

Maternal Health Care: Policies, Technical Standards and Service Accessibility in Eight Countries in the Western Pacific Region



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and Service Accessibility in Eight Countries
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ABBREVIATIONS

ANC	antenatal care
ART	antiretroviral therapy
AVD	assisted vaginal delivery
BEmONC	basic emergency obstetric and newborn care
CEmONC	comprehensive emergency obstetric and newborn care
CHW	community health worker
CMA	Chinese Medical Association
CPR	contraceptive prevalence rate of modern methods
DHS	Demographic and Health Survey
EML	Essential Medicines List
EmONC	emergency obstetric and newborn care
FHR	fetal heart rate
IFA	iron and folic acid
IM	intramuscular
IUD	intrauterine device
IV	intravenous
LAM	lactational amenorrhoea method
LSIS	Lao Social Indicator Survey
MCH	maternal and child health
MCPC	Managing Complications in Pregnancy and Childbirth: A Guide for Midwives and Doctors
MDGs	Millennium Development Goals
MDSR	maternal death surveillance and response
MICS	Multiple Indicator Cluster Survey
MMEIG	Maternal Mortality Estimation Inter-Agency Group
MMR	maternal mortality ratio
MVA	manual vacuum aspiration
NGO	nongovernmental organization
NMR	neonatal mortality rate
PNC	postnatal care
PPH	postpartum haemorrhage
SBA	skilled birth attendant
SDGs	Sustainable Development Goals
TFR	total fertility rate
UHC	universal health coverage
UNICEF	United Nations Children's Fund
UNFPA	United Nations Population Fund
WHO	World Health Organization

FOREWORD

The World Health Organization (WHO) and Member States share a vision: ensuring health and well-being through universal access to quality maternal and newborn health-care services. With more women receiving antenatal and perinatal care at health facilities in the Western Pacific Region, it is time to focus more on quality of care. Many instances of death and morbidity can be prevented by evidence-based interventions at health facilities.

In its mandate to provide normative guidance to Member States, WHO has issued various evidence-based guidelines and recommendations on maternal health care. This report shows the dissemination and implementation status of these guidelines and recommendations in eight Member States that account for 96% of maternal deaths and 97% of neonatal deaths in the Region.

The experiences of these Member States point to a need to ensure that guidelines and protocols are informed by the most recent WHO recommendations and that protocols are fully applied in practice.

To reach the ambitious targets of the Sustainable Development Goals, WHO stands ready to work even harder with Member States to bring high-quality maternal care to all women in every part of the Region.

The findings of this report suggest that national guidelines and protocols often do not include the more recent WHO recommendations. Where the degree of congruity with WHO guidelines is high, the protocols are often not fully applied in practice.



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Thanks are also given to Ms Sheryl Keller, who carried out the initial review and drafted this report.

The contribution of the independent review group of their crucial insights, views, suggestions and experiences is also acknowledged.

EXECUTIVE SUMMARY

BACKGROUND

Target 5A of the United Nations Millennium Development Goals (MDGs) was to reduce maternal deaths by 75% between 1990 and 2015. The Maternal Mortality Estimation Inter-Agency Group comprising the World Health Organization (WHO), the United Nations Children's Fund (UNICEF), the United Nations Population Fund (UNFPA), the World Bank Group and the United Nations Population Division assessed the 95 countries with an MMR higher than 100 in 1990. The report notes Cambodia, the Lao People's Democratic Republic and Mongolia have achieved this target in the Western Pacific Region. However, maternal mortality remains higher than the Sustainable Development Goal (SDG) target in five countries in the Region.

WHO has developed evidence-based maternal health recommendations for reducing maternal mortality and morbidity. This review compares national guidelines and protocols, implementation and health system standards to WHO recommendations¹ for eight countries that account for 96% of maternal deaths in the Western Pacific Region.²

KEY FINDINGS

Comprehensive national antenatal, childbirth and postpartum guidelines were only found in Cambodia, Mongolia and Viet Nam. Only 13 of the 32 WHO routine antenatal care recommendations and four of the 12 WHO recommendations on management of antenatal complications were included in all eight countries. Low implementation often resulted from key medicines, supplies and commodities not being included in respective national essential medicines lists.

All eight countries have a policy encouraging delivery by skilled birth attendants (SBA) and in a health facility but include only eight of 26 WHO recommendations of care for normal childbirth in a national guideline or protocol. Unnecessary or potentially harmful practices not recommended by WHO remain in many national protocols.

All countries have guidelines for management of postpartum haemorrhage and for using magnesium sulfate as the first-line drug for management of severe pre-eclampsia, though content variation exists. Some countries still use amniotomy alone for induction and augmentation of labour, which WHO no longer recommends. Caesarean section can result in permanent complications, disability and death. Rates exceeding 10% at the population level are not associated with reduced maternal and newborn mortality. Thus, WHO recommends that caesarean sections be provided only to women who need them. Caesarean section rates for all births exceeded 10% in China, Mongolia, the Philippines and Viet Nam. The Philippines includes patient preference as an indication for caesarean section.

1. This review does not include WHO recommendations made after 2017.

2. Cambodia, China, the Lao People's Democratic Republic, Mongolia, Papua New Guinea, the Philippines, Solomon Islands and Viet Nam.

Only seven of 27 WHO postnatal care recommendations were fully included in guidelines in all eight countries. Six country guidelines include provisions that women after uncomplicated vaginal birth remain in the facility for at least 24 hours, and five countries include four postnatal contacts. Some national guidelines either differ from or partially include the WHO recommendations. Information on implementation of postnatal care interventions is limited. Most surveys only asked whether any postnatal care was received.

Initiating life-saving measures and stabilizing patients with obstetric complications at the primary care level before referral is critical. These measures require: appropriately trained personnel; clear policies that permit them to take the necessary actions; protocols that specify what those actions are; and availability of the relevant drugs, supplies, means of notifying the receiving facility and means of transportation. Fulfilment of these requirements in national guidelines widely varies country to country.

Implementation of national guidelines requires sufficient allocation, distribution and role delineation of the health workforce and facilities, financial risk protection for women, and functional monitoring and evaluation systems. Nationwide assessments to map emergency obstetric and neonatal care facilities and their functions have been conducted in Cambodia and the Lao People's Democratic Republic.

In Cambodia, through increasing production, employment, deployment, optimization of midwives and incentive schemes, health facility delivery increased fourfold in just a decade. In China, three national insurance schemes cover 95% of the population. In Mongolia and in remote parts of China, the state covers transportation and living costs in maternity waiting homes attached to the emergency obstetric and newborn care (EmONC) facility. In Solomon Islands, free maternal health services including EmONC resulted in most people not paying out-of-pocket costs for health services.

The main indicators used to monitor maternal health services in all countries are: proportion of women accessing antenatal care; skilled attendance at delivery and health facility delivery; and maternal mortality ratio. All countries conduct periodic surveys to measure coverage or utilization of maternal health services.

Cambodia, China, Mongolia and Viet Nam have systems in place for nationwide regular technical supervision. In Cambodia, regular technical meetings between health centre midwives and referral hospital staff are used for coordination and upgrading skills. In Viet Nam, staff from large national hospitals rotate at the provincial level to provide on-the-job technical training and support. All countries have maternal death surveillance and response (MDSR) systems in place, though quality varies and is often not satisfactory in achieving a reduction in future preventable maternal mortality.

CONCLUSIONS

Technical guidelines vary from almost none to comprehensive in these eight countries. Guidelines are often not updated for the recent WHO recommendations and, where present, are often not implemented. All countries conduct surveys to measure maternal health indicators. Most surveys collect information on antenatal but not childbirth or postnatal care services received. Optimization of trained health workers is good in most of the countries. Although national protocols may exist for administering life-saving drugs, the drugs are often not included in the Essential Medicines List at the primary level.

All countries are recommended to review the assessment framework in their country to identify the technical elements that differ from WHO recommendations in antenatal care, normal childbirth care, postnatal care and management of complications, then update the national guidelines and protocols to fill those gaps. All countries are also recommended to discontinue the interventions not recommended by WHO. Each country's specific strengths and WHO recommendations are outlined in Chapter V.

I. Progress of maternal health care

A. Overview of global situation

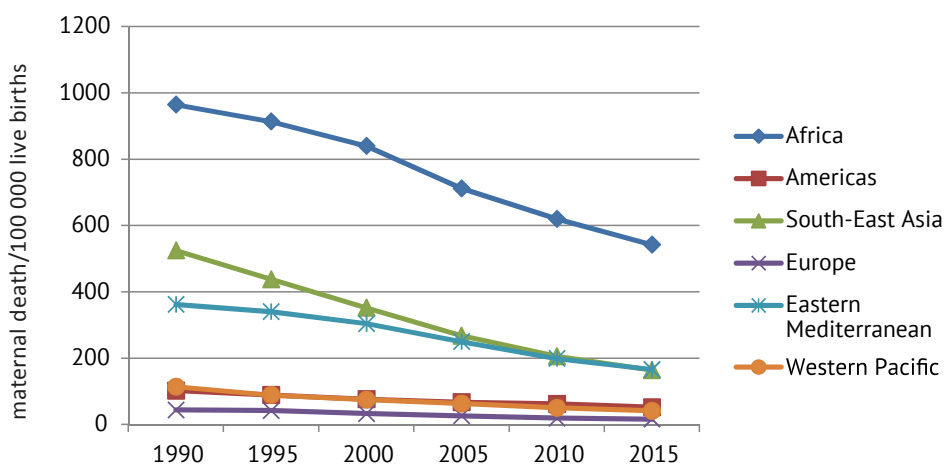
In 1990, about 1500 women worldwide died every day due to complications in pregnancy and childbirth; the maternal mortality ratio (MMR) was 385 per 100 000 live births. The United Nations Millennium Development Goal (MDG) target 5A was to reduce maternal deaths by 75% between 1990 and 2015. The Maternal Mortality Estimation Inter-Agency Group (MMEIG) comprising the World Health Organization (WHO), the United Nations Children’s Fund (UNICEF), the United Nations Population Fund (UNFPA), the World Bank Group and the United Nations Population Division (UNPD) assessed the 95 countries with an MMR higher than 100 in 1990. The report notes nine countries had achieved this by 2015: Bhutan, Cape Verde, Cambodia, the Islamic Republic of Iran, the Lao People’s Democratic Republic, Maldives, Mongolia, Rwanda and Timor-Leste. The global MMR fell by nearly 44% to an estimated 216 per 100 000 live births. However, progress has not been uniform and large disparities remain among and within countries. In 2015, about 830 women worldwide still died every day in pregnancy and childbirth.

Building on MDG target 5A, the Sustainable Development Goals (SDGs) aim at ending preventable maternal mortality through target 3.1 – to reduce the global MMR to less than 70 per 100 000 live births by 2030. To contribute to the SDGs as a road map, the *Global Strategy for Women’s, Children’s and Adolescents’ Health (2016–2030)* was launched by the United Nations Secretary-General. This Strategy contains three overarching objectives: Survive, Thrive and Transform. Survive, that is ending preventable death, is just a first step. Ensuring health and well-being through universal access to quality health-care services, including financial risk protection, is emphasized more than ever.

B. Overview of situation in the Western Pacific Region

In the Western Pacific Region, average MMR was already much lower than in the African, South-East Asia and Eastern Mediterranean regions in 1990 (Fig. 1).

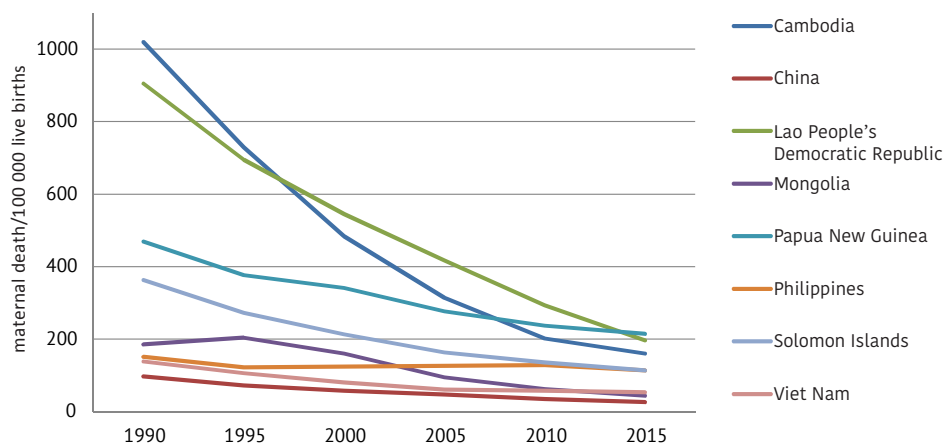
Fig. 1. Trends in estimates of MMR (maternal deaths per 100 000 live births), by WHO region, 1990–2015



Source: Trends in maternal mortality: 1990 to 2015: estimates by WHO, UNICEF, UNFPA, World Bank Group and UNPD.

In the Western Pacific, major progress in improving maternal mortality was noted in countries having achieved or made progress towards MDG target 5A, but some countries show insufficient progress or no progress. Maternal mortality remains high in five countries (Fig. 2). In 2015, 89% of pregnant women visited at least one antenatal clinic and coverage of birth at health facilities was 85%. With more women receiving antenatal and perinatal care, there is more focus on quality of care, which contributes to reduction of maternal and newborn morbidity and mortality.

Fig. 2. Trends in estimates of MMR (maternal deaths per 100 000 live births) in eight countries in the Western Pacific Region, 1990–2015



Source: Trends in maternal mortality: 1990 to 2015: estimates by WHO, UNICEF, UNFPA, World Bank Group and the United Nations Population Division.

C. WHO's evidence-based guidelines and recommendations

Maternal mortality and morbidity can be prevented by evidence-based interventions during pregnancy, childbirth and postpartum. In keeping with its mandate to provide normative guidance to Member States, WHO has issued various evidence-based guidelines and recommendations on maternal health care (Table 1).

Many of these documents have been monitored by a Guideline Review Committee ensuring that they are of high methodological quality and developed through a transparent, evidence-based decision-making process. The guideline development standard operating procedure consists of: (i) identification of priority questions and critical outcomes; (ii) retrieval of the evidence; (iii) assessment and synthesis of the evidence; (iv) formulation of recommendations, including research priorities; (v) planning for the dissemination; (vi) implementation, equity and ethical considerations; and (vii) impact evaluation and updating of the guideline.

Table 1. List of major WHO guidelines and recommendations on maternal health care

YEAR	TITLE
2000	Managing Complications in Pregnancy and Childbirth: A Guide for Midwives and Doctors (First Edition)
2006	Pregnancy, Childbirth, Postpartum and Newborn Care: A Guide for Essential Practice (Second Edition)
2009	Monitoring Emergency Obstetric Care: A Handbook
2011	Guideline: Vitamin A Supplementation in Pregnant Women WHO Recommendations for Induction of Labour WHO Recommendations for Prevention and Treatment of Pre-eclampsia and Eclampsia
2012	WHO Recommendations for the Prevention and Treatment of Postpartum Haemorrhage WHO Recommendations: Optimizing Health Worker Roles to Improve Access to Key Maternal and Newborn Health Interventions Through Task Shifting Guideline: Daily Iron and Folic Acid Supplementation in Pregnant Women
2013	WHO Recommendations on Postnatal Care of the Mother and Newborn
2014	Clinical Practice Handbook for Safe Abortion WHO Recommendations for Augmentation of Labour
2015	WHO Recommendations for Prevention and Treatment of Maternal Peripartum Infections WHO Recommendations on Interventions to Improve Preterm Birth Outcomes The Prevention and Elimination of Disrespect and Abuse During Facility-based Childbirth, WHO statement WHO Statement on Caesarean Section Rates Health Worker Roles in Providing Safe Abortion Care and Post-abortion Contraception Pregnancy, Childbirth, Postpartum and Newborn Care: A Guide for Essential Practice (Third Edition)
2016	WHO Recommendations on Antenatal Care for a Positive Pregnancy Experience Guideline: Updates on HIV and Infant Feeding: The Duration of Breastfeeding, and Support from Health Services to Improve Feeding Practices Among Mothers Living with HIV
2017	Managing Complications in Pregnancy and Childbirth: A Guide for Midwives and Doctors (Second Edition) WHO Recommendations on Tranexamic Acid for the Treatment of Postpartum Haemorrhage

II. About this report

A. Purpose

The purpose of this review is to monitor the dissemination and implementation status of WHO guidelines and recommendations, with particular reference to those monitored by the Guideline Review Committee, and to identify any gaps and actions needed to strengthen maternal health care in countries in the Western Pacific Region.

B. Selection of countries

Eight countries in the WHO Western Pacific Region were selected for this review: Cambodia, China, the Lao People's Democratic Republic, Mongolia, Papua New Guinea, the Philippines, Solomon Islands and Viet Nam. These eight countries are estimated to account for 96% of maternal deaths and stillbirths and 97% of neonatal deaths in the Region. Except Mongolia, they are priority countries for improving information on women's health, in line with recommendations from the Commission of Information and Accountability for Women's and Children's Health. They have also been prioritized to introduce Early Essential Newborn Care under the *Action Plan for Healthy Newborn Infants in the Western Pacific Region (2014–2020)*.

C. Overview of reviewed information

The following four categories of information were reviewed:

- A. Availability of national guidelines and protocols
- B. Technical soundness of content and implementation status of guidelines and protocols in comparison with WHO guidelines and recommendations on the following:
 1. routine antenatal care
 2. normal childbirth care
 3. routine postnatal care
 4. management of obstetrical complications, specifically:
 - i. complications during antenatal period
 - ii. eclampsia/severe pre-eclampsia
 - iii. induction and augmentation of labour
 - iv. caesarean section
 - v. postpartum haemorrhage
 - vi. prevention and treatment of infections
 - vii. initial stabilization and referral.
- C. Service accessibility and coverage in terms of geographic access, infrastructure, human resources for health and financial risk protection
- D. Monitoring and evaluation systems

D. Methodology

This assessment was conducted between 2015 and 2017 through a desk review of existing documents for each country supplied by its ministry of health, supplemented by online searches of the literature and various databases (Annex 1). These documents were reviewed with reference to the most recent WHO recommendations as of November 2017, taking into account any local factors that might explain inconsistencies. In some cases where national guidelines and protocols were lacking, training materials were reviewed.

In the case of Cambodia and the Philippines, secondary analyses were also performed on the most recent Demographic and Health Survey (DHS) datasets. A template for structured assessment framework was used to gather information for each country (Annex 2).

E. Validation process

The completed assessment frameworks were shared with the health ministry in each country through the corresponding WHO country office for validation, and then revised based on the feedback. The final completed frameworks for the eight countries are not attached in this report; however, the final framework for each country has been shared with the respective health ministry to be referred to for their future policy development, including updates of their guidelines and protocols.

III. Status of key indicators in the eight countries

The eight countries included in this report vary in terms of economic characteristics and status of key indicators of maternal and newborn health – MMR, stillbirth rate per 1000 live births, neonatal mortality rate (NMR) per 1000 live births, more than four antenatal care (ANC) visits (ANC 4+), health facility delivery rate, contraceptive prevalence rate of modern methods (CPR) and total fertility rate (TFR). Table 2 summarizes the status of these indicators and each country's overall achievement towards MDG target 5A based on the MMEIG.

