care Newborn care Education Discharge 2-3 day home visit 7-10 day office visit 4-6 week exam Family planning Breastfeeding support Parenting support
				Hospital/Physician care	//	OB consultation Antepartum referral Intrapartum referral Hospital birth Postpartum or newborn referral Discharge

Blanc et al., 2016 [40]	Kenya	Observational study	To assess the validity of a large set of maternal and newborn health indicators that are included or have the potential to be included in population-based surveys	Initial client assessment	//	Woman referred to the facility because of a problem Provider washes hands with soap and water or uses antiseptic before initial examination Takes blood pressure
				Provide respectful care	//	Woman allowed to drink liquids or eat Encourages/assists woman to ambulate during labor Encourages/assists woman to assume different positions in labor Woman are allowed to have a support person during labor and delivery Support companion present during the birth
				First stage of labor	//	Induces labor with uterotonic Augments labor with uterotonic Uterotonics received (labor induction or augmentation) Membranes ruptured (labor induction or augmentation)
				Skilled birth attendance	//	Main provider labor nurse/midwife Main provider delivery doctor (ob/gyn)/medical resident Main provider delivery student nurse
				Second and third stage labor	//	Episiotomy performed Uterotonic received following delivery of the placenta
				Immediate postnatal newborn care	//	Baby is given to mother immediately after birth Baby placed skin-to-skin immediately on the mother Breastfeeding within the first hour of birth 3 elements of essential newborn care (immediately dried, on mother's skin, breastfed within the first hour) 3 elements of essential newborn care (immediately dried, 2 items on mother's skin, breastfeeding within the first hour) Low birthweight newborn (<2500g)
				Immediate postnatal care for the mother	//	Palpates uterus 15 min after delivery of the placenta First post-delivery exam, the provider asks/ checks for bleeding First post-delivery exam, the provider examines the perineum

Butcher et al., 2020 [33]	USA	Observational study	Organizing nursing interventions and activities in a complete and systematic way	Basic physiology	Maternal outcomes	//	First post-delivery exam, the provider takes the temperature
							First post-delivery exam, the provider takes blood pressure
							First post-delivery exam, the provider checks for involution
							Woman asked for pain relief medication during her stay
							Woman received pain relief medication
							Cesarean section performed
							Reason for cesarean section - prolonged/obstructed labor
							Complications (bleeding, prolonged labor, none)
							Promotion of physical activity
							Management of activity and physical exercise
							Management of elimination
							Support in managing bowel function
							Management of urinary elimination
							Education on proper urinary habits
							Nutrition
							Nutrition
							Self-care assistance: nutrition
							Nutritional counseling
							Pain management
							Pain management
							Massage
							Environmental Management: wellbeing
							Nutrition
							Nutrition
							Self-care assistance
							Perineal care
							Self-care assistance: bathing/personal hygiene
							Administration of analgesics
							Administration of medication
							Administration of medication

		Medication management
	Perioperative assistance	Intraoperative positioning Administration of anesthesia Post-anesthesia care Preoperative coordination Assistance during surgery Management of surgical instruments Preventive measures in case of surgery Preparation for surgery Regulation of intraoperative temperature Teaching: preoperative period Infection control: intraoperative phase
	Management of skin/wounds	Care of the incision site Suturing Wound care
	Thermoregulation	Temperature regulation
	Management of tissue perfusion	Preventive measures for bleeding Reduction of bleeding Reduction of antepartum uterine bleeding Reduction of postpartum bleeding Capillary blood sampling Venous cannulation Intravenous therapy Blood sampling: venous blood sample
Behavior	Behavioral therapy	Support in behavior management Support in behavior modification Sharing of goals Contract with the patient Assistance in smoking cessation