Table 2. Economic features and maternal health key indicators in eight countries

Country	Income level ^a	Urban population ^a (%)	MMR ^b		Stillbirth rate ^c		NMR		ANC 4+ ^f (%)	Health facility delivery rate ^f (%)	CPR ^f (%)	TFR ^a	Achievement of MDG target 5A ^b
			1990	2015	2000	2015	1990 ^d	2015 ^e					
KHM	Lower middle	20	1020	161	20.8	11.9	40	18	75.6	83.2	38.8	2.6	Achieved
CHN	Upper middle	56	97	27	14.5	7.2	30	5.4	95.6	99.5	84.0 ⁱ	1.6	Not assessed ^m
LAO	Lower middle	39	905	197	31.6	23.7	54	29	50.4	46.6	42.1 ^j	2.9	Achieved
MNG	Lower middle	72	186	44	12.4	7.3	30	10.2	89.6 ^g	99.8	54.0	2.6	Achieved
PNG	Lower middle	13	470	215	18.8	15.9	31	24	39.0 ^h	43.0	24.3 ^k	3.7	Insufficient progress
PHL	Lower middle	44	152	114	14.3	10.9	20	13	84.3	61.1	37.4	2.9	No progress
SLB	Lower middle	22	364	114	19.7	17.6	15	9	68.9	84.5	17.6	3.9	Making progress
VNM	Lower middle	34	139	54	15.0	10.1	23	12	73.7	93.6	65.0 ^l	2.0	Making progress

KHM: Cambodia; CHN: China; LAO: Lao People's Democratic Republic; MNG: Mongolia; PHL: Philippines; PNG: Papua New Guinea; SLB: Solomon Islands; VNM: Viet Nam

Source: WHO

- World Bank Open Data (accessed 23 May 2017)
- Trends in maternal mortality 1990 to 2015: estimates by WHO, UNICEF, UNFPA, the World Bank and the United Nations Population Division (WHO, 2015)
- Blencowe H, Cousens S, Jassir FB, et al. for The Lancet Stillbirth Epidemiology Investigator Group. National, regional, and worldwide estimates of stillbirth rates in 2015, with trends from 2000: a systematic analysis. *Lancet Glob Health* 2016
- Levels & Trends in Child Mortality. Report 2017. UNICEF, WHO, World Bank Group, United Nations.
- Demographic and Health Surveys and Multiple Indicator Cluster Surveys, 2013–2015. For the Lao People's Democratic Republic and Papua New Guinea, where a survey was not conducted in the last four years, estimates are from Level and trends in child mortality – Report 2016 (UNICEF, 2017). For China and Mongolia, estimates are for 2016 from national surveillance systems.
- 2014 Cambodia DHS; China 2013 Maternal and Child Health Program Service Statistics; Lao People's Democratic Republic National Health Statistics Report FY 2015–2016; Mongolia Health Indicators 2016; Papua New Guinea National Health Information System (reported in the 2014 Annual Sector Performance Review); 2013 Philippine DHS; 2015 Solomon Island DHS; 2014 Viet Nam Multiple Indicator Cluster Survey
- Mongolia promotes ANC 6+. Its coverage was 83.9% in 2016.
- For Papua New Guinea, only ANC 1 data are currently available. ANC 4 was estimated based on the ratio between ANC 1 and ANC 4 demonstrated in the 2006 DHS, the last population-based survey.
- China National Family Planning and Reproductive Health Survey 2006
- Lao People's Democratic Republic Social Indicator Survey 2012
- Papua New Guinea Demographic and Health Survey 2006
- Viet Nam Annual Population Change Survey 2015
- Progress towards MDG 5A was assessed for the 95 countries with an MMR higher than 100 in 1990.

Economic characteristics

All the included countries are lower-middle-income countries except for China, which is considered an upper-middle-income country. The percentage of urban population ranges from 13% in Papua New Guinea to 72% in Mongolia.

MMR, stillbirth rate and NMR

MMR in 2015 ranged from 215 in Papua New Guinea to 27 in China, with the Lao People's Democratic Republic (197) and Cambodia (161) on the high end of the range and Mongolia (44) and Viet Nam (54) on the low end. The highest stillbirth rate and NMR in 2015 are estimated in the Lao People's Democratic Republic, with Cambodia next. China is on the lowest end.

ANC 4+ and health facility delivery rate

In five countries, ANC 4+ and health facility delivery rates are relatively correlated with one another. China and Mongolia have high values for both indicators. Cambodia has similar values for both indicators, showing a dramatic increase for the health facility delivery rate from only 21.5% in 2005 to 83.2% in 2014. Rates for both indicators are low in the Lao People's Democratic Republic and Papua New Guinea.

In comparison, three countries did not show a strong correlation between health facility delivery rate and ANC 4+. In the Philippines, the health facility delivery rate is 20% lower than the value for ANC 4+; the low health facility delivery rate of 61.1% is an improvement from the rate a decade earlier, when it was 37.9%. Among women who did not deliver in a health facility, 91.1% received ANC at either *barangay* (village or neighbourhood) health stations or urban health centres where delivery service is often not provided. In contrast to the Philippines, Solomon Islands and Viet Nam had a 15–20% higher health facility delivery rate than its rate for ANC 4. The percentage of women receiving at least one ANC is 94% in Solomon Islands and 96% in Viet Nam.

Postnatal care (PNC)

The table does not include any information on PNC as there is a general scarcity of information on this indicator. No data on PNC are available from Papua New Guinea; data are limited in the Lao People's Democratic Republic, the Philippines and Viet Nam. Solomon Islands tracks the rate for two contacts for PNC (PNC 2); Cambodia, China and Mongolia have data available for four contacts for PNC (PNC 4), which is what WHO recommends.

CPR and TFR

Papua New Guinea and Solomon Islands have the lowest CPR (24.3% and 17.6%, respectively) and highest TFR (3.7 and 3.9, respectively); China and Viet Nam had the highest CPR (84.9% and 65.0%, respectively) and the lowest TFR (1.6 and 2.0, respectively).

Achievement of MDG target 5A

Three countries – Cambodia, the Lao People’s Democratic Republic and Mongolia – achieved MDG target 5A according to the estimation by MMEIG. Solomon Islands and Viet Nam are making progress, while the Philippines made no progress and Papua New Guinea showed insufficient progress.

IV. Results of review

A. Availability of national guidelines and protocols

The availability of national guidelines and protocols ranged from comprehensive to none. Cambodia, Mongolia and Viet Nam have comprehensive national protocols for maternal health care that encompass routine antenatal, intrapartum and postnatal care, as well as common complications. Papua New Guinea has guidelines for management of obstetric and gynaecologic complications with limited information on antenatal, intrapartum and postnatal care. The Lao People's Democratic Republic and the Philippines do not have one set of comprehensive national guidelines and protocols; instead, information can be found in many different documents. As of November 2017, Solomon Islands had submitted for official approval its first national protocol for maternal health care – the *National Standard Treatment Manual for Obstetrics and Gynecology and Emergency Obstetric Care*. This is primarily for hospital staff. Guidelines for ANC and PNC for all health staff are in early development stage in Solomon Islands.

Guidelines and protocols for ANC, intrapartum care, PNC and management of obstetric complications are essential for ensuring the consistent delivery of quality maternal health services. Having one comprehensive document that covers all these aspects is ideal for health-care providers and programme managers to access necessary information efficiently in the busy clinical setting.

All referred national protocols, guidelines and any other relevant documents in this review are listed by country in Annex 1.

B. Technical content and implementation status

This section gives an overview of the technical soundness of the content of the national guidelines and protocols in each country in comparison with WHO guidelines and recommendations, as well as their implementation status.

B1. Routine antenatal care (ANC)

WHO sees the routine ANC as a platform for important health-care functions, including health promotion, screening and diagnosis, and disease prevention. ANC is the opportunity to communicate with and support women, families and communities about physiological, biomedical, behavioural and sociocultural issues, and to provide effective support to women in a respectful way.

National guidelines and protocols were reviewed to determine whether they included 32 elements of routine ANC recommended by WHO and if so, whether the protocol was consistent with WHO guidelines. Table 3 summarizes these elements by country.

In November 2016, WHO proposed a minimum of eight ANC contacts; however, as no country had applied this new model as of November 2017, the four-visit minimum was utilized in this review.

Table 3. Elements of routine ANC in guidelines and protocols in eight countries

Y: Yes – fully includes element recommended by WHO *or* excludes element not recommended by WHO. **P:** Partial – includes some aspects of the element recommended by WHO *or* includes element but protocol differs from WHO guidelines. **N:** No – excludes element recommended by WHO *or* includes element not recommended by WHO.

ELEMENT OF CARE	KHM	CHN	LAO	MNG	PHL	PNG	SLB	VNM
Mentioned in all countries								
Minimum four ANC visits and first ANC visit at first trimester	Y	Y	Y	Y ^h	Y	Y	Y	Y
History taken of past pregnancies	Y	Y	Y	Y	Y	Y	Y	Y
Measurement of blood pressure	Y	Y	Y	Y	Y	Y	Y	Y
Measurement of haemoglobin	Y	Y	Y	Y	Y	Y	Y	Y
Urine test for protein	Y	Y	Y	Y	Y	Y	Y	Y
Abdominal palpation	Y	Y	Y	Y	Y	Y	Y	Y
Discussed birth planning	Y	Y	Y	Y	Y	Y	Y	Y
Daily IFA supplementation	Y	Y	Y	Y	Y	Y	Y	Y
Diagnosis and treatment of vaginal discharge ^a	Y	Y	P ^g	Y	Y	Y	Y	Y
Counselling on nutrition	Y	Y	Y	Y	Y	Y	Y	Y
Counselling on breastfeeding and infant/young child feeding	Y	Y	Y	Y	Y	Y	Y	Y
Counselling on danger signs during pregnancy	Y	Y	Y	Y	Y	Y	Y	Y
Counselling on postpartum family planning	Y	Y	Y	Y	Y	Y	Y	Y
Mentioned by half or more countries								
Auscultation of fetal heart rate (FHR)	Y	Y	Y	Y	Y	N	Y	Y
Syphilis screening and treatment	Y	Y	Y	Y	Y	Y	P ⁱ	Y
Advice against tobacco, alcohol and other substance use	Y	Y	Y	Y	Y	N	Y	Y
Vitamin A supplementation is not routine but only if vitamin A deficiency is a severe public health problem	Y	Y	Y	N	Y	Y	Y	Y
Lifelong triple antiretroviral therapy initiated for all HIV-positive pregnant women	Y	P ^e	Y	Y	Y	Y	P ^k	Y
Tetanus toxoid immunization	Y	N ^f	Y	N	Y	Y	Y	Y
Malaria test, prophylaxis and ITNs in endemic area	P	Not applicable	Y	Not applicable	Y	P	P	Y
HIV test and counselling	Y	Y	N	Y	Y	Y	N	Y
Mebendazole 1 dose in 2nd–3rd trimester	Y	N	Y	N	Y	P ⁱ	Y	Y

Table 3. (continued)

ELEMENT OF CARE	KHM	CHN	LAO	MNG	PHL	PNG	SLB	VNM
Promote woman-held case notes	N	Y	Y	N	N	Y	Y	Y
Any systematic screening for active tuberculosis	Y	Y	Y	N	N	N	Y	N
Clinical enquiry about the possibility of intermittent partner violence ^b	N	P	P	P	P	Y	N	Y
Mentioned by less than half of countries								
One ultrasound scan before 24 weeks of gestation	N	Y	N	N	N	Y	N	Y
Measurement of glycaemia ^c	N	Y	N	N	P	P	P	Y
Daily calcium supplementation for populations with low dietary calcium intake	N	Y	N	N	Y	N	N	N
Urine test for asymptomatic bacteriuria and treatment	N	N	N	N	P	N	P	N
Any instruction for common physiological symptoms ^d	N	N	N	N	N	N	Y	N
Low-dose acetylsalicylic acid initiated before 20 weeks of pregnancy in women at high risk of developing pre-eclampsia	N	Y	N	N	N	N	N	N
Pre-exposure prophylaxis for HIV prevention for women at substantial risk of HIV infection	N	N	N	N	N	N	N	N

ANC: antenatal care; ART: antiretroviral; BP: blood pressure; CHN: China; FHR: fetal heart rate; IFA: iron and folic acid; ITN: insecticide-treated bed nets; KHM: Cambodia; LAO: Lao People's Democratic Republic; MNG: Mongolia; PHL: Philippines; PNG: Papua New Guinea; SLB: Solomon Islands; TB: tuberculosis; VNM: Viet Nam

- Bacterial vaginitis, candida vaginitis, *Neisseria gonorrhoeae* and chlamydia
- Minimum requirements are: a protocol/standard operating procedure; training on how to ask about interpersonal violence and on how to provide the minimum response or beyond; private setting; confidentiality ensured; system for referral in place; and time to allow for appropriate disclosure
- This is not a recommendation on routine screening for hyperglycaemia in pregnancy but hyperglycaemia first detected at any time during pregnancy should be classified as either gestational diabetes mellitus or diabetes mellitus in pregnancy, according to WHO criteria
- Morning sickness, heartburn, leg cramps, low back and pelvic pain, constipation and varicose veins
- The protocol in China is AZT/3TC or FTC + LPV/R, or if there are side effects, use of TDF/3TC or FTC. It differs from WHO recommendation.
- In 2012 WHO confirmed elimination of neonatal tetanus in China
- Not as part of ANC but in the 2015 National Treatment Guidelines for the general population
- Mongolia promotes minimum of six visits
- Not all ANC clients, only if anaemic
- Mentioned in a newly launched National Guidelines for Diagnosis and Treatment of Sexually Transmitted Infections (2017); however, it is not in the ANC guideline.
- Mentioned in a newly launched National Consolidated Guidelines on the Use of HAART for Treating and Preventing HIV Infections in Adults, Adolescents and Children (2017); however, it is not in the ANC guideline.

Source: WHO

Out of 32 elements of routine ANC, 13 elements which were recommended by WHO before 2011 were fully included in some guidelines or protocols in all eight countries. In contrast, the seven elements that were mentioned by less than half of the countries were made in 2011 or after. A discrepancy between disease-specific guidelines and ANC protocols were observed in some countries. Six out of eight countries included routine provider-initiated HIV testing and counselling in their ANC guidelines. All countries have a lifelong therapy policy for management of HIV in pregnancy.

Table 4 shows the percentage of ANC patients in each country's nationwide population-based survey that received specific interventions. All these are included in the national guidelines and protocols in all countries. One of the reasons for low implementation is lack of means to provide these interventions. In Cambodia, urine dipsticks, the rapid syphilis test and haemoglobin test materials are not included in the Essential Medicines List (EML) at the primary health care facility level. Rapid tests for syphilis and HIV, urine dipsticks and haemoglobin test materials are not included in the EML at the primary health care facility level in Papua New Guinea. In the Lao People's Democratic Republic, a new EML is being drafted to include urine dipsticks, the haemoglobin test and rapid syphilis test. Haemoglobin test equipment and peripherals are not on the EML in Solomon Islands.

Table 4. Percentage of ANC patients that received interventions

Intervention	Country							
	KHM	CHN	LAO	MNG	PHL	PNG	SLB	VNM
Blood pressure check	96.1%	ND ^b	46.9%	97.0%	98.1%	ND	97.7%	82.3%
Urine sample taken	48.9%	ND ^b	22.6%	97.0%	65.1%	ND	93.7%	72.0%
Blood sample taken	77.1%	ND ^b	23.2%	97.0%	59.0%	ND	85.4%	61.8%
Received IFA	95.6%	ND ^b	52%	71.0%	92.1%	ND	88.1%	ND
Received mebendazole/ albendazole	72.2%	ND ^b	ND	Not applicable	4.7%	ND	49.1%	ND
Informed/counselled about potential danger signs	82.1%	ND ^b	39.0% ^c	ND	97.1%	ND	80.6%	ND
Received syphilis testing ^a	59.4 %	96.4%	ND	97.1%	ND	44.2%	38.6%	15.9% ^e
Received HIV testing and counselling ^a	86.1%	98.2%	ND	95.0%	<2.0% ^d	55.6%	16.1%	70.8%

CHN: China; KHM: Cambodia; IFA: iron and folic acid; LAO: Lao People's Democratic Republic; MNG: Mongolia; ND: no data; PHL: Philippines; PNG: Papua New Guinea; SLB: Solomon Islands; VNM: Viet Nam

- Country-specific Global AIDS Response Progress Reports.
- Pregnant women do receive these interventions at ANC but no national data are available.
- The percentage reporting counselling about danger signs is from the World Bank Survey, which was limited to only six provinces as it is not available in the Lao Social Indicator Survey (LSIS) dataset. All other figures are from the LSIS 2012.
- 2.0% of women aged 15–49 have ever been tested; the percentage tested during pregnancy is not available.
- Health management information system 2016.

Sources: Cambodia: DHS 2014; Lao People's Democratic Republic: Lao Social Indicator Survey 2012 and World Bank Maternal and Child Health Survey 2013; Mongolia: Multiple Indicator Cluster Survey 2010 and UNICEF Situation Analysis of Children and Women in Mongolia. 2009; Philippines: DHS 2013; Solomon Islands: Demographic and Health Survey 2015; Viet Nam: Multiple Indicator Cluster Survey 2014

B2. Normal childbirth care

WHO issued two publications, *Managing Complications in Pregnancy and Childbirth: A Guide for Midwives and Doctors* in 2000 and *Pregnancy, Childbirth, Postpartum and Newborn Care: A Guide for Essential Practice* in 2006, which contain guidelines for management of a normal childbirth. Some of the elements in these documents have been revised or newly added in their updated version in 2017 and 2015, respectively.

Skilled birth attendant (SBA) and health facility delivery

All of the countries reviewed have an explicit policy of encouraging delivery by SBA and in a health facility. Each country has tried to implement these policies through various approaches. For example, Cambodia issued a ministerial directive on a midwife incentive scheme funded by the Government to increase health facility delivery with an SBA. This is a cash incentive whereby a health centre receives US\$ 15 and a referral hospital receives US\$ 10 per one live birth assisted by an SBA. In the Philippines, in addition to Administrative Order 2008–0029 articulating policies for delivery by an SBA in a health facility, some local government units have issued local ordinances banning home births; some have imposed fines on women delivering at home, or on the birth attendant, or both. Mongolia and China put special emphasis on delivery in emergency obstetric and newborn care (EmONC) facilities. Pregnant women living in rural areas are referred at about eight months gestation to maternity homes attached to provincial hospitals in Mongolia, or the county hospital in China, with costs paid for by the state. The ANC and PNC manual in the Lao People’s Democratic Republic advises practitioners to respect a woman’s choice of home delivery with an SBA as long as there are no contraindications or complications; however, health facility is listed as a preferred choice of birth place and mobilization for health facility delivery is part of the core package in the strategy and planning framework for the integrated package of maternal child care services (2009).

In addition to an SBA and health facility delivery, another 26 elements of care for normal childbirth in WHO guidelines and recommendations were reviewed to determine whether they are included in any guideline or protocol in each country, and, if included, whether the protocol is consistent with that of WHO. In the case of countries without guidelines, training materials and checklists were reviewed (Table 5).

Table 5. Elements of care during normal childbirth in guidelines and protocols in eight countries

Y: Yes – fully includes element recommended by WHO or excludes element not recommended by WHO. **P:** Partial – includes some aspects of the element recommended by WHO or includes element but protocol differs from WHO guidelines. **N:** No – excludes element recommended by WHO or includes element not recommended by WHO.

Element of care	KHM	CHN	LAO	MNG	PHL	PNG	SLB	VNM
Use of partograph starting from active labour phase	Y	Y	Y	Y	Y	Y	Y	Y
Monitor contractions every 30 minutes in active labour	Y	Y	Y	Y	Y	N ^d	Y	Y ^h
Monitor FHR every 30 minutes in active labour	Y	Y	Y	Y	Y	N ^f	Y	Y ^h
Vaginal exam every 4 hours	Y	Y	Y	Y	Y	Y	Y	Y ⁱ
Monitor status of membranes and amniotic fluid	Y	Y	Y	Y	Y	Y	Y	Y
Monitor BP at least every 4 hours	Y	Y	Y	Y	Y	N ^d	Y	Y ^j
Monitor temperature at least every 2 hours	P ^a	P ^a	Y	Y	Y	N ^d	P ^a	P ^a
Encourage taking oral fluid and food during labour as desired	Y	Y	N ^d	Y	Y	N ^d	Y	P ^k
Continuous chosen birth companion during labour	Y	Y	Y	Y	Y	N ^d	Y	N ^d
Encourage ambulation during the first stage of labour	Y	Y	N ^d	Y	Y	N ^d	Y	N ^d
Allow the woman to adopt any position she prefers at each stage of labour	Y ^b	Y	Y	Y	Y	N ^d	Y	N ^l
Ensure the woman is never left unattended	Y	Y	N ^d	Y	Y	Y	N	N ^d
Controlled delivery of the head	Y	Y	Y	Y	Y	Y	Y	Y
Check for compressed cord after head delivered	Y	Y	Y	Y	Y	Y	Y	Y
Routine oxytocin 10 units IM immediately after delivery	Y	Y	Y	Y	Y	Y	N ^g	Y
No use of enema in labour	Y	Y	Y	N	Y	Y	Y	N ^m
No routine artificial rupture of membrane	Y	Y	Y	Y	Y	N	Y	N ^d
Episiotomy only if indicated	Y	Y	Y	Y	Y	Y	N ^d	Y
Cord clamping after cord pulsation has stopped	Y	Y	N ^e	Y	Y	Y	Y	P ⁿ
Controlled cord traction in third stage of labour is optional	N	Y Not ministry but CMA	N	N	N	N	N	Y

Table 5. (continued)

Element of care	KHM	CHN	LAO	MNG	PHL	PNG	SLB	VNM
Routine uterine tone assessment in third stage of labour to detect uterine atony	Y	Y	Y	Y	Y	Y	Y	Y
No continuous uterine massage in third stage of labour in absence of PPH in women who have received oxytocin	N	Y Not ministry but CMA	N	N	N	N	N	N
Inspection of placenta for completeness, cervix and perineum for tears	Y	Y	Y	Y	Y	Y	Y	Y
Provider-initiated voluntary HIV test done during labour if HIV status not already known	Y	Y	N	Y	N	N	N	N ^d
Any respectful care components during delivery	Y ^c	Y	Y	Y	Y	Y	N ^d	Y

BP: blood pressure; CHN: China; CMA: Chinese Medical Association; FHR: fetal heart rate; IM: intramuscular; KHM: Cambodia; LAO: Lao People's Democratic Republic; MNG: Mongolia; PHL: Philippines; PNG: Papua New Guinea; PPH: postpartum haemorrhage; SLB: Solomon Islands; VNM: Viet Nam

- a. Every four hours.
- b. Document especially mentions not to let the woman lie flat, in addition to helping her into a comfortable position of her choice, i.e. sitting upright, squatting, laying on side.
- c. Explain all procedures, seek permission, discuss findings with the women. Keep the woman informed about the progress of labour. Praise, encourage and reassure the woman that things are going well. Respect privacy.
- d. Not specified in the reviewed documents.
- e. Clamp the cord close to the perineum using sponge forceps within one minute of delivery.
- f. Every 30–60 minutes.
- g. Only for high-risk women in the reviewed documents. Routine use of oxytocin for all women is being introduced through EmONC coaching at a National Referral Hospital and will be included in new national guidelines currently being drafting.
- h. If obstetric monitor is available, continuous monitoring is recommended for high-risk pregnancies.
- i. Updated in 2016 to align with WHO recommendation. Before 2016, it was described as “every 4 hours in latent phase but every 2 hours in active phase”.
- j. Every hour.
- k. Encouraging taking oral fluid is mentioned but food is not mentioned.
- l. The parturient lies on her back on the delivery table, in a semi-sitting position. Her head is high, arms hold the two sides of the table, knees are flexed, legs are widely separated, buttocks are at the end of the table, legs are then put onto the two pegs of the table.
- m. Pregnant woman should try defecating or have an enema at the beginning of labour.
- n. Guidelines state it is “not necessary to clamp immediately” but does not specify to wait until pulsation stops.

Source: WHO

The following seven elements were included in all countries' documents:

- use of the partograph
- vaginal exam every four hours
- monitoring status of the membranes and appearance of amniotic fluid
- controlled delivery of the head, and checking for cord compression after head delivered
- abdominal palpation in the third stage to detect uterine tone
- inspection of placenta for completeness
- inspection of cervix and perineum for tears
- augmentation of labour only when medically indicated.

Routine administration of oxytocin in the third stage of labour will be added to the above list, as Solomon Islands – the only country limiting oxytocin only for high-risk women when this review was conducted – has started introducing this element into EmONC coaching in 2016 and plans to include it in the draft national guidelines in 2017. With the exception of being unspecified in the Papua New Guinea protocol, which does not provide details specific to normal childbirth, all countries' protocols include monitoring of contractions, maternal vital signs and fetal heart rate.

Recommendations for active management of third stage of labour

The revised recommendations for individual components of active management of the third stage of labour have not been fully reflected in national guidelines. Although early cord clamping is generally contraindicated, protocol in the Lao People's Democratic Republic mentions clamping the cord within one minute of delivery. Continuous uterine massage is not recommended for women who have received prophylactic oxytocin because it causes maternal discomfort and may not reduce blood loss. Controlled cord traction is now regarded as optional in settings where SBAs are available. In all countries but China, these latter two components are included in guidelines or protocols. In China, the recently issued Chinese Medical Association (CMA) protocol reflects the latest WHO recommendations.

Recommended practices for prevention of prolonged labour

The three recommended practices for prevention of prolonged labour are: encouraging taking oral fluid and food; continuous chosen birth companionship; and ambulation. All three are included in protocols for five countries – Cambodia, China, Mongolia, the Philippines and Solomon Islands. Encouraging taking of oral fluid and food, and ambulation during the first stage of labour are not fully mentioned in the protocols for the Lao People's Democratic Republic and Viet Nam. None of the three practices are mentioned in the protocol for Papua New Guinea, which does not provide details specific to normal childbirth.

Unnecessary or potentially harmful practices

Unnecessary or potentially harmful practices still remain in the national protocol in some countries. Enemas are still part of routine childbirth procedures in both Mongolia and Viet Nam, although they have long been discouraged by WHO. Routine artificial rupture of membranes, which is likewise discouraged due to risk of infection and cord prolapse, remains part of the protocol in Papua New Guinea, excepting women who are known to be HIV-positive. In Viet Nam, women are required to keep the lithotomy position for childbirth. Although the wording is unclear, routine episiotomy may be part of the Viet Nam protocol as well. Guidelines and protocols in Viet Nam tend to recommend more frequent maternal monitoring than the WHO recommendation, such as hourly blood pressure monitoring. On the other hand, the frequency of monitoring temperature is less than the WHO recommendation in five countries, including Viet Nam.

Compared to evaluating ANC, a systematic review of actual childbirth practices is difficult. Various reports from reviewed countries indicate low compliance in terms of respectful care, not allowing birth companions and choice of delivery position, conducting unnecessary episiotomy, artificial rupture of membranes, and augmentation of labour.³

B3. Routine postnatal care (PNC)

WHO recommends timing, number, place and content of postnatal care for all mothers and babies during the first six weeks after childbirth. The recommended elements of PNC are detailed in the WHO document *Pregnancy, Childbirth, Postpartum and Newborn Care: A Guide for Essential Practice*. Some of the elements in this guide were revised or new recommendations were added in the *WHO Recommendations on Postnatal Care of the Mother and Newborn* in 2013. They were reflected in the revised third edition of the guide in 2015. A total of 27 elements for PNC listed in the above WHO documents were reviewed to determine whether they are included in any guideline or protocol for each country, and, if included, whether the protocol is consistent with WHO guidelines (Table 6).

3. Including China, Mongolia, Papua New Guinea, the Philippines and Solomon Islands.

Table 6. Elements of routine PNC in guidelines and protocols in eight countries

Y: Yes – fully includes element recommended by WHO or excludes element not recommended by WHO. **P:** Partial – includes some aspects of the element recommended by WHO or includes element but protocol differs from WHO guidelines. **N:** No – excludes element recommended by WHO or includes element not recommended by WHO

ELEMENT OF CARE	KHM	CHN	LAO	MNG	PHL	PNG	SLB	VNM
<i>General policy of PNC</i>								
Mother and newborn stay at least 24 hours after birth in a health facility	Y	Y	Y	Y	Y	Y ^v	N	N
Minimum of 4 postnatal contacts for both mother and newborn ^a	Y	P ⁱ	N ^l	Y	Y	Y	N	N ^{aa}
BP measured at least twice in the first 24 hours ^b	P ^c	Y	N ^m	Y	Y	Y	Y	Y
<i>Element of care for mother at the first postnatal contact</i>								
Vaginal bleeding	Y	Y	Y	Y	Y	Y	Y	Y
Abdominal palpation	Y	Y	Y	Y	Y	Y	Y	Y
Anaemia	Y	Y	Y	Y	Y	Y	Y	Y
Perineal wound healing	Y	Y	Y	Y	Y	Y	Y	Y
Progress of breastfeeding	Y	Y	Y	Y	Y	Y	Y	Y
Breast tenderness, nipple cracking	Y	Y	Y	Y	Y	Y	Y	Y
Counselling on nutrition and breastfeeding	Y	Y	Y	Y	Y	Y	Y	Y
Temperature, pulse and BP	Y	Y	P ⁿ	Y	Y	Y	Y	Y
Counselling on family planning and provision of methods	Y	Y	P ^o	Y	Y ^q	Y ^w	Y	P ^{ab}
Urinary function	Y	Y	Y	Y	Y	N	Y	Y
Counselling on postpartum danger signs	Y	Y	Y	Y	N	Y	Y	Y
Counselling on hygiene	Y	Y	Y	Y	Y	N	Y	Y
Counselling on mobility, rest and resumption of sexual relations	Y	Y	Y	Y	Y	N	Y	Y
Emotional well-being	Y	Y	N	Y	N ^r	Y	Y	Y
Preventive antibiotics only for women with 3rd–4th degree perineal tears	P ^d	Y	N	Y	Y	Y	Y	N

Table 6. (continued)

ELEMENT OF CARE	KHM	CHN	LAO	MNG	PHL	PNG	SLB	VNM
No routine vitamin A capsule	Y	Y	Y	Y	N ^s	Y	Y	N ^{ac}
90 days of iron/folate	P ^e	P ⁱ	Y	Y	P ^t	P ^x	N	Y
Headache	P ^f	Y	N	Y	N	N	N	Y
Bowel function	N	Y	N	Y	N	N	N	Y
Counselling on use of ITNs (malaria-endemic areas only)	Y	Not applicable	Y	Not applicable	N	P ^y	N	N
Mebendazole if none received in past 6 months	Y ^g	N	Y	Not applicable	N	N	N	N
Tetanus toxoid if due	Y	N	N	N	Y	N	N	Y
ART prophylaxis for infants born to HIV-positive women	Y	Y	Y	Y	Y	Y	Y	Y
Any infant feeding policy for HIV+ mother	Y ^h	Y ^k	Y ^p	Y ^k	P ^u	Y ^z	N	Y ^{ad}

ANC: antenatal care; ART: antiretroviral treatment; BP: blood pressure; CHN: China; ITN: insecticide-treated bed nets; KHM: Cambodia; LAO: Lao People's Democratic Republic; MNG: Mongolia; PNC: postnatal care; PHL: Philippines; PNG: Papua New Guinea; SLB: Solomon Islands; VNM: Viet Nam

- a. First: within 24 hours / Second: day 2–3 (48–72 hours) / Third: between days 7–14 / Fourth: 6 weeks after birth
- b. First: immediately after delivery / Second: within 6 hours after delivery if the first BP was normal
- c. First: within 2 hours after delivery / Second: before discharge
- d. Antibiotics if signs of perineal infection. Degree of perineal tears is not specifically mentioned.
- e. For 42 days.
- f. If diastolic BP is more than 90 mmHg.
- g. To all postpartum women. No mention of omitting if received in prior 6 months.
- h. Encourage exclusive breastfeeding as the primary option
- i. First: within 24 hours / Second: day 3–7 / Third: day 28 / Fourth: 6 weeks after
- j. 90 days folate is mentioned but iron is not mentioned
- k. Mothers should be advised to give formula feeding and avoid breastfeeding
- l. Three checks: First check is immediately after delivery, second check is within 7 days of delivery, and third check is at 6 weeks.
- m. First vital monitoring is for the first 2 hours after delivery. The frequency is not specified. Next monitoring is next PNC check, i.e. sometime in the first 7 days.
- n. BP and temperature are mentioned but not pulse rate.
- o. Information and counselling on family planning is mentioned. However, methods for family planning are not mentioned.
- p. If breastfeeding is selected as infant feeding option, breastfeeding for six months is recommended. Ensure that the mother continues to take and have good adherence to the ART during the whole duration of breastfeeding.
- q. Lactational amenorrhoea method (LAM), barrier methods, intrauterine device (IUD) and sterilization are best options for lactating mothers. Thus, it is mentioned in the document; however, IUD is only available in limited locations.
- r. No specific instruction other than asking: "How are you feeling?"
- s. Give one capsule Vitamin A if none was given postpartum to protect the baby from nutritional blindness and infections
- t. For 2 months (or more if mother is pale).
- u. The decision is left to the health worker and the woman: Counsel mothers about the risks and benefits of both exclusive breastfeeding and exclusive replacement feeding and guide them in selecting the most suitable option for their circumstances
- v. At least 48 hours.
- w. Mentions implants.
- x. One month for all women, 90 days for anaemic women.
- y. Yes for pregnant women during ANC but not specified in PNC.
- z. Exclusively breastfeed for first 6 months of life for known HIV-positive mothers
- aa. First: for the first two hours to the end of the first day / Second: during the first week after birth / Third: at 6 weeks after birth
- ab. Only after four weeks for postpartum IUD.
- ac. Still routinely given.
- ad. The guideline recommends selecting one of two options: (1) exclusive breastfeeding, or (2) exclusive infant formula feeding.

Source: WHO

The following seven postnatal care elements out of 27 recommended are fully included by all countries: assessment of vaginal bleeding; abdominal palpation to assess uterine tone, any tenderness and fundal height; assessment of anaemia; assessment of perineal wound healing; assessment of breastfeeding progress; assessment of breast tenderness and nipple check; and counselling on nutrition and breastfeeding.

All countries except for Solomon Islands and Viet Nam have a clear policy that after an uncomplicated vaginal birth in a health facility, healthy mothers and newborns should receive care in the facility for at least 24 hours. Five countries have a policy promoting four postnatal contacts, but the timing of the third visit is different in China from the WHO recommendation. The Lao People's Democratic Republic promotes three postnatal contacts, and Solomon Islands and Viet Nam do not have clear policy on the number of postnatal contacts.

Monitoring of maternal temperature, blood pressure and pulse rate were mentioned in all countries except for the Lao People's Democratic Republic, where the monitoring of pulse rate is missing. The timing of measurement of blood pressure differs from the WHO recommendation in this country and in Cambodia. All the other countries except for Papua New Guinea include assessment of urinary function; counselling on hygiene; and counselling on mobility, rest and resumption of sexual relations as expected elements of routine PNC. All countries include counselling on family planning, but the protocol in the Lao People's Democratic Republic does not specify the methods of family planning, and the timing of intrauterine device (IUD) insertion in Viet Nam is limited only to after four weeks while WHO recommends insertion within 48 hours in addition to after four weeks.

Although all countries recommend assessing anaemia, the duration of postnatal iron and folic acid (IFA) supplementation is shorter than in the WHO recommendation except in the Lao People's Democratic Republic, Mongolia and Viet Nam. Four countries where hookworm is endemic (China, Papua New Guinea, Solomon Islands and Viet Nam) do not mention administering mebendazole if the woman has not received it in the past six months. Administration of routine postpartum vitamin A capsule is still included in the guidelines in the Philippines and Viet Nam, even though the latest WHO evidence shows it is unnecessary.

WHO recommends that national authorities in each country decide which infant feeding practice is most appropriate for HIV-positive mothers in the country context and promote it. If a country decides to support breastfeeding, mothers living with HIV should breastfeed for at least 12 months and may continue breastfeeding for up to 24 months or longer (similar to the general population) while being fully supported for antiretroviral therapy (ART) adherence. Cambodia, the Lao People's Democratic Republic and Papua New Guinea recommend exclusive breastfeeding, though the duration varies. China and Mongolia recommend formula feeding. In Viet Nam, it is recommended that one of two options be selected: (1) exclusive breastfeeding; or (2) exclusive infant formula feeding. In the Philippines, the protocol is to inform the mother of the various pros and cons of all options and to let her choose. In Solomon Islands, there is no protocol on prevention of mother-to-child transmission yet.

There is a serious dearth of information on actual provision of PNC interventions. None of the reviewed countries had conducted nationwide population-based surveys on the services

received during PNC. Even the frequency of PNC is not documented. Most population-based surveys only asked whether any PNC was received. Only Cambodia included coverage of IFA among postpartum women into their DHS, where it was 48.8%, despite overall PNC coverage (at least one) being 91.5%. A very small-sized study of postpartum women covered by a voucher scheme from a nongovernmental organization (NGO) in Cambodia in 2012 found that not all women had their blood pressure measured during PNC and that receiving of all interventions other than provision of medication (IFA, mebendazole, etc.) was very irregular and incomplete. A much larger study conducted in Cambodia in 2009 found that, even after an intervention designed to strengthen PNC, less than half of women reported receiving postpartum counselling in family planning. There is no information from the other countries, but it is likely that there is likewise a gap between protocol and what is actually delivered.

B4. Management of obstetrical complications

i. Complications during antenatal period

Four out of 12 topics of management of antenatal complications were included in some guidelines or protocols in all eight countries (Table 7). Unlike the routine ANC elements, various degrees of inconsistency with WHO protocols were observed for each element.

Table 7. Elements of management of antenatal complications

Y: Yes, it is mentioned and protocol is fully consistent with WHO guidelines.

P: It is mentioned but protocol differs from WHO guidelines.

N: No, it is not mentioned.

ANTENATAL COMPLICATIONS	KHM	CHN	LAO	MNG	PHL	PNG	SLB	VNM
Mentioned in all countries								
Placenta praevia	Y	Y	P	Y	P	Y	P	P
Placenta abruptio	Y	Y	P	Y	P	P	P	P
Threatened/inevitable/ incomplete/complete abortion	Y	P	Y	Y	P	P	P	P
Pre-eclampsia/eclampsia	P	P	P	P	Y	P	P	P
Mentioned in seven countries								
Ectopic pregnancy	Y	Y	Y	Y	N	Y	Y	Y
Molar pregnancy	Y	Y	Y	Y	N	P	P	Y
Anaemia	P	Y	N	Y	P	P	Y	P
Hypertension	P	Y	Y	P	Y	Y	N	P
Intrauterine death	P	Y	P	Y	N	Y	P	Y
Preterm labour ^a	P	P	P	P	P	P	N	P
Mentioned in fewer than seven countries								
Urinary tract infection	P	P	P	Y	N	P	P	N
Gestational diabetes	P	Y	N	Cannot be ascertained ^b	N	P	P	Y

CHN: China; KHM: Cambodia; LAO: Lao People's Democratic Republic; PHL: Philippines; PNG: Papua New Guinea; SLB: Solomon Islands; VNM: Viet Nam

a. Limited usage of tocolytics, magnesium sulfate for less than 32 weeks and antenatal steroid for less than 34 weeks.

b. National protocol exists, but English translation was not available for review.

Source: WHO

All countries have protocols for the management of spontaneous abortion. The protocols in Cambodia, the Lao People's Democratic Republic and Mongolia are largely consistent with WHO recommendations. In the other countries there are issues regarding ineffective treatments for threatened abortion or non-recommended methods of uterine evacuation. Tocolytics and bed rest for threatened abortion are no longer recommended in the latest WHO guidelines in 2015, but featured in the protocols of China, the Philippines and Viet Nam. WHO's *Clinical Practice Handbook for Safe Abortion* (2014) was revised to include any of the following three approaches for inevitable or incomplete abortion: expectant management; manual vacuum aspiration (MVA); or use of misoprostol. Use of curettage, *not* recommended by WHO, is still included in the protocols of China, Papua New Guinea and the Philippines. MVA kits to replace curettage are not available in the Philippines, Papua New Guinea and Solomon Islands. In the Lao People's Democratic Republic, provision of MVA kits and training in its use are limited to that provided by an international NGO. In the Philippines, MVA kits, MVA training and misoprostol are not legally available.

ii. Eclampsia/Severe pre-eclampsia

Management of severe pre-eclampsia

The mainstay of management of severe pre-eclampsia in WHO guidelines is administration of magnesium sulfate to prevent convulsions and promote optimal timing for birth. It is strongly recommended that at least the initial loading dose of magnesium sulfate be available at all primary levels of health facilities. All countries have guidelines for the use of magnesium sulfate as the drug of choice in management of severe pre-eclampsia; however, the regimens vary.

Cambodia – An intramuscular (IM) magnesium sulfate regimen is mentioned. Its loading dose differs very slightly from the WHO recommendation (15 grams rather than 14 grams). The frequency of the maintenance dose is every five hours rather than the four-hour interval recommended by WHO. Only midwives who have received special training are permitted to administer it.

China – Intravenous (IV) magnesium sulfate regimen is mentioned, for which WHO recommends using an infusion pump. There is no mention of what regimen to use in health facilities where infusion pumps are not available. Magnesium sulfate is available at all levels of facilities but only as a 25% solution in China, while the WHO-recommended IM regimen uses a 50% solution. It is difficult to administer an IM injection of 25% solution without causing the patient extreme pain. Non-physicians in primary-level facilities can administer a magnesium sulfate loading dose under the guidance of physicians through remote consultation, such as via teleconference.