		Prevention of substance abuse
	Cognitive therapy	Facilitation of learning
	Improvement of communication	Active listening
		Improvement of socialization
	Coping assistance	Preventive guidance in critical situations
		Improvement of coping
		Counseling
		Sexual counseling
		Support in decision-making
		Emotional support
		Facilitation of grief processing: perinatal death
		Presence
		Improvement of safety
		Enhancement of self-awareness
		Improvement of self-efficacy
		Improvement of self-esteem
	Patient education	Health education
		Improvement of health literacy
		Facilitation of learning
		Improvement of readiness to learn
		Parent education: child in the first year of life
		Teaching: preoperative period
		Teaching: nutrition of the child from 0 to 3 months of life
		Teaching: safety of the child from 0 to 3 months of life
		Family planning: contraception
	Promotion of psychological wellbeing	Guided visualization
Safety	Crisis management	Management of severity codes
		Emergency assistance

		First aid
		Triage: emergency center
		Telephone triage
	Risk management	<hr/> Allergy management Environment management Environment management: safety Prevention of falls Screening Vaccination management Latex use precautions Infection control Identification of the assisted person Surveillance Monitoring of vital parameters <hr/>
Family	Pregnancy assistance	<hr/> Assistance to the person: pregnancy Reduction of antepartum uterine bleeding Reduction of postpartum bleeding Facilitation of grief processing: perinatal death Identification of risks: family expecting a child Surveillance: post-term pregnancy Assistance during childbirth Preparation for childbirth Electronic fetal monitoring: antepartum Electronic fetal monitoring: intrapartum Family planning: contraception Assistance to the child: newborn Intrapartum assistance Intrapartum assistance: high-risk childbirth Labor induction Labor suppression <hr/>

		Lactation suppression
		Non-nutritive sucking
		Phototherapy: newborn
		Postpartum and puerperium assistance
		Prenatal assistance
		Resuscitation: fetus
		Resuscitation: newborn
		Obstetric ultrasound
		Promotion of the integrity of the family expecting a child
	Assistance in child growth	Bottle feeding
		Breastfeeding counseling
		Parent education: child in the first year of life
		Teaching: nutrition of the child from 0 to 3 months of life
		Teaching: safety of the child from 0 to 3 months of life
		Promotion of parent-child attachment
		Cup feeding: newborn
		Promotion of parenting role
	Assistance throughout life	Empowerment of the role
		Support to the caregiver
		Promotion of family involvement
		Support to the family
Healthcare system	Sustaining adaptation with the healthcare system	Preoperative coordination
		Support to the decision-making process
		Welcome to a healthcare or social facility
		Case management
		Cultural mediation
		Guide to the healthcare system
		Protection of the rights of the assisted person
		Discharge planning
		Facilitation of visits

Management of the healthcare system	Emergency cart control
	Interpretation of laboratory data
	Peer review
	Collaboration with the doctor
	Improvement of collaboration
	Tutoring: Staff
	Tutoring: Students
	Evaluation of equipment
	Quality monitoring
	Management of laboratory samples
	Staff supervision
	Management of supplies
	Staff development
	Management of technology
	Transfer to another facility
	Transfer within the facility
	Management of economic resources
Management of information	Surveillance: teleassistance
	Consultancy
	Documentation
	Collection of forensic data
	Exchange of health-related information
	Monitoring of healthcare policy
	Incident reporting - report on an accidental event
	Multidisciplinary care consultancy
	Prescription: diagnostic test
	Prescription: non-pharmacological treatment
	Data collection for research purposes
	Shift change communications
	Telephone consultation