Lao People's Democratic Republic – Use of magnesium sulfate for all cases of pre-eclampsia is mentioned in the hospital manual; however, the 2015 national treatment guidelines limit its use to women who have had a seizure. Both IM and IV regimens are mentioned. Trained midwives can give "a single IM dose" of magnesium sulfate without a physician order in an emergency. This "single IM dose" can be less than the full loading dose recommended by WHO.

Mongolia – IM magnesium sulfate regimen is mentioned; however, only a 25% solution is available in Mongolia, which makes it difficult to administer as an IM injection. The frequency of the maintenance dose is every six hours instead of four hours. Magnesium sulfate is available at district (*soum*) health centres, the lowest level of facility.

Papua New Guinea – The magnesium sulfate regimen is consistent with WHO recommendations for the loading dose, but the frequency of the maintenance dose is every six hours instead of every four hours. Staff at primary levels are permitted to administer magnesium sulfate following the national protocol.

Philippines – This is the only country with a protocol fully consistent with WHO guidelines. An Administrative Order (AO 2010-0014) of the Department of Health and an Act Providing for a National Policy on Responsible Parenthood and Reproductive Health (Republic Act No. 10354) allow trained midwives and nurses to administer magnesium sulfate and other life-saving drugs such as antenatal steroids, oxytocin, and antibiotics under emergency conditions and when there are no physicians available. An assessment following typhoon Haiyan in 2014 revealed that 71% of first-level referral facilities had magnesium sulfate available. In the 2017 assessment in 28 hospitals implementing Early Essential Newborn Care practice, magnesium sulfate was available in 92% of national and regional hospitals and 93% of first-level referral hospitals. The issue in the Philippines is that administration of magnesium sulfate at lower facilities is limited to the initial loading dose.

Solomon Islands – A national protocol for EmONC is currently being developed following WHO recommendations. Magnesium sulfate has been restricted to hospitals and can only be ordered and administered by a physician, not by a midwife. In the national protocol under development, midwives will be able to administer it with a doctor's agreement.

Viet Nam – IM magnesium sulfate regimen is mentioned. The loading dose is 2–4 grams IV only, compared to the WHO recommendation of 4 grams IV plus 10 grams IM (total of 14 grams). The maintenance dose is 2 grams IM every hour, compared to 5 grams IM every four hours in the WHO protocol. It can be administered at primary-care facilities. Data from the 2017 Early Essential Newborn Care annual implementation review revealed that there were no stock-outs of magnesium sulfate in the three national hospitals and 45 subnational hospitals in the previous 12 months. The latest data in commune health centre were not available, while the 2010 survey found that only 17% had magnesium sulfate.

Recommendations on optimal timing for birth:

For optimal timing for birth in women with eclampsia, WHO recommends immediate delivery within 12 hours of onset of convulsions regardless of gestational age. In 2011, WHO issued new recommendations on the optimal timing for birth for women with severe eclampsia, mild pre-eclampsia or mild gestational hypertension. For women with severe eclampsia with a viable fetus before 37 weeks of gestation, a policy of expectant management is recommended if the following conditions are absent and can be monitored: (a) uncontrolled maternal hypertension; (b) increasing maternal organ dysfunction; or (c) fetal distress. Induction of labour is recommended for women with severe eclampsia at a gestational age when the fetus is not

viable or unlikely to achieve viability within one or two weeks. Early delivery is recommended in women with severe eclampsia at term. In women with mild pre-eclampsia or mild gestational hypertension at term, induction of labour is recommended.

All countries have some provision for timing of birth, but with different degrees of consistency with WHO recommendations:

Cambodia, China and Mongolia – These protocols are consistent with pre-2011 WHO recommendations. Recommendations added since 2011 are not yet reflected.

Lao People’s Democratic Republic – Expediting delivery is not mentioned in the 2015 national treatment guidelines. The hospital manual includes it, but indications are not clearly mentioned.

Papua New Guinea and the Philippines – The protocols for delivery in women with severe pre-eclampsia are generally consistent with WHO recommendations. There is no inclusion of a provision to induce labour if the fetus is not viable or likely to achieve viability within 1–2 weeks. Both countries include induction at term for mild pre-eclampsia and gestational hypertension.

Solomon Islands – The training manual of the College of Higher Education Midwifery Diploma Course – the only existing national document during this review period – does not include the topic of severe pre-eclampsia.

Viet Nam – The protocol for severe pre-eclampsia is to “terminate the pregnancy” and includes no further details. The previous protocol for eclampsia was to deliver immediately by caesarean section if at 34 or more weeks gestation, while WHO does not recommend caesarean section in any cases. In the new protocol adopted since 2016, caesarean section applies only if there is any other obstetric reason for it. The protocol does not include induction at term for mild pre-eclampsia and gestational hypertension.

iii. Induction and augmentation of labour

The WHO-recommended methods for induction of labour were updated in 2011 as sweeping membrane, prostaglandins and balloon catheter. When prostaglandins are not available or are contraindicated, IV oxytocin alone or combined with balloon catheter are recommended. Amniotomy alone is no longer recommended. Earlier WHO guidelines were to perform artificial rupture of membranes followed by oxytocin, first ripening the cervix if necessary with either prostaglandins or a balloon catheter. For augmentation, the use of oxytocin alone or the use of amniotomy and oxytocin are recommended, while amniotomy alone has not been recommended since 2011.

Cambodia and Mongolia – There are clear protocols for both induction and augmentation that are consistent with WHO recommendations prior to 2011. The updated WHO recommendations since 2011 have not been incorporated in the national protocols.

China – There is a separate protocol for induction and augmentation of labour, and indications are mentioned under relevant complications. Diabetes mellitus is included as an indicator for inducing labour, while WHO does not recommend induction for women with gestational diabetes before 41 weeks of gestation if diabetes is the only abnormality but is well controlled. Usage

of oxytocin is introduced as the method of induction in the CMA guidelines for management of premature rupture of membranes at term.

Lao People's Democratic Republic – There is no separate protocol for induction of labour but it is mentioned under the guidelines for management of placental abruption. The technique mentioned is amniotomy and oxytocin, with a higher initial starting dose of oxytocin than WHO recommends. There is no protocol for augmentation of labour and no details on technique that can be compared with WHO recommendations.

Papua New Guinea – There are clear protocols for both induction and augmentation of labour. Similar to China, diabetes at term is included in the indicators for induction of labour. The case of pre-labour rupture of membranes is not mentioned as an indication, while WHO recommends a gestational age of after 37 completed weeks. The technique of augmentation in Papua New Guinea is amniotomy first, then oxytocin infusion if the contractions do not improve in 2–3 hours. The initial starting dose of oxytocin is higher than WHO suggests.

Philippines – The Philippine Obstetrical and Gynecological Society's 2012 clinical practice guidelines on caesarean section has a chapter on induction of labour, but augmentation is not included in any guidelines. Indications of induction include “logistical factors for term pregnancy (history of rapid labour, distance from the hospital, psychosocial indications)” which are not included in WHO's recommendations. A variety of techniques of induction are described without clear prioritization, and some cases conflict with each other.

Solomon Islands – The training manual of the College of Higher Education Midwifery Diploma Course mentions referring a woman who reaches 42 weeks of gestation to the provincial hospital. The method of induction of labour at the hospital and details about augmentation of labour are not included in this document.

Viet Nam – There are clear protocols for both induction and augmentation of labour. The timing of induction of labour for women with pre-labour rupture of membranes is slightly different from WHO recommendations. Viet Nam induces at 36 weeks while WHO recommends after 37 completed weeks. Several methods of induction of labour are listed in the protocols without prioritization, except under protocols for specific conditions. The misoprostol dosage for induction of labour differs from WHO recommendations. The protocol for augmentation of labour is generally consistent with WHO, though use of partograph to confirm the delay in progress of labour and maximum dose of oxytocin are not articulated.

iv. Caesarean section

Technical guidelines on caesarean section are outlined in the WHO document *Managing Complications in Pregnancy and Childbirth: A Guide for Midwives and Doctors* (MCPC). In 2015, WHO released a statement emphasizing that caesarean section rates higher than 10% are not associated with reductions in maternal and newborn mortality rates at the population level, and that while concerted efforts should be made to provide caesarean sections to women who need it, it should ideally only be undertaken when medically necessary, due to the risk of significant and sometimes permanent complications, disability or death. The timing of

administration of prophylactic antibiotic and vaginal cleansing for caesarean section cases were newly recommended in 2015.

Cambodia and Mongolia – These two countries have detailed indications and protocols consistent with the MCPC guidelines. The two new recommendations to prevent infections, that is the timing of administration of prophylactic antibiotic and vaginal cleansing, are not reflected.

China and the Philippines – These two countries do not have protocols issued by their health ministries, but professional medical associations have issued guidelines that provide detailed indications and descriptions of technique. Indications in both countries negatively include patient preference. In China, the guideline mentions “the requirement of pregnant women is not the indicator of caesarean section. Doctors have the right to refuse caesarean section without clear indication. However, the request of the women should also be respected.” In the Philippines, “maternal request” is mentioned, though only in women not planning additional children due to the increased risk to subsequent pregnancies. In China, macrosomia is also considered an indication for caesarean section with the limitation of gestational diabetes with an estimated birth weight of over 4250 grams.

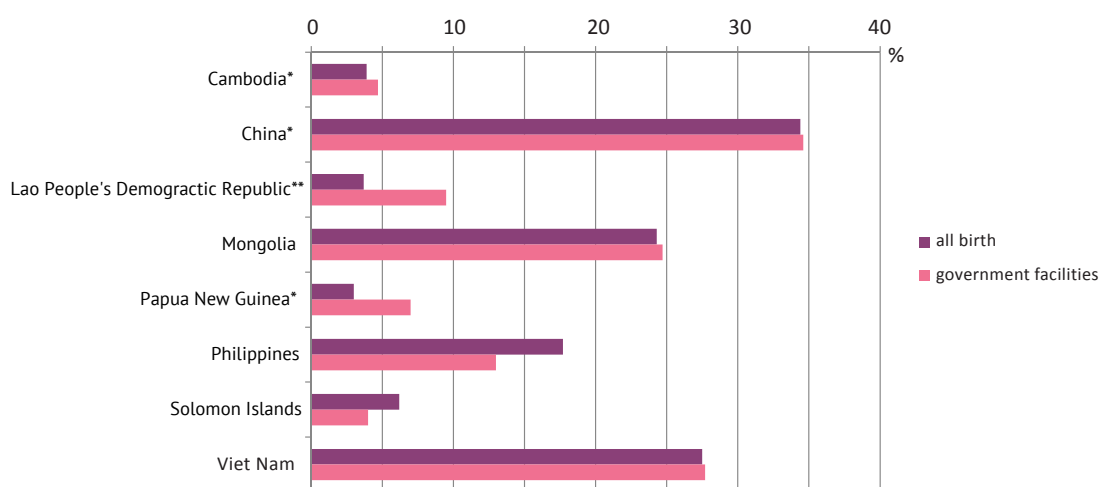
Lao People’s Democratic Republic and Solomon Islands – These countries do not have a list of indications nor detailed descriptions of techniques for caesarean section.

Papua New Guinea – Indication for caesarean section is consistent with WHO recommendations.

Viet Nam – There is no statement regarding elective or non-medically indicated caesarean section in the protocol.

Caesarean section rates

Fig. 3. Percentage of deliveries performed by caesarean section for eight countries



* Percentage of all births is an estimate based on the percentage of caesarean sections in government facilities and known proportion of births occurring at home, i.e. it assumes the rate of caesarean section to be the same in government and private facilities. The percentage of births occurring in private facilities is quite small in these countries.
 **Percentage for government facilities is based on an assessment of 68 facilities in 2012. These were primarily hospitals with surgical capacity, so the actual percentage for all government facilities would be a little lower.

Source: 2014 Cambodia Health Information System (for caesarean section in government facilities) and 2014 Cambodia DHS (for percentage of caesarean section among all births*); China 2016 Maternal and Child Health Program service statistics; Lao Social Indicator Survey 2012 (for all caesarean sections) and National Emergency Obstetric and Newborn Care Needs Assessment 2012 (for government facilities**); Mongolia Multiple Indicator Cluster Survey 2011; Papua New Guinea National Health Information System (reported by the WHO Country Office); 2013 Philippine DHS; 2015 Solomon Island DHS (rate among all deliveries) and 2005–2008 UNFPA Family Planning and Emergency Obstetric Care Facility Assessment in Seven Pacific Countries (rate for government hospitals); 2014 Viet Nam Multiple Indicator Cluster Survey

Caesarean section rates for all births are higher than 10% in China, Mongolia, the Philippines and Viet Nam (Fig. 3). In the Philippines, the caesarean section rate in private hospitals is high, at 26.1%. This high rate suggests that non-medical indications are being employed. High patient caseloads along with a policy of encouraging delivery by physicians rather than midwives are also considered as factors for the high caesarean section rate in Mongolia.

While the rate in China is the highest of the eight reviewed countries, it actually reflects a decline over prior years, having peaked at about 50% in 2010. According to articles published domestically, the possible reasons behind the high rate of caesarean section in China are: fear of pain of vaginal delivery; cultural desire to choose a “lucky birth day”; and the one-child policy.

Lack of necessary equipment for performance of assisted vaginal delivery (AVD) in many comprehensive EmONC (CEmONC) facilities is also identified as one of the reasons necessitating caesarean section in both Mongolia and Viet Nam. While continuing efforts to eliminate unnecessary caesarean sections, every attempt should be made to provide medically necessary caesarean section coupled with AVD to save maternal and infant lives in all countries and areas.

v. Postpartum haemorrhage (PPH)

WHO guidelines for management of PPH were initially set forth in the 2000 MCPC. This was updated in 2012 by new recommendations outlined in the *WHO Recommendations for the Prevention and Treatment of Postpartum Haemorrhage*. The standard PPH treatment package includes fluid replacement, uterotonics, monitoring of vital signs, nonsurgical (such as bimanual compression, intrauterine balloon tamponade, non-pneumatic anti-shock garment, aortic compression) and surgical interventions. Oxytocin is now strongly recommended as the first choice of uterotonic, with other drugs to be used when oxytocin is unavailable or the patient does not respond to it. For the initial IV fluid resuscitation, isotonic crystalloids are recommended rather than the use of colloids. Early use of intravenous tranexamic acid (within three hours of birth) in addition to the standard PPH treatment package was newly recommended in November 2017.

All countries' protocols include the following WHO-recommended measures for PPH with varying technical details: volume replacement to stabilize shock; uterine massage; administration of uterotonic(s); temporizing measures to control bleeding (all countries include bimanual uterine compression); inspection of the placenta and removal of any retained fragments; inspection of the cervix and perineum and repair of any tears; surgery if other measures fail to control the bleeding.

Cambodia and Mongolia – In these two countries, the uterotonics and their dosage, and the type of initial IV fluid for volume replacement are consistent with WHO recommendations. Bimanual uterine compression, aortic compression and non-pneumatic anti-shock garments are mentioned in Cambodia. Tranexamic acid is not mentioned.

China – The CMA guidelines list four different uterotonics with prioritization. Oxytocin is the first option and carbetocin is the second option. Where there is no oxytocin, misoprostol and ergometrine are recommended. The colloids infusion is included for initial IV fluid resuscitation. “Early, active plasma and platelet transfusion” is also advised for initial IV fluid resuscitation in the absence of coagulopathy. Tranexamic acid, balloon tamponade and aortic compression are mentioned.

Lao People's Democratic Republic – The hospital manual prioritizes oxytocin as the uterotonic of choice but only mentions IV administration. Training materials for primary-level health facilities advise only a single IM injection of oxytocin prior to referral. The IV dosage in the hospital manual is less than the WHO recommendation. The hospital manual includes colloids infusion for the initial volume replacement. For temporizing measures to control bleeding, aortic compression is not included in the training materials for primary-level health care, but is mentioned in the hospital manual. Balloon tamponade and tranexamic acid are not mentioned.

Papua New Guinea – The protocol calls for active management of the third stage of labour with simultaneous administration of IV oxytocin, IV ergometrine and rectal misoprostol. The type of initial IV fluid for volume replacement is consistent with WHO recommendations. Balloon tamponade using condom is mentioned; tranexamic acid is not included.

Philippines – IV oxytocin is the prioritized uterotonic but the dosage is less than the WHO recommendation. The type of initial IV fluid for volume replacement is consistent with WHO recommendations, although this is specified only in the training materials for the Philippine Obstetrical and Gynecological Society Life-Saving Skills Course; other references do not mention type of IV fluid. Balloon tamponade is mentioned in medical association guidelines but not in training materials for midwives. Tranexamic acid is mentioned in the Philippine Obstetrical and Gynecological Society guidelines.

Solomon Islands – The training material of the College of Higher Education Midwifery Diploma Course does not include aortic compression, balloon tamponade and tranexamic acid. The newly drafted EmONC coaching material in 2016 is consistent with WHO recommendations in all aspects as far as the medicines and equipment available in the country. Tranexamic acid is not available in Solomon Islands.

Viet Nam – Oxytocin is the first choice but via IM (10 units oxytocin IM repeated twice if necessary, no interval specified) rather than IV administration. The type of initial IV fluid for volume replacement is consistent with WHO recommendations. Balloon tamponade and tranexamic acid are not mentioned.

vi. Prevention and treatment of infections

WHO guidelines for prevention and treatment of infections were initially set forth in the 2000 MCPC. This was updated in 2015 with 20 recommendations for prevention and two recommendations for treatment of peripartum infections, including: limiting the frequency of routine vaginal examinations during labour (every four hours); routine antibiotic prophylaxis before manual removal of the placenta; vaginal cleansing with povidone-iodine immediately before caesarean section; a single dose of first-generation cephalosporin or penicillin prior to the initial skin incision as routine antibiotic prophylaxis for caesarean section; and a combination of clindamycin and gentamicin as first-line antibiotics for the treatment of postpartum endometritis.

Vaginal examinations

All countries limit routine vaginal examinations during active labour to every four hours (see Table 5). In the case of Viet Nam, the frequency was changed from two hours to four hours in the updated national protocol in late 2016.

Routine antibiotic prophylaxis before manual removal of the placenta

Administering of routine antibiotic prophylaxis in manual removal of placenta is clearly mentioned in the protocols of Cambodia, Mongolia, the Philippines and Solomon Islands. In all four countries, the antibiotic(s) include either ampicillin or a cephalosporin as recommended by WHO. In addition, metronidazole is included in the protocols of Cambodia and the Philippines. In the Lao People's Democratic Republic, antibiotic prophylaxis is mentioned in the hospital manual but not in the clinical practice guidelines for midwives. The protocols in Papua New Guinea does not mention antibiotic prophylaxis in manual removal of placenta. In China,

routine antibiotic prophylaxis is not mentioned in the protocol for manual removal of placenta, but manual removal of placenta is included in obstetric surgery requiring prophylactic use of antibiotics in a guideline on antibiotics usage.

Single dose of cephalosporin/penicillin for caesarean sections

Only the Philippines has a protocol fully consistent with the WHO recommendation to give a single dose of first-generation cephalosporin or penicillin prior to the initial skin incision for caesarean sections. The protocol for Papua New Guinea is also consistent in terms of timing but does not specify the antibiotic of choice. In both Cambodia and Mongolia, a single-dose antibiotic for caesarean section is given after delivery of the cord, as was the pre-2015 WHO recommendation. The type of antibiotic is not specified in Cambodia. In Mongolia it is specified as ampicillin or cefazolin. In China, timing is consistent but second generation of cephalosporin, ceftriaxone or cefotaxime plus metronidazole is recommended, without specifying number of doses. In Viet Nam, single-dose antibiotics are recommended prior to skin incision, but recommended antibiotics are different from WHO recommendations. The Lao People's Democratic Republic and Solomon Islands have no protocols for caesarean section.

Vaginal cleansing prior to caesarean section

This is not yet reflected in any of the protocols of the eight countries.

Postpartum endometritis

Cambodia, Mongolia and Papua New Guinea have protocols for treatment of postpartum endometritis; the protocol in the Lao People's Democratic Republic refers to "shock due to infection". The regimen of antibiotics in these four countries aligns with the pre-2015 WHO recommendations, including dosages and frequencies in the case of the Lao People's Democratic Republic and Mongolia. The protocol in Viet Nam states only "appropriate antibiotics" without specifying drug or dosage. It also includes 5 units of oxytocin IM once or twice a day, which is not included in WHO recommendations for treatment of postpartum endometritis. There is no protocol for treatment of endometritis in China, the Philippines and Solomon Islands.

vii. Initial stabilization and referral

The ability to stabilize patients with serious obstetric complications and initiate life-saving measures at the primary care level before referral is critical to saving lives. The following are examples of measures that WHO recommends be provided at front-line health facilities in an emergency, prior to referral to a higher level of care:

- detection and stabilization of shock;
- administration of parenteral oxytocin in PPH: IM followed by IV;
- uterine massage to expel clots and continued massage if the uterus is atonic (PPH);
- temporizing measures to reduce PPH such as aortic compression, bimanual uterine compression, balloon tamponade;

- manual removal of placenta and retained placental fragments if actively bleeding;
- administration of a loading dose of magnesium sulfate in severe pre-eclampsia/eclampsia; and
- administration of an initial dose of parenteral antibiotics.

These measures require, appropriately trained personnel, clear policies that permit them to take the necessary actions in an emergency, protocols that specify what those actions are, and availability of the relevant drugs, supplies, means of notifying the receiving facility and means of transportation.

Cambodia – There is a clear policy supporting all of these measures at the primary-care level in the safe motherhood protocol for health centres. The protocol also includes clear instructions for referral, including accompanying the patient on their visit.

China – According to the national maternal health-care protocols published by the Ministry of Health in 2011, all health-care facilities should screen high-risk pregnancy. Identified obstetric emergencies are included in the high-risk pregnancy management system. If a primary-level facility cannot deal with the case, it should transfer the patient to higher-level facilities, with stabilization before transfer. All levels of facilities should have the necessary drugs, including magnesium sulfate, oxytocin and others.

Lao People’s Democratic Republic – While there is no protocol for management of obstetric complications at the primary level, the 2009 Ministry of Health guidelines for the scope of midwifery state that midwives can “make judgments and take actions of BEmONC (basic emergency obstetric and newborn care) as necessary on their own prior to referral” and specifies functions such as administration of IV fluid, manual removal of placenta, and the administration of one dose of IM oxytocin, antibiotics and magnesium sulfate. A BEmONC training manual also describes various stabilization measures. It also discusses the need to accompany the woman in transit.

Mongolia – At the lowest level of primary care is a network of physician assistants (*bagh feldshers*) who serve nomadic communities out of their homes. These personnel are not trained in EmONC nor supplied with life-saving EmONC drugs. The next level up is the district (*soum*) health centres, which are equipped and allowed to perform various stabilization measures for serious obstetric complications cases prior to referral.

Papua New Guinea – There are clear guidelines for the performance of all the listed functions at both community aid posts and health centres. Provision is made for the induction of labour at health centres in an emergency if it is not possible to transfer the woman quickly. Health workers in rural health facilities have varying capacities in managing maternity care, especially emergency cases. Initiation of treatment is made through consultation with a senior medical officer at the closest hospital. The manual of standard management in obstetrics and gynaecology includes a section on stabilization and referral that summarizes indications and initial measures to be taken.

Philippines – Primary-care facilities that are designated as BEmONC can perform these functions. From data available for some provinces, few *barangay* (village or neighbourhood) health stations (the single largest provider of ANC) and only some rural health units (the next level of primary care) are categorized as BEmONC. Oxytocin, parenteral antibiotics and magnesium sulfate are not on the EML for primary-level facilities. A 2012 Republic Act No. 10354 explicitly allows midwives and nurses who are properly trained and certified to administer life-saving drugs such as, but not limited to, oxytocin and magnesium sulfate under emergency situations and when there are no physicians available. However, one assessment on district -; and primary-level facilities in five provinces and one municipality found that midwives remain hesitant to provide these treatments due to continuing concerns about legal liability. Only physicians are allowed to perform manual removal of placenta and retained placental fragments. Midwives need to refer patients with these conditions to the nearest BEmONC or CEmONC facility, whichever is nearer.

Solomon Islands – The training material describes the basic protocol to stabilize obstetric emergencies before referral. The first tier of the primary health-care system is the nurse aide post where the health workers (nurse aides) have not been trained in clinical stabilization for obstetric emergencies. The next level is area health centres with nurses who may or may not have had special training in obstetrics. The 2010 EML includes parenteral antibiotics, oxytocin, magnesium sulfate, misoprostol and IV fluids. However, administration of magnesium sulfate and misoprostol is limited to specialized nurses or to situations in which a physician has been consulted. Not all provincial hospitals can provide EmONC, and one small province (Renbel) does not have a hospital. Hence, most emergency obstetric referrals in Solomon Islands are to the National Referral Hospital in the capital by boat or plane.

Viet Nam – Commune health centres are permitted to perform all the above-listed measures and necessary life-saving drugs are all approved for use. However, a 2009 assessment found that only 16.9% of commune health centres had magnesium sulfate, 65.1% had nifedipine and 12.3% had no uterotonics of any type in stock. More recent data was not available during this review period. The 2016 national guidelines for reproductive health-care services include a specific section on stabilization and referral that summarizes indications for urgent referral, general management and specific measures to take prior to referral according to the specific conditions.

C. Service accessibility

Implementation of national guidelines and protocols into practice requires sufficient resources and systems in place such as an adequate number of health facilities and adequate functions, a trained health workforce, financial risk protection for women, and functional monitoring and evaluation systems. Without these conditions, it is hard to ensure service accessibility to quality maternal and newborn care.

C1. Number of EmONC facilities and their functions

Ensuring a functional network of facilities able to provide EmONC – with numbers and locations rationalized in terms of both the country’s population size and geography – is critical to minimizing maternal and newborn mortality. WHO defines the following as EmONC signal functions:

Basic Emergency Obstetric and Newborn Care (BEmONC):

- a. administration of parenteral antibiotics;
- b. administration of uterotonic drugs (for example, parenteral oxytocin) for both prevention and treatment of PPH;
- c. administration of parenteral anticonvulsants (for example, magnesium sulfate) for pre-eclampsia/eclampsia;
- d. manual removal of retained placenta;
- e. removal of retained uterine contents (for example, manual vacuum extraction);
- f. performance of AVD (for example, vacuum extraction or forceps delivery); and
- g. basic neonatal resuscitation (with bag and mask).

Comprehensive Emergency Obstetric and Newborn Care (CEmONC):

Includes all of the above plus surgery (for example, caesarean section) and blood transfusion.

WHO recommends that there be at least five EmONC facilities (including at least one comprehensive facility) for every 500 000 population both nationally and within all subnational areas. To ensure equity, in situations where the population is widely dispersed and travel is difficult, WHO advises exceeding the minimum acceptable level.

Nationwide EmONC assessments have been conducted in only two countries: Cambodia in 2009 and 2015, and the Lao People’s Democratic Republic in 2012 and 2016.

Cambodia – Of the eight countries studied, only Cambodia has a clear EmONC plan listing and mapping out facilities by name, location and signal functions to be performed. The functions, number of facilities and locations outlined in the plan at both the national level and by province conform to WHO guidelines. Review of the EmONC improvement plan in 2015 found that there were three fully functional EmONC facilities per 500 000 people in a 12-month period,⁴ which was an improvement since the last assessment in 2009. CEmONC facilities – mainly located at the national level and in the provincial capital – functioned well. However, about half of BEmONC facilities, particularly health centres, did not yet perform all signal functions such as AVD, with the reason being lack of equipment for vacuum extraction⁵ or lack of training. The proportion of all births that take place in EmONC facilities was 23.5%, and estimated met need for EmONC⁶ was 23.6%.⁷

4. WHO recommends using a three-month period, but this assumes that all the facilities serve about 100 000 people. In Cambodia, many of the designated rural BEmONC facilities serve a much smaller population, and the most common reason for non-performance of signal functions was lack of clients with indication for it. Thus, a 12-month period was applied.

5. In Cambodia, forceps are not used except possibly in national hospitals by obstetricians.

6. The definition is “estimate of the proportion of all women with major direct obstetric complications who are treated in a health facility providing EmONC (basic or comprehensive)”.

7. This calculation does not include EmONC provided in private or NGO hospitals in the numerator. The denominator is all expected births, not births in public facilities. Therefore, the actual met need for EmONC could be higher than 23.6%.

China – There were no formal EmONC plans before 2016, but there have been guidelines describing the general package of services that should be provided at different levels of health facilities. Since 2017, the National Health and Family Planning Commission has developed a national EmONC plan for strengthening the EmONC system, encouraging every province to set up an EmONC network. This draft plan contains details for all of the EmONC signal functions. Data from 2013 showed that 84% of families living in rural areas can reach the nearest health facility within 15 minutes.

Lao People’s Democratic Republic – Provinces have been encouraged to develop their own EmONC plans but none are evident to date. A nationwide assessment in 2010–2011 targeted only hospitals and identified 1.7 EmONC facilities for every 500 000 population. Thirty-five hospitals performed all signal functions in the past 12 months,⁸ but no functional EmONC facilities existed at all in seven provinces. Lower-level facilities are known not to provide BEmONC; about a third actually provide routine maternity care. According to a 2013 survey in six provinces, the average travel time to a health centre was 0.4–1.7 hours, and travel time to a hospital was 1.6–4.2 hours depending on the season. The percentage of all births which take place in EmONC facilities is 20.3%⁹ and estimated met need for EmONC¹⁰ is 11.2%.

Mongolia – There are guidelines describing the package of general services, without specifying maternal health or EmONC general functions, that should be provided at different levels of health facilities. It is expected that full CEmONC would be available at the secondary level and above. This would be about 4.9 EmONC facilities per 500 000 population nationally. There is insufficient information to assess the ratio per province to ensure geographical accessibility. Primary-level facilities (*soum* health centres) are expected to be able to provide all BEmONC functions except for AVD. According to the 2009 EmONC assessment in the capital and three rural provinces, the average travel time from communities to BEmONC facilities was three hours. Seven out of nine assessed secondary- and tertiary-level facilities lacked vacuum extractors and forceps and therefore had no function for AVDs. Newborn bags and masks for resuscitation and supply of blood and blood products were also often lacking. There have been interventions to improve this situation, but the assessment has not been repeated to date.

Papua New Guinea – The level of facility that provides each of the EmONC signal functions is clearly indicated in the role delineation matrix, an annex to the *National Health Service Standards 2011–2020*. In that plan, all district and provincial hospitals are expected to provide CEmONC, and all area health centres are expected to provide BEmONC. This is a long-range vision that, if achieved, would yield considerably more than five facilities per 500 000 population. An assessment of EmONC service delivery has not been conducted, though it is known that some district hospitals have EmONC facilities; however, most district hospitals and health centres are not equipped with the capacity for EmONC. In 2012, 49 out of 89 rural districts did not have a district hospital. Assuming that the number of functional EmONC facilities is roughly the same as the number of provincial and national hospitals, the current availability of EmONC facilities would be 1.39 per 500 000 population, with locations mainly in urban areas.

8. As in Cambodia, the population catchment areas served by many facilities may be too small to ensure that all functions would be needed in a three-month period.

9. This is the percentage delivering services in the 68 facilities surveyed, of which only 18 were actually performing the signal EmONC functions.

10. The definition is “estimate of the proportion of all women with major direct obstetric complications who are treated in a health facility providing EmONC (basic or comprehensive)”.

Philippines – Health services are decentralized to local government units in the Philippines. Each province has been requested to conduct a mapping and needs assessment to identify which facilities should provide basic or comprehensive EmONC. It has so far been completed in only some provinces. In the 2013 DHS, 64% of women in the Autonomous Region of Muslim Mindanao described distance or travel to health facilities as a barrier to treatment, while 27% said so nationwide. A 2014 assessment of community- and district-level facilities in five provinces and one municipal area found that 67% did not administer parenteral antibiotics, 43% did not provide uterotonics,¹¹ 42% did not perform removal of retained uterine contents and 34% did not perform manual removal of placenta. Only four facilities performed all BEmONC signal functions out of 95 assessed facilities of which 21 were hospitals. Any tertiary hospital is automatically categorized as providing CEmONC facilities. However, the actual performance of the EmONC signal functions in tertiary hospitals is not monitored regularly. Assuming that 85% of tertiary facilities, including private hospitals, currently perform all functions, the availability of EmONC facility is about 1.42 per 500 000 population nationally.

Solomon Islands – There has not yet been any planning for which facilities would provide EmONC. A government audit in 2006 found that 30% of essential drugs overall was out of stock. A 2008 assessment found that only five out of 58 health facilities provided EmONC; of these, four provided CEmONC and one BEmONC. While this equals 4.5 per 500 000 population nationally, the population in Solomon Islands is widely dispersed and travel is difficult. According to the survey in 2013, two thirds of the population can reach a lowest level of health facility within an hour. The other third of women have to travel up to half a day or longer. Referral time from primary level to hospital ranges from under one hour to 24 hours.

Viet Nam – The appendix in the national action plan on reproductive health care describes a detailed chart that specifies which EmONC functions should be provided at what level of facility. However, there is no mapping or customization to the specific needs of different locations. All seven BEmONC functions are expected at the district hospital level and above, while CEmONC is expected at provincial and national hospitals, in addition to the district hospitals, which have surgical capacity. If this were actualized, it would equal four EmONC facilities per 500 000 population nationally. There is insufficient information to assess the ratio per province. The average distance from villages to the nearest primary care facility is about 5 kilometres. The travel time from a primary care facility to the nearest hospital ranges from 30 minutes in delta regions to more than 1 hour in the highlands and northwest. In district hospitals, less than half perform AVD (45% vacuum extraction, 38.7% forceps delivery) and 62.9% could remove retained products up to 12 weeks of gestation. One assessment reports 55% of district hospitals providing CEmONC.¹² At provincial hospitals, 6.4% lacked capacity to provide blood transfusion, 7.3% could not provide caesarean section and 10% could not perform a subtotal hysterectomy. The capacity to perform AVD is also limited: 24% of provincial hospitals lacked equipment for vacuum extraction and 34% lacked obstetrical forceps. Quantification of availability of EmONC is difficult to calculate since the assessment lists do not have data on health facilities that provide all seven or nine functions.

11. Unclear if this includes routine IM oxytocin after delivery, or only administration in presence of PPH.

12. This is the percentage that can provide transfusion and surgery, not those that perform all signal functions.

C2. Health workforce

Deployment and retention of a sufficient skilled and motivated health workforce at the right place and at the right time are critical to ensuring women's right to access quality care. In addition, attempts to optimize the potential of the existing health workforce are crucial.

Cambodia – Efforts by the Government to strengthen the midwifery workforce in terms of production, employment, Deployment and optimization during the past decade have been impressive. The quantity and categories of midwives in health centres have been monitored as an indicator. In 2016, virtually all health centres had at least two midwives to provide maternal health care 24 hours, seven days a week. At least one secondary midwife – who has received three years of formal midwifery education – is available at each health centre. The Ministry of Health also signed a decree in 2007 to discourage government midwives from performing home deliveries and provides a cash bonus from the national budget for deliveries performed in a health facility. As a result, health-facility delivery increased from 9.9% in 2000 to 83.2% in 2014, the maternal mortality ratio has declined and Cambodia has achieved target 5A of the MDGs. Training coverage of midwives has been periodically assessed. The most recent assessment (2015), limited to midwives in designated BEmONC and CEmONC facilities, found that 80% had received specific training in key functions such as administration of magnesium sulfate, manual removal of placenta and management of PPH, and more than 70% had been trained in MVA and vacuum extraction.

China and Mongolia – Doctors outnumber nurses and midwives in both these countries, and are relatively well deployed to primary-care facilities nationwide. Thus, there is less task shifting from physicians to non-physicians. Physicians provide most ANC. Midwives manage normal deliveries in China, and, for complicated deliveries or deliveries needing extra support, obstetricians are present to manage the situation. Formal midwifery education ceased in 1993 in China and resumed in 2011 in a few universities. Most currently employed “midwives” in China are obstetric nurses who completed some in-service training after graduation and then received the midwife certification. In Mongolia, except for assistant doctors working at the primary level, non-physicians are not allowed to administer medications without a physician's order, even in an emergency. Midwives support women during labour, but management of deliveries and all related decisions are made by the physician.

Lao People's Democratic Republic – About one third of health centres lack a trained midwife. Midwifery training was recently revived in the country, and 1500 new midwives have been trained as of the end of 2016. However, they have not been deployed yet as of November 2017. At health centres where there is a midwife, weak clinical competency is documented in various reports. Mechanisms for supportive supervision or on-the-job training for midwives are not yet systematically in place. A 2008 assessment found that only 65% of maternal health-care providers at provincial hospitals and 39% at district hospitals knew how to use the partograph. Since then, short-term training on basic life-saving skills, ANC, intrapartum care and PNC has been provided to health centres and hospital staff. The coverage of this training is estimated to be approximately 65% of targeted health-care providers, but skill levels after this training have not been assessed. In 2016, EmONC coaching materials completely following

WHO recommendations were newly developed. The coaching has been implemented at the provincial health facilities and regular monitoring and evaluation after the coaching is planned. The optimization of midwives has not been maximized. Midwives are limited to administering a single IM injection of oxytocin even when there is frank haemorrhage, and to giving only an IM dose of magnesium sulfate, which precludes full loading dose.

Papua New Guinea – The optimization of trained health workers conforms to WHO recommendations. Many primary-level facilities lack a midwife or other health workers who are trained in midwifery functions. The absolute shortage of health workforce, especially midwives, is recognized as a critical bottleneck for service provision by the Government. The Australian Department of Foreign Affairs and Trade supported a midwifery capacity-building project from 2012–2015 with the aim of building the institutional capacity of midwifery schools and rapidly producing a critical mass of midwives over four years. At the end of the project 450 midwives were trained at five midwifery schools. However, this is not adequate and many midwifery positions in rural health facilities are still vacant. In-service EmONC training for midwives is outsourced to an Australian-funded project called the Reproductive Health Technical Units, which ended in 2015. In the absence of midwives, deliveries are attended by health extension officers, nursing officers and community health workers (CHWs) who undergo a two-year training. In a few districts, a six-month training programme allows CHWs to learn basic midwifery skills and make urgent referrals where necessary.

Philippines – Midwives have historically had two years of formal training, but in recent years there has been a move towards four-year university programmes. There are also registered nurses with certification in midwifery. The majority of ANC is conducted at the lowest-level health facilities, which are *barangay* health stations or urban health centres where one trained midwife is appointed and assisted by community volunteers. The optimization of midwives during delivery is limited. The Philippine Midwifery Act of 1992, Section 23, defines the practice of midwifery as “services requiring an understanding of the principles and application of procedures and techniques in the supervision and care of women during pregnancy, labor and puerperium management of normal deliveries...”¹³. The Act does not specify any limitations to the services; however, the Department of Health does not allow midwives to perform manual removal of retained placenta or removal of retained placental products. Provision of life-saving drugs by midwives in emergencies when there are no physicians available was allowed by a 2010 Department of Health administrative order and a 2012 Republic Act No. 10354. However, an assessment in 2012 reported that support for this amendment was inconsistent in the health sector. The report also noted a “lack of commitment to the midwife as skilled birth attendant.” Pay levels for midwives tend to be lower than for nurses, which can lead to lack of status for the profession. No nationwide assessment has been conducted on the training coverage or skills of midwives. Although there may be isolated assessments on this topic undertaken by particular local government units, there has not been a coordinated national assessment.

Solomon Islands – ANC and PNC services are provided by nurse aides at the lowest level of health facility. Although nurse aides are not trained to perform deliveries, according to the 2015 DHS, 10.4% of all deliveries were performed by them. Where midwives are deployed,

13. Access at: <http://www.chanrobles.com/republicactno7392.htm#.VpYxJVLh49I>.

their optimization can be better maximized. Nurses and midwives¹⁴ have not been allowed to administer magnesium sulfate¹⁵ or perform AVD. However, WHO suggests considering allowing midwives to perform AVD with targeted monitoring and evaluation. It would be worth considering task shifting to midwives since the population in Solomon Islands is widely dispersed and travel is difficult.

Viet Nam – A total of 96% of commune health stations have a midwife and 75% also have a doctor, though they are less deployed in the northern and central highlands. A programme of competency-based education is now being implemented. Optimization of trained health workers fully conforms to WHO recommendations. Limitations on provided services are based on level of facility rather than on provider; for example, AVD can only be performed at the hospital level.

None of the eight countries allows community health workers or lay health workers to provide postpartum misoprostol for the prevention of PPH in settings where SBAs are not present and oxytocin is unavailable. This WHO recommendation is not important for most countries in which the delivery rate with SBAs is high, but may affect populations in rural areas in the Lao People's Democratic Republic and Papua New Guinea, where the delivery rates with an SBA are low.