				Telephone follow-up		
				Community	Promotion of community health	Case management Community health development Management of economic resources Health education Monitoring of healthcare policy Management of vaccinations Program development
					Management of community risks	Screening Risk identification.
Day et al., 2021 [32]	Bangladesh, Nepal, and Tanzania	Observational study	To assess the validity of indicators of maternal and newborn healthcare coverage around the time of birth in survey data and routine facility register data	Labor and delivery ward	//	Uterotonics to prevent postpartum hemorrhage Early initiation of breastfeeding Neonatal resuscitation by bag-mask ventilation
				Kangaroo mother care ward or corner	//	Skin-to-skin contact or kangaroo mother care position between mother and baby
				Newborn ward or pediatrics ward	//	Antibiotic treatment for neonatal infection
Devane et al., 2019 [39]	Ireland	Observational study	To report on the development and prioritization of a national suite of Quality Care Metrics (QCM), and their associated indicators, for midwifery care processes in Ireland	//	//	Midwifery Plan of Care Booking Abdominal examination (after 24 weeks gestation) on current or last assessment Intrapartum fetal wellbeing Intrapartum fetal wellbeing cardiotocography (CTG) Intrapartum maternal wellbeing Risk assessment for venous thromboembolism (VTE) in pregnancy and the puerperium Immediate post-birth care Communication (Clinical Midwifery Handover) Pain management (other than labor) Infant feeding

Postnatal care (daily midwifery care processes)
 Post-birth discharge planning for going home
 Medication administration
 Medication, storage, and custody (excluding MDSs)
 MDA drugs
 Intravenous fluid therapy
 Clinical Record Keeping

Diamond-Smith et al., 2022 [31]	Africa	Literature review	To summarize and describe respectful maternal care-promoting interventions during childbirth implemented in Africa	Supply-side domains	//	Train healthcare personnel Improve facility environment Implement quality improvement programs Enact policies or guidelines Support provider wellness Address other drivers of RMC
				Demand-side domains	//	Advocate for respectful maternal care Educate women giving birth Engage community members
				Combination of both supply and demand side domains	//	Implement social accountability mechanisms
Escuriet et al., 2015 [38]	Spain	Literature review	To provide a critical literature review on the tools and indicators currently being used to measure the performance of maternity care within Europe and to identify the dominant focus of existing measurements	Process	//	Antenatal care Intrapartum care Postnatal care Neonatal care
Flenady et al., 2016 [30]	Australia	Observational study	To assess the status of global indicators by describing the currently available data to address the WHO Essential Interventions and to develop a robust suite of indicators	Preconception interventions	//	Family planning (preconception advice and counseling about the choice of contraception) Prevention and Management of STIs, including HIV for PMTCT of HIV and syphilis Folic acid fortification and/or supplementation to prevent neural tube defects

and respective data points to monitor WHO Essential Interventions – both screening and management components – for use in eRegistries.	Antenatal care interventions	//	Antenatal care essential package (four-visit schedule) Iron and folic acid supplementation during pregnancy Tetanus immunization in pregnancy for preventing neonatal tetanus Prophylactic antimalarial for preventing malaria in pregnancy Insecticide Treated Bednets (ITBN) for preventing malaria in pregnancy Smoking cessation during pregnancy Screening and treatment of syphilis (during pregnancy) Prevention and Management of HIV and prevention of mother-to-child-transmission (PMTCT) in pregnancy Calcium supplementation in pregnancy for preventing pre-eclampsia Low-dose aspirin for preventing pre-eclampsia in high-risk women Antihypertensive drugs for treating severe hypertension in pregnancy Magnesium sulfate to prevent and treat eclampsia External Cephalic Version (>36 weeks) to reduce malpresentation at term Induction of labor for Management of prelabour rupture of membranes (PROM) at term Antibiotics for Management of preterm prelabour rupture of membranes (pPROM) Corticosteroids for prevention of neonatal respiratory distress syndrome (RDS) in preterm labor Safe abortion for the Management of unintended pregnancy
	Interventions for care at birth	//	Social support during childbirth Prophylactic antibiotic for cesarean section Cesarean section for maternal/fetal indication (e.g., obstructed labor and central placenta previa) Prophylactic uterotonic/active Management of the third stage to prevent postpartum hemorrhage Induction of labor for prolonged pregnancy Uterotonics for Management of postpartum hemorrhage

Manual removal of placenta (only by professional health workers) for Management of postpartum hemorrhage
Initiation or continuation of HIV therapy for HIV-positive women