C3. Financial risk protection for women

Cambodia – A health equity fund pays both service and transportation costs for the poor, which covered more than half of the country in 2015 and is being scaled up. Though the non-poor have to pay out-of-pocket user fees, ANC, normal childbirth and PNC costs at primary levels are modest (about US\$ 4 for four ANC visits and about US\$ 12 for delivery). An average cost of US\$ 10 for “tips for service” is also often paid for normal childbirth. The assessment in 2015 found that most clients were satisfied with the amount paid. “Tips” are not paid for ANC and PNC services. On the other hand, the cost of EmONC is considerably high. The official price for a caesarean section in government hospitals varies between US\$ 185 and US\$ 325 in addition to commonly requested unofficial charges. Emergency transportation can also be costly for those not covered by the health equity fund.

China, Mongolia and Solomon Islands – Maternal health services are free of charge in these three countries. In China, three national insurance schemes cover roughly 95% of the population. Government subsidies for delivery in a health facility and ANC/PNC are free of charge at primary and secondary levels of care. In Mongolia and in a few remote parts of China, transportation and living costs in maternity waiting homes for rural women are also covered by the state. However, out-of-pocket payment is still reported in China and Mongolia. The 2009 EmONC assessment in Mongolia found that families often need to purchase required equipment or supplies such as IV catheters, fluid and surgical instruments. Fees for “setting up patient records” or “donations” were requested. In Solomon Islands, the Government covers medical evacuation to the national referral hospital or abroad. Independent surveys have confirmed that the vast majority of people in Solomon Islands pay nothing out of pocket for health services, including EmONC; thus, no “unofficial” fees are required.

14 In Solomon Islands, “midwife” means registered nurses with an additional year of specialized training.

15 Newly drafted EmONC coaching material in Solomon Islands in 2016 encourages midwives to administer magnesium sulfate.

Lao People's Democratic Republic – A 2013 decree made all maternal health care (ANC, PNC, normal childbirth care and EmONC) officially free. This policy has covered about 60% of the country, though monitoring of implementation has been very limited. As of 2016, 10% of total delivery is considered to be covered by formal sector health insurance. The remainder of health facility deliveries (40% of total deliveries) are supposed to be covered by this free scheme. However, continued charging is anecdotally reported. Deliveries outside public health facilities (50% of total deliveries) are not covered by the free scheme. The country also has a health equity fund for the poorest quintile of the population covering 79% of total districts and 39% of the scheme's target population. Where user fee are still charged, the prices are modest for care in normal pregnancies, but fees for caesarean section is around US\$ 175 at the secondary level and US\$ 188 at the tertiary level. Unofficial charges are reportedly common.

Papua New Guinea – A policy was enacted in 2013 under which all care at primary-level facilities should be free of charge for all patients. However, due to insufficient recurrent budget support to sustain the operations and costs of medicines in rural health facilities, health workers started to charge patients for the services. These facilities are now heavily dependent on user fee revenue for their operations, and no measures have been taken to offset the loss in revenue. As a result, implementation of the free-of-charge policy is limited. The average user fee for ANC was US\$ 3.50¹⁶ and normal delivery was US\$ 5.30 at primary facilities in 2012. The official fee for a normal delivery at a provincial hospital was about US\$ 90. There are plans to eventually subsidize services at the hospital level but these have not yet taken shape. There is no information on the costs of caesarean section or other emergency care. Unofficial charges are reportedly common. The user fee has affected the demands for community maternity care services. Women may wish to avoid the cost of confinement in a health facility by not foregoing ANC visits or choosing to deliver at home.

Philippines – Services at the primary care level are free of charge. The Government is striving to ensure universal health coverage (UHC) through a single-payer insurance system (PhilHealth), which covered 63% of the population in 2013; however, in the same survey, 63.9% of women in the poorest quintile responded that money is a barrier to obtaining health care. The cost for a normal delivery in 2013 ranged from US\$ 45 in a rural health unit to US\$ 108 in a government hospital. The average cost of a caesarean section was US\$ 441. About one fifth of women with a delivery in the past year of the 2013 DHS were PhilHealth members but did not have any of their delivery costs paid by PhilHealth. The main reason for non-payment was bureaucratic issues.¹⁷ A 2010 study of unattended home births in the Philippines found that cost was a barrier for 83% of women who lived within 15 kilometres of a hospital.

Viet Nam – Efforts have been made to achieve UHC through social health insurance. As of 2014, 71% of the population was covered. There was no information on average costs for ANC, normal childbirth care, PNC or caesarean section. Unofficial charges are reportedly common.

16 This is the average cost listed for “maternal care”, which is presumed to mean antenatal/postnatal checks.

17 Data on source of funds are limited to women who delivered in a health facility and reflect both normal delivery and caesarean sections.

D. Monitoring and evaluation systems

D1. Indicators used for monitoring maternal health services

The main indicators used to monitor maternal health services in all countries are ANC, SBA delivery rate and facility delivery rate. The number of ANC contacts varies from “any” in Papua New Guinea to six in Mongolia. PNC contacts are monitored for a range of numbers except in Papua New Guinea (Table 8)

Table 8. Indicators used to monitor maternal health services*

COUNTRY	ANC 4	SBA DELIVERY	FACILITY DELIVERY	PNC 4	CAESAREAN SECTION RATE
Cambodia	Yes	Yes	Yes	PNC 2	Yes
China	Yes	Yes	Yes	Yes	Yes
Lao People’s Democratic Republic	Yes	Yes	Yes	any PNC	Yes
Mongolia	ANC 6	Yes	Yes	Yes	Yes
Papua New Guinea	any ANC	Yes	Yes	No**	No
Philippines	Yes	Yes	Yes	any PNC	No**
Solomon Islands	Yes	Yes	Yes	PNC 2	No
Viet Nam	Yes	Yes	Yes	Yes	Yes

ANC: antenatal care; PNC: prenatal care; SBA: skilled birth attendant

* Indicators of red colour are in national plan with targets.

** Data are available from the DHS but do not appear to be used in monitoring.

Source: WHO

All countries except China conduct periodic population-based surveys such as DHS or Multiple Indicator Cluster Surveys (MICS) to measure coverage or utilization of maternal health services, which also estimate maternal mortality ratios. The interval between surveys is 10 years in Papua New Guinea, Solomon Islands and Viet Nam, and five years in other countries. China relies on data from its vital registration system and maternal child care (MCH) service statistics.

D2. Technical supervision and maternal death surveillance and response

Cambodia and Viet Nam – There are systems in place in both countries for ongoing technical supervision, including specific supervisory checklists and a cascade approach whereby national-level personnel supervise provinces, provinces supervise districts and districts supervise health centres. In Cambodia, there are regular technical meetings between health centre midwives and referral hospital staff called the Midwifery Coordination Alliance Team. In Viet Nam, staff from large national hospitals rotate at the provincial level to provide on-the-job technical training and support.

China – Regular technical supervision is also undertaken in China. Maternal and perinatal health-care quality investigation is conducted at least once a year by each provincial-level health authority and provincial MCH institutions (random sampling of local institutions), and at least once every six months by the county-level health authority and MCH institutions (all institutions). Ministry-level regulations are disseminated in written form as a “red letter notice” to provincial health bureaus followed by local health bureaus. CMA guidelines are disseminated within the network of the medical association through annual conferences, meetings and medical journals, which are accessible to all levels of health providers, including non-physicians. The Capacity Building and Continuing Education Center of the National Health and Family Planning Commission is in charge of in-service training. The centre issues in-service programme application guidelines every year to indicate the requirements and criteria for the training programmes, following ministry-level policy and regulations and the CMA guidelines. Health providers are required to have a certain number of in-service training credits each year. In some counties, obstetricians from tertiary hospitals have provided hands-on training at township health centres to upgrade staff capabilities.

Lao People’s Democratic Republic – The *SBA Development Plan 2008–2012* called for establishment of mechanisms to ensure compliance with midwifery standards, integrated into the regular supervision system. However, this had not been implemented. Some district hospitals hold technical meetings with health centre midwives but this is not uniformly the case.

Mongolia – Technical supervision is conducted regularly but is oriented more towards inspection. Facility assessments are also conducted annually by the Ministry of Health.

Papua New Guinea and the Philippines – Supervision of staff providing maternal health services is devolved to local governments and not standardized nationwide. In Papua New Guinea, supervision of hospital-based maternity care staff is conducted by senior physicians, but there is no regular technical supervision system below the hospital level. In the Philippines, inter-local health zones coordinate services and referrals across administrative lines, and regional centres for health development provide technical assistance and guidance to local government health managers. In contrast to Papua New Guinea, some degree of supervision is generally done at the primary and secondary levels in the Philippines, but the frequency and quality vary. Budget allocations for supervisory visits and technical workshops are also highly variable in different administrative areas. In the absence of clinical protocols approved by the Department of Health for management of maternal health complications at the hospital level, there is no clear reference that can be used to assess clinical practices during supervision. The national health insurer, PhilHealth, exerts a quality-control function in certification of health facility eligibility for reimbursement.

Solomon Islands – There is no regular system of technical supervision to monitor the quality of care. Clinic infrastructure evaluation is conducted every three to five years using checklists developed by the Ministry of Health and Medical Services focusing on physical infrastructure, medicines and equipment, but not specifically on clinical practice.

Maternal death surveillance and response (MDSR) is a quality-of-care improvement process to reduce future preventable maternal mortality. It is a continuous cycle of timely

identification and notification of maternal death, review and analysis to understand why the death occurred, and action to prevent similar death in the future. All countries have MDSR systems in place, though quality varies and is often not satisfactory in achieving their purpose. In the Lao People's Democratic Republic, MDSR is implemented in all provinces and the National MDSR Report with 187 reviewed cases between 2014 and 2016 is under development. In Papua New Guinea, the Philippines and Solomon Islands, MDSR systems are not yet at nationwide scale. In Papua New Guinea, MDSR has been introduced in four provinces but capacity at the provincial level needs to be supported to sustain the systems. The 2012 MDSR review in the Philippines found that 45 out of 81 provinces have implemented it, and that the central Department of Health had very limited information on the number conducted and processes used. The Department of Health organized an MDSR forum in November 2017 to strengthen the reporting from provinces. In Solomon Islands, in addition to a national referral hospital that has regularly conducted maternal death reviews, three provinces have newly established MDSR committees in 2017.

Perinatal death audits also draw attention to quality of antenatal and childbirth care, as this is often a factor contributing to stillbirths and neonatal deaths. While estimates on stillbirths are available (Table 2), health information systems also need to capture causes of stillbirths to understand how maternal care can be improved.

V. Conclusions and recommendations

This report examines the following dimensions of maternal health services in eight countries:

- A. availability of technical guidelines and protocols;
- B. consistency of guidelines and protocols with WHO recommendations and their application in practice; and
- C. service accessibility:

The availability of technical guidelines and protocols in the reviewed countries varies from almost none to very detailed guidelines in easy-to-use formats. Where guidelines and protocols exist, they often do not include the more recent WHO recommendations. This is partly a function of dates because some national guidelines and protocols were developed prior to the issuance of the latest WHO recommendations. However, in many cases new WHO recommendations do not receive sufficient visibility to prompt updating national guidelines. Where the degree of congruity with WHO guidelines is high, the protocols are often not fully applied in practice. In all countries, population-based surveys are used to measure key maternal health indicators. While most such surveys collect information on the services actually rendered during ANC, this is not done for delivery care and PNC. As a result, it is hard to monitor nationwide the application in practice of protocols of delivery care and PNC.

Comprehensive, customized planning of EmONC services is lacking in most countries. There appears to be confusion in some countries regarding what constitutes BEmONC and how this differs from the package of life-saving interventions that should be present at all facilities that provide maternity care. Optimization of trained health workers is fairly good in most of the countries. Although national policies and protocols may allow them to administer life-saving drugs at the primary level, sometimes these medicines are not included in the EMLs for primary-care facilities.

Each country's specific strengths and WHO recommendations are outlined below.

1. Recommendations to Cambodia

Cambodia's major strengths are: (a) clear and comprehensive national technical protocols that are largely consistent with WHO recommendations; (b) clear, well-rationalized plan for delivery of EmONC services that conforms to WHO recommendations; (c) a robust primary health care system with SBAs available; (d) systems for technical supervision and programme monitoring; and (e) a health equity fund to ensure economic access to services by the poor in most of the country.

The Government of Cambodia may consider implementing the following recommendations:

- a. Include urine dipsticks, rapid syphilis test and haemoglobin test materials in the EML at the primary health -care-facility level. Revise the stipulation for magnesium sulfate and parenteral antibiotics in that list from "special need" to "routinely provided". Make sure they are available at all health facilities providing ANC, normal childbirth care and PNC.

- b. Review the assessment framework and identify the technical elements that differ from WHO recommendations in ANC, normal childbirth care, PNC and management of complications. Identify which elements should be revised in the next edition of the Safe Motherhood Protocol. Explore the possibility of introduction of routine antenatal calcium supplementation for the prevention of pre-eclampsia.
- c. In the Cambodia DHS or any relevant population-based health survey nationwide, add elements of care received among women who deliver in a health facility, such as continuous chosen birth companionship, adoption of any position she prefers, no continuous uterine massage in third stage of labour; elements of services during PNC such as blood pressure check and family planning counselling; and amounts spent for delivery in a health facility, especially “tips” to providers.
- d. Strengthen the MDSR, especially at the national level, to respond to the main cause of maternal death. In addition to cases of maternal death, conduct reviews of the quality of care received for women with EmONC such as prolonged labour, severe pre-eclampsia or eclampsia, PPH, and caesarean section. Use the results of MDSR and EmONC case analysis to improve the quality of maternal care.

2. Recommendations to China

China’s major strengths are: (a) availability of free routine maternity care at all levels, and of EmONC from the secondary level onward; (b) CMA protocols for maternity care that highly conform to the latest WHO recommendations; (c) nationwide health-facility delivery subsidy programme to encourage health-facility delivery; and (d) well-established routine monitoring and evaluation system.

The Government of China may consider implementing the following recommendations:

- a. Develop a comprehensive, user-friendly protocol approved by the National Health and Family Planning Commission for both routine maternity care and management of complications consistent with the latest WHO recommendations. First, review the assessment framework for China and identify the technical elements that differ from WHO recommendations in ANC, normal childbirth care, PNC and management of complications. Identify the gaps to be filled by the new protocol approved by the National Health and Family Planning Commission. Actively disseminate it to all health facilities with monitoring of compliance.
- b. Provide magnesium sulfate to all township health centres dealing with maternal care and authorize them in the provision of an initial loading dose prior to referral of patients with severe pre-eclampsia or eclampsia. Ensure availability of infusion pumps for IV administration of magnesium sulfate maintenance dose for severe pre-eclampsia and eclampsia cases, or 50% magnesium sulfate for the IM route when infusion pumps are unavailable.
- c. Add key maternal care indicators related to interventions received during ANC, normal childbirth care and PNC in the national household health surveys so that population-based estimates of these indices are available. These can include continuous chosen birth companionship, adoption of any position she prefers, no continuous uterine massage in third stage of labour, elements of services during PNC such as blood pressure check and family planning counselling.
- d. Continue and accelerate current efforts to address the high rate of caesarean section. Further reduction could be expected by providing information on the benefits of vaginal delivery and the risks of caesarean section to both the general population and health providers, and promoting appropriate use of induction and augmentation of labour and AVD as alternatives where appropriate.

3. Recommendations to the Lao People's Democratic Republic

Major strengths of the Lao People's Democratic Republic are: (a) a relatively well-optimized existing workforce; (b) measures under way to increase availability of SBAs at primary levels; and (c) a policy framework for rendering maternity services, including economic accessibility.

The Government of the Lao People's Democratic Republic may consider implementing the following recommendations:

- a. Review the assessment framework and identify the technical elements that differ from WHO recommendations in ANC, normal childbirth care, PNC and management of complications. Identify the gaps to be filled, and develop and disseminate a comprehensive updated Ministry of Health protocol for both routine maternal health care and management of complications, consistent with the latest WHO recommendations, including the perspective of women-centred care. This may include routine antenatal calcium supplementation at ANC to reduce the incidence of eclampsia, administration of the full loading dose of magnesium sulfate for severe pre-eclampsia and eclampsia, initiation of IV oxytocin drips in treatment of PPH, and routine monitoring during intrapartum and within 24 hours after the childbirth for early detection of any emergency sign. Widely disseminate and ensure that all relevant health-care providers are trained in the updated protocol.
- b. Address shortages in life-saving obstetric drugs and equipment, especially at health centres and district hospitals.
- c. Expedite posting of newly trained midwives to health facilities where a considerable number of deliveries occur to achieve one or more midwives per health facility to ensure 24-hour, seven-day availability of maternal health services.
- d. Develop and implement a system of supportive technical supervision for midwives at health facilities and assess their performance and competencies. Based on the assessment, plan to provide in-service training or preceptorships at a provincial or district hospital for midwives who do not meet minimal standards.
- e. Assess EmONC facilities at periodic intervals and use findings to develop and implement EmONC improvement plans. The performance of signal functions in the past three months could be modified to specify a longer time period when applied to facilities that serve small populations.
- f. In the Lao Social Indicator Survey (LSIS) or any relevant nationwide population-based health survey, add elements of care for women who deliver in a health facility, such as continuous chosen birth companionship, adoption of any position she prefers, no urinary catheter, no continuous uterine massage in third stage of labour; elements of services during PNC such as blood pressure check and family planning counselling; and amounts spent for delivery in a health facility, especially "tips" to providers.
- g. Continue efforts to expand the newly developed EmONC coaching at the provincial level. After the first introduction of EmONC coaching, review medical charts of women who received EmONC for prolonged labour, severe pre-eclampsia or eclampsia, PPH, or caesarean section to monitor the competency of health-care providers in delivering EmONC. Strengthen the MDSR at both the national and provincial levels. Use the results from reviews of maternal death and EmONC charts to improve the quality of maternal care.

4. Recommendations to Mongolia

Mongolia's major strengths are: (a) technical protocols that are largely consistent with WHO recommendations; (b) well-functioning secondary- and tertiary-level hospitals linked to a functional primary health care system; (c) policy of free maternal health care in government facilities; and (d) well-established programme monitoring system.

The Government of Mongolia may consider implementing the following recommendations:

- a. Review the assessment framework for Mongolia identifying the technical elements that differ from WHO recommendations in ANC, normal childbirth care, PNC and management of complications. Identify the gaps to be filled and update the national technical protocols to reflect the latest WHO recommendations. Conduct back translations on Mongolian versions of the WHO MCPC to ensure accuracy if necessary.
- b. Discontinue the interventions not recommended by WHO such as use of enemas, artificial rupture of membranes, IV fluids, routine episiotomy and continuous uterine massage.
- c. Ensure availability of infusion pumps for IV administration of magnesium sulfate maintenance dose for severe pre-eclampsia and eclampsia cases in all health facilities designated for BEmONC, or introduce 50% magnesium sulfate for the IM route when infusion pumps are unavailable.
- d. Consider introducing low-dose aspirin (75 milligrams) initiated before 20 weeks of gestation for the prevention of pre-eclampsia in women at high risk of developing the condition. Assess adequacy of calcium intake in pregnancy and, if it is low, introduce routine calcium supplementation to all women during pregnancy.
- e. Provide refresher training in AVD and equipment to physicians in *aimag* (province) hospitals and *soum* (district) hospitals designated for BEmONC.
- f. Add key maternal care indicators in the national household health surveys so that population-based estimates of these information are available. These can include continuous chosen birth companionship and adoption of any position she prefers, including in a delivery room, and no continuous uterine massage in the third stage of labour; elements of services during PNC such as blood pressure check and family planning counselling; and amounts spent for delivery in a health facility, especially "tips" to providers.
- g. Continue strengthening the MDSR. In addition to cases of maternal death, conduct review of quality of care received for women with EmONC for prolonged labour, severe pre-eclampsia or eclampsia, PPH and caesarean section. Use these results to improve the quality of maternal care.

5. Recommendations to Papua New Guinea

Major strengths in Papua New Guinea are: (a) a regularly updated comprehensive technical protocol for management of obstetric complications; (b) workforce optimization; and (c) a policy for reducing economic barriers through free primary health-care services.

The Government of Papua New Guinea may consider implementing the following recommendations:

- a. Review and follow up on the recommendations of the four-year midwifery project that ended in December 2015. Develop a long-term midwifery plan to address long-standing shortage of midwives.
- b. Introduce the following antenatal interventions: (a) mebendazole for all pregnant women; (b) routine antenatal calcium supplementation during pregnancy at all levels of care to reduce the incidence of eclampsia; (c) plan for the place of delivery; and (d) administration of misoprostol by CHWs immediately after home delivery to prevent PPH.
- c. Add useful maternal health data in the health-facility datasets to gauge quality of care. These can include data on chosen birth companionship; adoption of preferred position; number of PNC contacts; elements of services during PNC such as blood pressure check and family planning counselling; and amounts spent for delivery in a health facility, especially “tips” to providers.
- d. Strengthen the MDSR system both at the national and provincial levels. In addition to cases of maternal death, conduct reviews of quality of care received for women with EmONC for prolonged labour, severe pre-eclampsia or eclampsia, PPH, and caesarean section during the supervision. Use the results of maternal death and EmONC case analysis to improve the quality of maternal care.
- e. Strengthen the capacity of rural health facilities, especially in district hospitals, to be able to offer quality maternal health-care services, including EmONC. In particular, support the availability of life-saving drugs and equipment in those health facilities and deployment of skilled health-care providers.
- f. Establish an EmONC training and supervisory team in each provincial hospital to support ongoing capacity-building for staff, including those in rural health facilities.
- g. Provide health centres and hospitals with training and equipment in MVA as the preferred means of surgical evacuation of retained uterine contents such as placental fragments.
- h. Establish quality-care improvement tools for antenatal, childbirth and postnatal care and ensure they are carried out regularly as a way of strengthening the competency of health-care providers in the management of common life-threatening conditions such as PPH, severe pre-eclampsia or eclampsia, and obstructed labour. Develop guidelines for systematic patient referral to ensure better communication between lower-level health facilities and upper-level health facilities to minimize waiting time for patients transferring from one facility to the other.

6. Recommendations to the Philippines

Major strengths in the Philippines are: (a) technical protocols exist for routine ANC, childbirth care, PNC and first-line stabilization of emergencies; (b) availability of SBAs at all levels of the health system; and (c) commitment to achieving universal health care coverage through the national health insurance scheme.

The Government of the Philippines may consider implementing the following recommendations:

- a. Develop a comprehensive, user-friendly protocol approved by the Department of Health for both routine maternal health care and management of complications consistent with current WHO recommendations. First, review the assessment framework for the Philippines identifying the technical elements that differ from WHO recommendations in ANC, normal childbirth care, PNC and management of complications. Identify the gaps to be filled by the new Department of Health-approved protocol. This may include the introduction of routine antenatal calcium supplementation for all women during pregnancy and low-dose aspirin (75 milligrams) initiated before 20 weeks of gestation for the prevention of pre-eclampsia in women at high risk of developing the condition, and the introduction of the early use of intravenous tranexamic acid in addition to standard PPH treatment package.
- b. Conduct baseline assessments of the designated EmONC facilities and then develop comprehensive EmONC plans for all provinces, ensuring that there are at least five facilities per 500 000 population providing all seven BEmONC signal functions, as well as one CEmONC providing all nine signal functions.
- c. Remove limitations on midwives to perform manual removal of retained placenta so that they are included as core midwifery and EmONC functions in practice.¹⁸
- d. Develop and implement supplemental training for BEmONC facilities in the signal functions of vacuum extraction and manual removal of retained placenta at least in situations where it is necessary to control active haemorrhage and remove retained products of conception or placental fragments.¹⁹ Train and equip hospital physicians to perform MVA as a safer alternative to dilation and curettage in management of incomplete or inevitable spontaneous abortion and molar pregnancy.
- e. Review the reimbursement structure of Phil Health to ensure compensation for lower-level providers who refer complicated obstetric cases to a higher level and to limit reimbursement of caesarean section to cases with medical indication.
- f. Add key maternal care indicators related to interventions received during ANC, delivery and PNC in the national household health surveys such as DHS so that population-based estimates of these indices are available. These can include continuous chosen birth companionship, adoption of any position she prefers, no continuous uterine massage in the third stage of labour, number of PNC contacts; elements of services during PNC such as blood pressure check and family planning counselling; and amounts spent for delivery in a health facility, especially “tips” to providers.
- g. Further strengthen and promote MDSR at the provincial level. In addition to maternal death cases, conduct reviews of quality of care received for women with EmONC for prolonged labour, severe pre-eclampsia or eclampsia, PPH and caesarean section. Use the results of MDSR and EmONC case analysis to improve the quality of maternal care.

18. Although the Philippine Midwifery Act of 1992 does not forbid manual removal of placenta, only physicians are allowed to perform it.

19. The present BEmONC training manual provides training in initial measures necessary at all health facilities and does not cover these BEmONC functions.

7. Recommendations to Solomon Islands

Major strengths in Solomon Islands are: (a) a robust, nurse-led primary health care system; (b) well-enforced policy of free health care; and (c) training materials for ANC, childbirth care and PNC that conform to best practices.

The Government of Solomon Islands may consider implementing the following recommendations:

- a. Develop and disseminate a comprehensive national protocol. First, go through the assessment framework identifying the technical elements that differ from WHO recommendations in ANC, normal childbirth care, PNC and management of complications. Identify the gaps to be filled and develop and disseminate a single comprehensive protocol by the Ministry of Health and Medical Services for both routine maternal health care and management of complications. This may include routine screening and treatment of syphilis and HIV during pregnancy, and routine antenatal calcium supplementation at ANC to reduce the incidence of eclampsia.
- b. Add key maternal care indicators related to interventions received during ANC, delivery and PNC in the national household health surveys such as DHS so that population-based estimates of these indices are available. These can include continuous chosen birth companionship, adoption of any position she prefers, no continuous uterine massage in the third stage of labour; elements of services during PNC such as blood pressure check and family planning counselling; and amounts spent for delivery in a health facility, especially transportation costs.
- c. Train and equip nurse aides in remote rural communities where normal delivery occurs in basic delivery care. Make sure they can identify the first signs of obstetric emergencies and provide appropriate stabilization measures. Integrate this into future pre-service training of nurse aides. Ensure that nurse aide posts where normal delivery occurs are supplied with oxytocin to prevent PPH. If refrigeration is not possible, supply misoprostol until means of refrigeration are available.
- d. Revise EML to provide magnesium sulfate to all area health centres where delivery occurs.
- e. Continue efforts to expand the newly developed EmONC coaching in the national referral hospital and other hospitals to lower-level health facilities where delivery occurs. After introducing EmONC coaching, conduct reviews of quality of care received for women with EmONC for prolonged labour, severe pre-eclampsia or eclampsia, PPH, and caesarean section to monitor the competency of health-care providers in delivering EmONC.
- f. Continue efforts to establish an MDSR system. Use the results of review of maternal death and charts of EmONC cases to improve the quality of maternal care, including EmONC.

8. Recommendations to Viet Nam

Viet Nam's major strengths are: (a) functional health system at primary, secondary and tertiary levels; (b) availability of SBAs in most primary care facilities; (c) availability of user-friendly comprehensive technical protocols; (d) optimization of the health workforce; and (e) commitment to achieving universal health care coverage through national health insurance.

The Government of Viet Nam may consider implementing the following recommendations:

- a.** Update the national guidelines for reproductive health-care services to reflect the latest WHO recommendations. First, review the assessment framework for Viet Nam identifying the technical elements that differ from WHO recommendations in ANC, normal childbirth care, PNC and management of complications to identify the gaps in the current national guidelines. These can include routine distribution of mebendazole, routine calcium supplementation for all pregnant women, and administration of low-dose aspirin (75 milligrams) initiated before 20 weeks of gestation in women at high risk of developing pre-eclampsia or eclampsia.
- b.** Discontinue the interventions not recommended by WHO such as use of enemas, artificial rupture of membranes, IV fluids, routine episiotomy and continuous uterine massage.
- c.** Conduct assessments of all designated EmONC facilities to measure the provision of all signal functions and the availability of necessary resources (medicines, instrument and capacity of health-care provider). Repeat the assessment periodically to monitor progress.
- d.** Provide refresher training on AVD or at least vacuum extraction, and provide necessary equipment to staff of district and provincial hospitals and any commune health centres designated as BEmONC.
- e.** Investigate and address reasons for excessive use of caesarean section. One option would be to revise health insurance reimbursement practices to limit medically indicated caesarean section procedures.
- f.** Continue strengthening the MDSR, especially the response element. In addition to maternal death cases, conduct reviews of quality of care received for women with EmONC for prolonged labour, severe pre-eclampsia or eclampsia, PPH, and caesarean section. Use these review results to improve the quality of maternal care nationwide.
- g.** Add key maternal care indicators related to interventions received during ANC, normal childbirth and PNC in the national household health surveys such as DHS so that population-based estimates of these indices are available. These can include continuous chosen birth companionship, taking oral fluid and food, no enema, adoption of any position she prefers, no continuous uterine massage in the third stage of labour; elements of services during PNC such as blood pressure check and family planning counselling; and amounts spent for delivery in a health facility, especially "tips" to providers.

Bibliography

ACCESS Project. Piloting an integrated postnatal care program for midwives in Cambodia. 2009

Berger S. Tetanus: global status. Los Angeles: Gideon Informatics, Inc.; 2015.

Blencowe H, Cousens S, Jassir FB, et al. for The Lancet Stillbirth Epidemiology Investigator Group. National, regional, and worldwide estimates of stillbirth rates in 2015, with trends from 2000: a systematic analysis. *Lancet Glob Health* 2016; published online Jan 18. ([http://dx.doi.org/10.1016/S2214-109X\(15\)00275-2](http://dx.doi.org/10.1016/S2214-109X(15)00275-2), accessed 1 November 2017).

Castillo MS, Corsino MA, Calibo AP, et al. Turning disaster into an opportunity for quality improvement in Essential Intrapartum and newborn care services in the Philippines: Pre- to Post-training assessments. *Biomed Res Int.* 2016;2016:6264249. doi: 10.1155/2016/6264249.

Keller S. Assessment of MNCH vouchers reproductive health association of Cambodia. 2012 [unpublished]

Keller S. Mapping abortion policies, programmes and services in the Western Pacific Region. [unpublished]

Merialdi M, Mathai M, Ngoc NTN, et al. World Health Organization systematic review of the literature and multinational nutritional survey of calcium intake during pregnancy. *Fetal Matern Med Rev.* 2005;16(2):97–121. doi:10.1017/S0965539505001506.

Oyerinde K, Baravilala W. Alternative measures of spatial distribution and availability of health facilities for the delivery of emergency obstetric services in island communities. *Matern Child Health J.* 2014;18(10):2245–9. doi:10.1007/s10995-013-1376-9.

United Nations Children’s Fund (UNICEF). Data: monitoring the situation of children and women [website]. New York; 2017 (<http://data.unicef.org/topic/maternal-health/antenatal-care/>, accessed 31 May 2017).

United Nations Children’s Fund, World Health Organization, World Bank Group, United Nations. Levels & Trends in Child Mortality. Report 2017. New York; United Nations Children’s Fund; 2017 (https://www.unicef.org/publications/files/Child_Mortality_Report_2017.pdf, assessed 1 November 2017)

United Nations Economic and Social Commission for Asia and the Pacific (ESCAP). Promoting sustainable strategies to improve access to health care in the Asian and Pacific Region. Bangkok: ESCAP; 2009 (<http://www.unescap.org/resources/promoting-sustainable-strategies-improve-access-health-care-asian-and-pacific-region>, accessed 1 November 2017).

World Health Organization. Clinical practice handbook for safe abortion. Geneva; 2014 (http://apps.who.int/iris/bitstream/10665/97415/1/9789241548717_eng.pdf, accessed 1 November 2017).

World Health Organization. Consolidated guidelines on the use of antiretroviral drugs for treating and preventing HIV infection. Geneva; 2013 (<http://www.who.int/hiv/pub/guidelines/arv2013/en/>, accessed 1 November 2017).

World Health Organization. Diagnostic criteria and classification of hyperglycaemia first detected in pregnancy. Geneva; 2013 (http://apps.who.int/iris/bitstream/10665/85975/1/WHO_NMH_MND_13.2_eng.pdf, accessed 6 November 2017).

World Health Organization. Guideline: daily iron and folic acid supplementation in pregnant women. Geneva; 2012 (http://apps.who.int/iris/bitstream/10665/77770/1/9789241501996_eng.pdf, accessed 6 November 2017).

World Health Organization. Guideline: vitamin A supplementation in pregnant women. Geneva; 2011 (http://apps.who.int/iris/bitstream/10665/44625/1/9789241501781_eng.pdf, accessed 1 November 2017).

World Health Organization. Guidelines on maternal, newborn, child and adolescent health approved by the WHO Guidelines Review Committee: recommendations on maternal and perinatal health. Geneva; 2013 (http://www.who.int/maternal_child_adolescent/documents/guidelines-recommendations-maternal-health.pdf, accessed 1 November 2017).

World Health Organization. Health worker roles in providing safe abortion care and post-abortion contraception. Geneva; 2015 (http://apps.who.int/iris/bitstream/10665/181041/1/9789241549264_eng.pdf, accessed 6 November 2017).

World Health Organization. Making pregnancy safer: the critical role of the skilled birth attendant. A joint statement by WHO, ICM and FIGO. Geneva; 2004 (<http://apps.who.int/iris/bitstream/10665/42955/1/9241591692.pdf>, accessed 1 November 2017).

World Health Organization. Managing complications in pregnancy and childbirth: a guide for midwives and doctors. First Edition. Geneva; 2000 [reprinted in 2007] (http://apps.who.int/iris/bitstream/10665/43972/1/9241545879_eng.pdf, accessed 1 November 2017).

World Health Organization. Managing complications in pregnancy and childbirth: a guide for midwives and doctors. Second Edition. Geneva; 2017 (http://www.who.int/maternal_child_adolescent/documents/managing-complications-pregnancy-childbirth/en/, accessed 6 November 2017).

World Health Organization. Monitoring emergency obstetric care: a handbook. Geneva; 2009 (http://apps.who.int/iris/bitstream/10665/44121/1/9789241547734_eng.pdf, accessed 1 November 2017).

World Health Organization. Pregnancy, childbirth, postpartum and newborn care: a guide for essential practice. Second Edition. Geneva; 2006.

World Health Organization. Pregnancy, childbirth, postpartum and newborn care: a guide for essential practice. Third Edition. Geneva; 2015 (http://www.who.int/maternal_child_adolescent/documents/imca-essential-practice-guide/en/, accessed 6 November 2017).

World Health Organization. The prevention and elimination of disrespect and abuse during facility-based childbirth. WHO Statement. Geneva; 2015 (http://apps.who.int/iris/bitstream/10665/134588/1/WHO_RHR_14.23_eng.pdf, accessed 1 November 2017).

World Health Organization. Responding to intimate partner violence and sexual violence against women: WHO clinical and policy guidelines. Geneva; 2013 (http://apps.who.int/iris/bitstream/10665/85240/1/9789241548595_eng.pdf, accessed 6 November 2017).

World Health Organization. Trends in maternal mortality: 1990 to 2015: estimates by WHO, UNICEF, UNFPA, World Bank Group and the United Nations Population Division. Geneva; 2015 (<http://www.who.int/reproductivehealth/publications/monitoring/maternal-mortality-2015/en/>, accessed 1 November 2017).

World Health Organization. WHO handbook for guideline development. 2nd edition. Geneva; 2014 (http://www.who.int/publications/guidelines/handbook_2nd_ed.pdf?ua=1, accessed 1 November 2017)

World Health Organization. WHO recommendations: optimizing health worker roles to improve access to key maternal and newborn health interventions through task shifting. Geneva; 2012 (http://apps.who.int/iris/bitstream/10665/77764/1/9789241504843_eng.pdf, accessed 1 November 2017).

World Health Organization. WHO recommendations for augmentation of labour. Geneva; 2014 (http://www.who.int/reproductivehealth/publications/maternal_perinatal_health/augmentation-labour/en/, accessed 1 November 2017).

World Health Organization. WHO recommendations for induction of labour. Geneva; 2011 (http://www.who.int/reproductivehealth/publications/maternal_perinatal_health/9789241501156/en/, accessed 1 November 2017).

World Health Organization. WHO recommendations for prevention and treatment of maternal peripartum infections. Geneva; 2015 (http://www.who.int/reproductivehealth/publications/maternal_perinatal_health/peripartum-infections-guidelines/en/, accessed 1 November 2017).

World Health Organization. WHO recommendations for prevention and treatment of pre-eclampsia and eclampsia. Geneva; 2011 (http://apps.who.int/iris/bitstream/10665/44703/1/9789241548335_eng.pdf, accessed 1 November 2017).

World Health Organization. WHO recommendations for the prevention and treatment of postpartum haemorrhage. Geneva; 2012 (http://www.who.int/maternal_child_adolescent/documents/postpartum_haemorrhage/en/, accessed 1 November 2017).

World Health Organization. WHO recommendations on antenatal care for a positive pregnancy experience. Geneva; 2016 (<http://apps.who.int/iris/bitstream/10665/250796/1/9789241549912-eng.pdf>, accessed 6 November 2017).

World Health Organization. WHO statement on caesarean section rates. Geneva; 2015 (http://apps.who.int/iris/bitstream/10665/161442/1/WHO_RHR_15.02_eng.pdf?ua=1, accessed 6 November 2017).

World Health Organization. WHO recommendations on interventions to improve preterm birth outcomes. Geneva; 2015 (http://www.who.int/reproductivehealth/publications/maternal_perinatal_health/preterm-birth-guideline/en/, accessed 1 November 2017).

World Health Organization. WHO recommendations on postnatal care of the mother and newborn. Geneva; 2013 (http://www.who.int/maternal_child_adolescent/documents/postnatal-care-recommendations/en/, accessed 1 November 2017).

World Health Organization. WHO recommendations on tranexamic acid for the treatment of postpartum haemorrhage. Geneva; 2017 (<http://apps.who.int/iris/bitstream/10665/259374/1/9789241550154-eng.pdf>, accessed 20 November 2017).

World Health Organization, United Nations Children's Fund. Action plan for healthy newborn infants in the Western Pacific Region (2014–2020). Manila; 2014 (http://www.wpro.who.int/child_adolescent_health/documents/regional_action_plan_newborn/en/, accessed 6 November 2017).

World Health Organization, United Nations Children's Fund. Guideline: updates on HIV and infant feeding: the duration of breastfeeding, and support from health services to improve feeding practices among mothers living with HIV. Geneva; 2016. (<http://apps.who.int/iris/bitstream/10665/246260/1/9789241549707-eng.pdf?ua=1>, accessed 6 November 2017).

Annex 1. Assessed country documents

Cambodia

Royal Government of Cambodia Ministry of Health. Cambodia EmONC improvement plan January 2010 – December 2015. Phnom Penh; 2009.

Royal Government of Cambodia Ministry of Health. Comprehensive abortion care protocol. Phnom Penh; 2008.

Royal Government of Cambodia Ministry of Health. Essential medicines list (Draft). Phnom Penh; 2015.

Royal Government of Cambodia Ministry of Health. Fast track initiative road map for reducing newborn and maternal mortality 2010–2015. Phnom Penh; 2010.

Royal Government of Cambodia Ministry of Health. Health facility survey in Cambodia 2010. Phnom Penh; 2010.

Royal Government of Cambodia Ministry of Health. Health information system 2014. [Data supplied by WHO/Cambodia Country Office.]

Royal Government of Cambodia Ministry of Health. National guideline for the prevention of mother-to-child transmission of HIV. Phnom Penh; 2011.

Royal Government of Cambodia Ministry of Health. National policy and guidelines for micronutrient supplementation to prevent and control deficiencies in Cambodia. Phnom Penh; 2012.

Royal Government of Cambodia Ministry of Health. National treatment guidelines for Malaria in Cambodia. Phnom Penh; 2012.

Royal Government of Cambodia Ministry of Health. Review of the Cambodian emergency obstetric and newborn care improvement plan 2010–2015. Phnom Penh; 2015.

Royal Government of Cambodia Ministry of Health. Safe motherhood clinical management protocol for health centers. Phnom Penh; 2010.

Royal Government of Cambodia Ministry of Health. Safe motherhood clinical management protocol for referral hospital. Phnom Penh; 2013.

Royal Government of Cambodia Ministry of Health. Safe motherhood clinical management protocol for health centers. Phnom Penh; 2016.

Royal Government of Cambodia Ministry of Health, Department of Planning and Health Information. Health coverage plan [Excel spreadsheet data obtained from the Ministry of Health in February 2015].

Royal Government of Cambodia Ministry of Health, National Maternal and Child Health Center, National Reproductive Health Program. National strategy for reproductive and sexual health in Cambodia 2013–2016. Phnom Penh; 2012.