Interventions for postpartum care (of the mother)	//	<p>Advice and provision of family planning</p> <p>Prevent, measure, and treat maternal anaemia</p> <p>Detection and Management of postpartum sepsis</p> <p>Screening and initiation or continuation of antiretroviral therapy for HIV</p>
Interventions for newborn care	//	<p>Promotion and provision of thermal care for all newborns to prevent hypothermia</p> <p>Promotion and support for early initiation and exclusive breastfeeding (within the first hour)</p> <p>Promotion and provision of hygienic cord and skin care</p> <p>Neonatal resuscitation with a bag and mask for babies who do not breathe at birth</p> <p>Newborn immunization</p> <p>Presumptive antibiotic therapy for newborns at risk of bacterial infection</p> <p>Case management of neonatal sepsis, meningitis, and pneumonia</p> <p>Initiation of ART in babies born to HIV-infected mothers</p>
Interventions for small and ill babies	//	<p>Kangaroo mother care (KMC) for preterm and for <2000g babies</p> <p>Extra support for feeding the small and preterm baby</p> <p>Prophylactic and therapeutic use of surfactant to prevent respiratory distress syndrome in preterm babies</p> <p>Continuous positive airway pressure (CPAP) to manage preterm babies with respiratory distress syndrome</p> <p>Management of newborns with jaundice</p>
Childbirth	//	<p>Induction of labor for prolonged pregnancy</p> <p>Prophylactic uterotonics to prevent postpartum hemorrhage</p> <p>Active Management of the third stage of labor to prevent postpartum hemorrhage</p> <p>Management of postpartum hemorrhage (e.g., uterotonics, uterine massage)</p>

Cesarean section for maternal/fetal indication
 Prophylactic antibiotics for cesarean section

Postnatal (mother)	//	Family planning
		Prevent and treat maternal anemia
		Detect and manage postpartum sepsis
		Screen and initiate or continue antiretroviral therapy for HIV
Postnatal (newborn)	//	Immediate thermal care (newborn)
		Initiation of exclusive breastfeeding (within the first hour)
		Hygienic cord and skin care
		Neonatal resuscitation with bag and mask (professional health worker)
		Case management of neonatal sepsis, meningitis, and pneumonia
		Kangaroo mother care for preterm and for less than 2000g babies
		Management of newborn with jaundice
		Surfactant to prevent respiratory distress syndrome in preterm babies
		Continuous positive airway pressure (CPAP) to manage babies with respiratory distress syndrome
		Extra support for feeding small and preterm babies
		Presumptive antibiotic therapy for newborns at risk of bacterial infections

Lazzaretto et al., 2018 [2]	Italy	Literature review	To identify the recommended intrapartum care indicators in order to measure the quality of midwifery care.	General midwifery procedures	//	Coping with pain Intrapartum Interventions Free maternal position Cesarean section Preterm delivery Intrapartum nutrition FHR monitoring Term newborn admitted to NICU Birth companion in labor Free maternal position
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Maternal wellbeing
 Partogram
 One-to-one midwifery care
 Place of birth
 TOLAC
 Spontaneous delivery
 Timing of birth
 Cord clamp
 Preterm newborn - NICU

Midwifery procedures in the I stage	//	Interventions I stage Free maternal position One-to-one midwifery care
Midwifery procedures in the II stage	//	Episiotomy Interventions II stage Expulsive contractions Free maternal position
Midwifery procedures in the III stage	//	Interventions III stage Cord clamp Skin to skin
Midwifery procedures in the IV stage	//	Perineum Breastfeeding Postpartum hemorrhage Suturing Interventions IV stage Vaginal examination

Nababan et al., 2017 [29]	Bangladesh	Observational study	To examine the effectiveness of the SCC in improving childbirth practices at a district hospital in Bangladesh	Childbirth practices	On admission	Partograph use Appropriate maternal infection management Appropriate eclampsia management Hand hygiene Birth companion present
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					Intrapartum counseling	
					Just before pushing	Emergency birth helper was identified Appropriate maternal infection management Appropriate eclampsia management Supplies for mothers and babies
					Soon after birth (within 1 h)	Active Management of the third stage of labor Appropriate newborn thermal and resuscitation Maternal blood loss assessment and treatment Appropriate maternal infection management Appropriate eclampsia management Newborn referral Appropriate newborn infection management Newborn special care Breastfeeding and skin-to-skin contact Postpartum counseling
					Before discharge	Maternal blood loss assessment Appropriate maternal infection management Appropriate newborn infection management Newborn feeding assessment Family planning counseling Discharge counseling Follow-up visit counseling
Obara et al., 2014 [28]	WHO Western Pacific Region	Observational study	WHO and the UNICEF Regional Action Plan for Healthy Newborn Infants provide a platform for countries to scale up Early Essential Newborn Care (EENC). The plan emphasizes the creation of an enabling environment for the practice of EENC;	Intrapartum care	All	Labour Monitoring (Partograph) Intrapartum care
					Preterm and low birth weight	Elimination of unnecessary inductions and C-sections Antenatal steroids Antibiotics for preterm PROM
					Sick newborns	Assisted delivery C-section
				Newborn care	All	Drying

thereby preventing 50.000
newborn deaths annually

Skin-to-skin contact
Clamping and cutting the cord appropriately
Initiating exclusive breastfeeding
Routine care- eye care, Vitamin K, immunizations, weighing
and examinations

Preterm and low birth weight	Kangaroo mother care Breastfeeding support Immediate treatment of suspected infection
Sick newborns	Resuscitation Antibiotic treatment

Pricilla et al., 2017 [27]	India	Observational study	To describe the quality of the antenatal care provided by nurse midwives of an urban health center concerning low-risk mothers and to document the maternal and early neonatal outcomes of the enrolled mothers during the period of study.	Interpersonal interaction	//	Greetings Politeness Addressing concerns Answering concerns Explaining before examination
				Physical examination	//	Gestational age calculated Height measured Weight measured Blood pressure checked Signs of anemia checked Presence of edema examined Fundal height measured Metro gram marked Presentation checked Fetal heart checked
				Diagnostic tests	//	Urine albumin/sugar Haemoglobin estimated HIV tested
				Prophylactic drugs	//	Tetanus toxoid injection given Iron and folic acid take

Saturno-Hernández et al., 2019 [26]	Spain	Systematic review	To systematically review indicators for the central phases of the maternal and child healthcare continuum of care (pregnancy, childbirth, newborn care and postpartum).	Health education	//	Diet advice on Iron rich food Advice on preparedness for delivery Information about danger signs (maternal and foetal) Breast/nipple care advice Family planning advice
				Structure	//	Design, policy, and health system context Human resources and infrastructure Mother, child, family and community context
				Process	//	Preventive activities Diagnosis and screening Treatment of pathologic conditions Other maternal and childcare processes
				Outcome	//	Maternal mortality Child mortality Maternal morbidity Child morbidity Safety in the care of the mother Safety in childcare Satisfaction Other health outcomes
Simpson et al., 2019 [35]	USA	Observational study	To describe the development of an adaptation of the MISSCARE Survey to measure missed nursing care in the perinatal setting.	Health determinants	//	Health knowledge and a healthy lifestyle Working and living conditions Environmental and geographic factors Demographics and other health statistics
				//	//	Assist women to the shower or tub for hydrotherapy Assess the effectiveness of medications Check bladder status/voiding needs every 2 hours Assess pain status every hour A thorough review of prenatal records

Patient teaching about procedures, tests, and other diagnostic studies
 Medications administered within 30 minutes before or after the scheduled time
 Administer oxytocin as per orders or protocol
 Response to call light is initiated within 5 minutes
 Emotional support to patient and/or family
 Patient bathing, skincare, or pedicure
 Recognize and respond to indeterminate (Category II) or abnormal (Category III) FHR changes within 15 minutes
 Recognize and respond to excessive uterine activity within 20 minutes
 Recognize and respond to new maternal complications within 10 min (e.g.hypertension, bleeding)
 Focused reassessments according to patient condition (e.g., FHR and uterine activity assessment q 15 minutes for women receiving oxytocin for labor induction or augmentation)
 Real-time or near real-time documentation of maternal-fetal assessments during labor, birth, and recovery
 Patient teaching about signs and symptoms, when to call after discharge from OB triage
 Monitor intake and output
 Provide skin-to-skin mother-baby care immediately after birth
 Assess vital signs as ordered or per protocol
 Provide thorough patient handoff
 Hand washing
 Breastfeeding within 1 hour after birth for women who are breastfeeding
 Recovery care consisting of 2 hours of every 15-minute maternal assessment and 2 hours of every 30-minute newborn assessments
 Notification of physician or nurse-midwife in a timely manner to attend the birth

Ueda et al., 2019 [34]	Japan	Observational study	To update the quality indicators developed for low-risk labor care in Japan	Pregnancy period	//	Primipara who has enrolled in a childbirth class about antenatal care and delivery by 36 weeks gestation Discussed a birth plan
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in 2012, mainly drawing on new or updated clinical practice guidelines and making the process clearly visible and assessable

Intrapartum period	//	<p>Initial assessment of labor risk at admission</p> <p>Assessment during the first stage of labor</p> <p>Assessment during the second stage of labor</p> <p>Women with a term, singleton infant in vertex position delivered by cesarean section</p> <p>Women with a term, singleton infant in vertex position delivered by vaginal delivery</p> <p>Women with a term, singleton infant in vertex position delivered by instrumental delivery</p> <p>Women with a term, singleton infant in vertex position delivered by labor induction</p> <p>Term infants with Apgar score less than 7 at five minutes after birth</p> <p>Living infant with birth injuries</p> <p>Respiratory support: resuscitation for asphyxiated term neonate with low oxygen concentrations and oxygen saturation measured by pulse oximetry immediately after birth</p> <p>Women with perineal tears and no perineorrhaphy</p> <p>Second-degree perineal laceration</p> <p>Third fourth-degree perineal laceration</p> <p>Postpartum hemorrhage of more than 500g within 2 hours of birth</p>
Within 1 week after childbirth	//	<p>Infant admission to pediatrics department within 1 week after birth (excludes those with congenital anomalies)</p> <p>Infants that were fed only breast milk at the time of discharge from the hospital</p> <p>Peer review of severe adverse events with medical staff</p> <p>The woman switched to receive care provided primarily by obstetricians from the midwifery ward</p> <p>Mother received cessation counseling intervention (including guidance on smoking cessation) if identified as either a tobacco user or passive smoker</p>
Within 1 month after birth	//	<p>Infant administered vitamin K three times by one month after birth</p> <p>Infants who had been fed only breast milk at the time of the health examination for children of 1 month of age</p>

New indicators	//	<p>Women receiving antibiotic prophylaxis during childbirth if maternal group B Streptococcus infections are identified at 33 to 37 weeks' gestation</p> <p>Infants are offered the necessary resuscitation in the first minutes after birth, evaluating their condition in line with the Japanese Neonatal Resuscitation Algorithm</p> <p>Women receiving uterotonics for the prevention of postpartum hemorrhage during the third stage of labor</p> <p>Women having early skin-to-skin contact with their babies if they wish, soon after birth in secure surroundings</p> <p>Women planning spontaneous vaginal birth in a midwifery ward and being able to follow that plan</p> <p>Infants are given formula supplementation without medical rationale from birth to discharge in term infants, even though the mother intended to breastfeed</p> <p>Women having a fall during their hospitalization</p> <p>Women and infants readmitted within 30 days of discharge</p> <p>Women being screened for antenatal or postnatal depression using a validated questionnaire</p> <p>Women and infants have complete medical records based on all quality indicators</p> <p>Women have a review of their childbirth experience and support from the midwives and other staff who assisted at the birth.</p> <p>Women have been encouraged and supported to adopt the most comfortable positions throughout the second stage of labor</p>
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