Royal Government of Cambodia Ministry of Planning, National Institute of Statistics (NIS). Cambodia Demographic and Health Survey 2014: Key indicators report. Phnom Penh: NIS; 2014.

Royal Government of Cambodia National AIDS Authority. Cambodia country progress report. Monitoring progress towards the 2011 UN political declaration on HIV and AIDS reporting period: January – December 2014. Phnom Penh; 2015.

Royal Government of Cambodia National Institute of Public Health. National emergency obstetric and newborn care assessment. Phnom Penh; 2009.

China

Anand S, Fan VY, Zhang J, et al. China's human resources for health: quantity, quality, and distribution. *Lancet*. 2008;372(9651):1774–81. doi:10.1016/S0140-6736(08)61363-X.

Beijing University, China Center for Health Development Studies. Functions and human resources of China's primary health care system in the early stage of health systems reform. Beijing: China Center for Health Development Studies; 2011.

Chinese Medical Association. Consensus of caesarean specialists. Beijing; 2014.

Chinese Medical Association. Consensus on prevention and treatment of postpartum depression guidelines. Beijing; 2014.

Chinese Medical Association. Guideline for antibiotics usage in gynaecology and obstetrics. *Chinese Journal of Obstetrics and Gynecology*. 2011;1(46):230-233.

Chinese Medical Association. Guidelines for cervical ripening and induction of labor in late pregnancy. Beijing; 2014.

Chinese Medical Association. Guidelines for clinical treatment of twin pregnancy. Beijing; 2015.

Chinese Medical Association. Guidelines for diagnosis and treatment of gestational iron deficiency and iron deficiency anemia. Beijing; 2014.

Chinese Medical Association. Guidelines for diagnosis and treatment of hypertension in pregnancy. Beijing; 2015.

Chinese Medical Association. Guidelines for diagnosis and treatment of placenta accreta. Beijing; 2015.

Chinese Medical Association. Guidelines for diagnosis and treatment of placenta abruption. Beijing; 2012.

Chinese Medical Association. Guidelines for diagnosis and treatment of placenta praevia. Beijing; 2013.

Chinese Medical Association. Guidelines for diagnosis and treatment of premature rupture of membranes. Beijing; 2015.

Chinese Medical Association. Guidelines for diagnosis and treatment of pre-term labor. Beijing; 2015.

Chinese Medical Association. Guidelines for hypovolemic shock (hemorrhagic shock) resuscitation. Beijing; 2007.

Chinese Medical Association. Guidelines for pre-pregnancy and pregnancy. Beijing; 2011.

Chinese Medical Association. Guidelines for prevention and treatment of postpartum hemorrhage. Beijing; 2014.

Chinese Medical Association. Guidelines for treatment of gestational diabetes. Beijing; 2014.

Feng XL, Shi G, Wang Y, et al. An impact evaluation of the safe motherhood program in China. *Health Econ*. 2010;19 Suppl:69-94. doi:10.1002/hec.1593.

Feng XL, Xu L, Guo Y, Ronsmans C. Socioeconomic inequalities in hospital births in China between 1988 and 2008. *Bull World Health Organ*. 2011;89(6):432–41. doi:10.2471/BLT.10.085274.

Gan XL, Hao CL, Dong XJ, et al. Provincial maternal mortality surveillance systems in China. *Biomed Res Int*. 2014;2014:187896. doi:10.1155/2014/187896

He Y, Zhai F, Wang Z, Hu H. Status of dietary calcium intake of Chinese residents [article in Chinese]. *Wei Sheng Yan Jiu*. 2007;36(5):600–602. [English-language abstract accessed through PubMed: <http://www.ncbi.nlm.nih.gov/pubmed/18095576>.]

Hellerstein S, Feldman S, Duan T. China's 50% caesarean delivery rate: is it too high? *BJOG*. 2015;122(2):160–164. doi:10.1111/1471-0528.12971

Liang J, Li X, Dai L, et al. The changes in maternal mortality in 1000 counties in mid-Western China by a government-initiated intervention. *PLoS One*. 2012;7(5):e37458. doi:10.1371/journal.pone.0037458.

Long Q, Zhang Y, Raven J, et al. Giving girth at a health-care facility in rural China: is it affordable for the poor? *Bull World Health Organ*. 2011;89(2):144–52. doi:10.2471/BLT.10.079434

National People's Congress Standing Committee. Maternal and infant health care law of the People's Republic of China. Revised on 4 November 2017. Beijing.

People's Republic of China. Law of the People's Republic of China on maternal and infant health care.

People's Republic of China Ministry of Foreign Affairs/United Nations System in China. China's progress towards the Millennium Development Goals 2013 report. Beijing: Ministry of Foreign Affairs; 2013.

People's Republic of China Ministry of Foreign Affairs/United Nations System in China. Report on China's implementation of the Millennium Development Goals (2000-2015). Beijing: Ministry of Foreign Affairs; 2015.

People's Republic of China Ministry of Health. From malaria control to elimination: A revised national malaria strategy 2010–2015. Beijing; 2010.

People's Republic of China Ministry of Health. Guidelines for maternal health care techniques. Beijing; 2011.

People's Republic of China Ministry of Health. Technical guidelines for prevention and control of reproductive tract infection. Beijing; 2011.

People's Republic of China Ministry of Health, UNICEF, WHO and UNFPA. Joint review of maternal and child survival strategies in China. Beijing; 2006.

People's Republic of China Ministry of Health, Maternal and Child Health Department. The regulation for maternal health care. Beijing; 2011.

People's Republic of China Ministry of Health, Maternal and Child Health Department. The regulation for maternal health care. Beijing; 2014.

People's Republic of China Ministry of Health. Maternal and child mortality surveillance report 2015. Beijing; 2016.

People's Republic of China National Health and Family Planning Commission. 2015 China AIDS response progress report. Beijing; 2015.

People's Republic of China National Health and Family Planning Commission. Chinese health statistical yearbook 2013. Beijing: 2013 (<http://www.nhfpc.gov.cn/htmlfiles/zwgkzt/ptjnj/year2013/index2013.html>, accessed 1 November 2017).

People's Republic of China National Health and Family Planning Commission. Implementation plan for the prevention of mother-to-child transmission of HIV/AIDS, syphilis, and hepatitis B. Beijing; 2015.

People's Republic of China National Health and Family Planning Commission. Success factors for women's and children's health. The Partnership for Maternal, Newborn and Child Health/WHO. Geneva: World Health Organization; 2014 (http://www.who.int/pmnch/knowledge/publications/china_country_report.pdf?ua=1, accessed 1 November 2017).

People's Republic of China National Health and Family Planning Commission, Maternal and Child Health Department. China national programme for prevention of maternal-to-child transmission of HIV, syphilis and hepatitis B: A progress report. Beijing: National Family Planning Commission; 2015.

People's Republic of China National Health and Family Planning Commission, Maternal and Child Health Department. Maternal and child mortality surveillance (MCMS) report 2013. Beijing: National Health and Family Planning Commission; 2013.

People's Republic of China National Malaria Control Program. From malaria control to elimination: A revised national malaria strategy 2010-2015. Beijing; 2009.

Qian X, Smith H, Liang H, Liang J, Garner P. Evidence-informed obstetric practice during normal birth in China: trends and influences in four hospitals. *BMC Health Serv Res.* 2006;6:29. doi:10.1186/1472-6963-6-29.

Song Li. China progress on prevention of mother-to-child transmission of HIV, syphilis and HBV. Presentation at Bi-regional PPTCT Taskforce Conference. Beijing; 15–17 September 2015.

World Health Organization, China National Health Development Research Center. China health service delivery profile, 2012. Beijing: China National Health Development Research Center; 2012 (http://www.wpro.who.int/health_services/service_delivery_profile_china.pdf, accessed 1 November 2017).

World Health Organization Regional Office for the Western Pacific. China eliminates maternal and neonatal tetanus [press release]. 30 October 2012. Manila; 2012 (<http://www.wpro.who.int/mediacentre/releases/2012/20121030/en/>, accessed 1 November 2017).

Xie X, Gou W. *Obstetrics and gynecology (expanded, Third Edition)*. Beijing: People's Medical Publishing House; 2013.

Zhou Y, Li H, Zhu L, Li Z, Zhang Y, Liu J. Secular trends of operative vaginal delivery in southern and northern China during 1993-2010 [article in Chinese]. *Zhonghua Yi Xue Za Zhi.* 2014;94(45):3599–602. [English-language abstract retrieved from PubMed: <http://www.ncbi.nlm.nih.gov/pubmed/25622844>.]

Lao People's Democratic Republic

Asia Pacific Observatory on Health Systems and Policies. Lao People's Democratic Republic health system review. *Health Systems in Transition.* Vol. 4, No. 1 2014. Geneva: World Health Organization; 2014.

Asian Development Bank. Health sector governance program: Report and recommendation of the president (RRP LAO 47137-003). Sector Assessment (Summary). Manila: Asian Development Bank; 2015.

Asian Development Bank. Independent Evaluation Department. Validation report: Lao People's Democratic Republic: Health System Development Project. Reference Number PVR-319. Manila: Asian Development Bank; 2014.

Boudreaux C, Chanthala P, Lindelow M. Assessing the elimination of user fees for delivery services in Laos. *PLoS One*. 2014;9(3):e89784. doi:10.1371/journal.pone.0089784.

Douangphachanh X, Ali M, Outavang P, Alongkon P, Sing M, Chushi K. Availability and use of emergency obstetric care services in public hospitals in Laos PDR: a systems analysis. *Biosci Trends*. 2010;4(6):318–24.

Korea International Cooperation Agency (KOICA), Seoul National University. Continuous professional development training materials for provincial and district hospitals in Lao PDR. Vientiane: KOICA; 2013. Lao People's Democratic Republic Ministry of Health. MCH Care Guide for Health Workers. Vientiane: Ministry of Health; 2005.

Lao People's Democratic Republic Ministry of Health. Agreement of the Minister of Health on the implementation of free delivery and free health care for children under 5 years old. No. 167. Vientiane; 2013.

Lao People's Democratic Republic Ministry of Health. Antenatal and postnatal care manual. Vientiane; 2010.

Lao People's Democratic Republic Ministry of Health. Assessment of skilled birth attendance in Lao PDR. Vientiane: Ministry of Health/UNFPA; 2008.

Lao People's Democratic Republic Ministry of Health. Basic emergency obstetric and newborn – life saving skills. Vientiane; 2010.

Lao People's Democratic Republic Ministry of Health. Intrapartum care: Competency-based training module for nurses, MAs, and MDs. Vientiane; 2012.

Lao People's Democratic Republic Ministry of Health. Laos national health statistics report FY2015–2016. Vientiane; 2017.

Lao People's Democratic Republic Ministry of Health. Midwifery improvement plan 2016–2020 (DRAFT). Vientiane; 2015.

Lao People's Democratic Republic Ministry of Health. Midwives in Lao PDR scaling up skilled birth attendance: Putting midwives at the community-level towards achieving MDGs for mothers and children. Vientiane: Ministry of Health/UNFPA; 2012.

Lao People's Democratic Republic Ministry of Health. Ministerial decision on guidelines for the scope of midwifery practice. No. 1764. Vientiane; 2009.

Lao People's Democratic Republic Ministry of Health. Ministerial decision on nursing and midwifery regulations. No. 656. Vientiane; 2007.

Lao People's Democratic Republic Ministry of Health. National strategy and action plan for integrated service on reproductive, maternal, newborn and child Health 2016-2025. Vientiane/WHO; 2016.

Lao People's Democratic Republic Ministry of Health. National treatment guidelines. Vientiane/WHO; 2015.

Lao People's Democratic Republic Ministry of Health. Norm and standard community and small hospital. Vientiane; 2014.

Lao People's Democratic Republic Ministry of Health. Skilled birth attendant development plan Lao PDR 2008–2012. Vientiane; 2009.

Lao People's Democratic Republic Ministry of Health. Strategy and planning framework for the integrated package of MNCH Services 2009–2015. Vientiane: Ministry of Health/WHO; 2009.

Lao People's Democratic Republic Ministry of Health. Success factors for women's and children's health. The Partnership for Maternal, Newborn and Child Health. Geneva: World Health Organization; 2015 (http://www.who.int/pmnch/knowledge/publications/lao_country_report.pdf?ua=1, accessed 1 November 2017).

Lao People's Democratic Republic Ministry of Health. Unsafe abortion prevention and care practical guideline for health workers. Vientiane; 2016.

Lao People's Democratic Republic Ministry of Health. User's guidebook for mother and child health handbook. Vientiane; 2016.

Lao People's Democratic Republic Ministry of Health, Center of Malariology, Parasitology, and Entomology. Guidelines for the diagnosis and treatment of uncomplicated malaria for health centers and village health volunteers/workers. Vientiane; 2011.

Lao People's Democratic Republic Ministry of Health, Center of Malariology, Parasitology, and Entomology. Malaria treatment guidelines for provincial and district hospitals. Vientiane; 2011.

Lao People's Democratic Republic Ministry of Health, Department of Organization and Personnel. Clinical Standards of Midwifery Practice. Vientiane: Ministry of Health/JICA; 2009.

Lao People's Democratic Republic Ministry of Health, Food and Drug Department. Medicine prices, availability, affordability and price components. Vientiane; 2013.

Lao People's Democratic Republic Ministry of Health, Lao Statistics Bureau. Lao social indicator survey 2011–12. Vientiane; 2012.

Lao People's Democratic Republic Ministry of Health, National Health Insurance Bureau. Key features of the official social health protection schemes in Lao PDR. Vientiane; 2017.

Lao People's Democratic Republic National Committee for the Control of AIDS. Lao PDR country progress report. Global AIDS response progress country Report, 2015. Vientiane; 2015.

Lao People's Democratic Republic National Committee for the Control of AIDS. National strategic and action plan on HIV/AIDS/STI control and prevention 2011–2015. Vientiane; 2010.

Lao People's Democratic Republic University of Health Sciences and National Institute of Public Health. National emergency obstetric and newborn care needs assessment final report. Vientiane: UNFPA; 2012.

Manithip C. Quality and utilisation of antenatal care services in Rural Lao PDR. Stockholm: Karolinska Institute; 2012.

Marsden D. National emergency obstetric and newborn care five year action plan: Requirements for EmONC service improvements 2013–2017. Vientiane: UNFPA; 2013.

Putney P, et al. Evaluation of Lao PDR's strategy and planning framework for integrated package of maternal neonatal and child health services 2009–2015. Vientiane: Ministry of Health; 2015.

Skinner J, Phrasisombath, K. Evaluation of the midwifery component of the SBA development plan Lao PDR 2008–2012. Vientiane: Ministry of Health; 2014.

Thomé JM, Pholsena S. Lao People's Democratic Republic: Health financing reform and challenges in expanding the current social protection schemes. In: Promoting Sustainable Strategies to Improve Access to Health Care in the Asia and Pacific Region. Manila: WHO Regional Office for the Western Pacific; 2009:71–102.

World Bank. Maternal Health, Child Health & Nutrition in Lao PDR: Evidence from a household survey in six central and southern provinces. World Bank Report No. AUS1920. Washington (DC): World Bank; 2013.

World Health Organization, Lao People's Democratic Republic Ministry of Health. Health service delivery profile: Lao PDR 2012. Vientiane: Ministry of Health; 2012 (http://www.wpro.who.int/health_services/service_delivery_profile_laopdr.pdf, accessed 1 November 2017).

Mongolia

Amarba A, Enhkjin S, Shinetugs B. Comparison between national and international data on maternal mortality – Mongolia. PowerPoint presentation at the workshop on MDG monitoring: 2015 and beyond. Bangkok, Thailand, 9–13 July 2012.

Asia Pacific Observatory on Health Systems and Policies. Mongolia health system review. Health Systems in Transition Vol. 3 No. 2 2013. Geneva: World Health Organization; 2013.

Asian Development Bank. Operations Evaluation Department. Program performance evaluation report in Mongolia. Mongolia: Health Sector Development Program Project Number: PPE: MON 28451. Manila: Asian Development Bank; 2008.

Como E. Research for strengthening community-based rehabilitation in Mongolia: Final report. LAMA Development and Cooperation Agency and Action Research for CO-Development. Ulaanbaatar; 2010.

Government of Mongolia. Achieving the Millennium Development Goals. Fifth national progress report. Ulaanbaatar: Government of Mongolia; 2015.

Government of Mongolia Ministry of Health. Essential medicines list. Ulaanbaatar; 2009.

Government of Mongolia Ministry of Health. Health indicators 2016. Ulaanbaatar; 2017.

Government of Mongolia Ministry of Health. Health indicators Mongolia 2013. Ulaanbaatar; 2013.

Government of Mongolia Ministry of Health. Health sector strategic master plan 2006–2015. Ulaanbaatar; 2005.

Government of Mongolia Ministry of Health. National maternal and child health surveillance data 2015. Ulaanbaatar: 2016.

Government of Mongolia Ministry of Health. National strategy on maternal and newborn health 2011–2015. Ulaanbaatar; 2010.

Government of Mongolia National Committee on AIDS. AIDS response progress report – Mongolia. Ulaanbaatar; 2014.

Government of Mongolia National Statistics Office. 2010 Population and housing census of Mongolia. Ulaanbaatar: NSO; 2010.

Government of Mongolia National Statistics Office. Mongolia social indicator sample survey (SISS) 2013: Key Findings. Ulaanbaatar; 2014.

Government of Mongolia National Statistics Office, UNFPA. Mongolia reproductive health survey 2008. Ulaanbaatar: National Statistics Office; 2009.

Government of Mongolia National Statistics Office, UNFPA. Multiple indicator cluster survey (MICS) 2010: Summary Report. Ulaanbaatar: National Statistics Office; 2011.

Government of Mongolia National Statistics Office, UNFPA. National report: National reproductive health survey 2003. Ulaanbaatar: National Statistics Office; 2004.

Henry JA, Orgoi S, Govind S, Price RR, Lundeg G, Kehrer B. Strengthening surgical services at the soum (first-referral) hospital: the WHO Emergency and Essential Surgical Care (EESC) Program in Mongolia. *World J Surg.* 2012;36(10):2359–70. doi:10.1007/s00268-012-1668-z.

Karunaratne P, Oyun C, Jargalsaikhan D, Khishigsuren, Undarya. Evaluation report of the UNFPA fourth country programme (2007-2011) of assistance to Mongolia. Ulaanbaatar: UNFPA/Mongolia; 2010.

MONFEMNET National Network. Country profile on universal access to sexual and reproductive health: Mongolia. Ulaanbaatar: MONFEMNET; n.d.

Mongolian Federation of Obstetrics and Gynecology, Wellspring NGO. Current status of emergency obstetric and essential newborn care in Mongolia. Ulaanbaatar: UNICEF/UNFPA/WHO; 2009.

Munkhuu B, Liabsuetrakul T, Chongsuvivatwong V, Geater A, Janchiv R. Antenatal care providers' practices and opinions on the services of antenatal syphilis screening in Ulaanbaatar, Mongolia. *Southeast Asian J Trop Med Public Health*. 2006;37(5):975–82.

United Nations Children's Fund (UNICEF). Mongolia: Child and development 2005 survey (MICS-3). Ulaanbaatar; UNICEF; 2007.

United Nations Children's Fund (UNICEF). Mongolia country programme document 2012–2016. New York: UNICEF; 2011.

United Nations Children's Fund (UNICEF). Situation analysis of children and women in Mongolia. Ulaanbaatar: UNICEF; 2009.

United Nations Family Planning Association (UNFPA) and World Health Organization (WHO). Joint UNFPA/WHO mission in collaboration with the Ministry of Health to review the current status of access to a core set of critical, life-saving maternal/reproductive health medicines in Mongolia. Ulaanbaatar: UNFPA Country Office/Mongolia; 2009.

Uush T. Calcium intake and serum calcium status in Mongolian children. *J Steroid Biochem Mol Biol*. 2014;(144 Pt A):167–71. doi:10.1016/j.jsbmb.2014.01.010.

World Health Organization, Government of Mongolia Ministry of Health, Mongolia. Health service delivery profile: Mongolia 2012. Ulaanbaatar: Ministry of Health; 2012 (http://www.wpro.who.int/health_services/service_delivery_profile_mongolia.pdf, accessed 1 November 2017).

World Health Organization Regional Office for the Western Pacific. Human resources for health country profiles: Mongolia. Manila: WHO Regional Office of the Western Pacific; 2014.

Papua New Guinea

Government of Papua New Guinea National Department of Health. Ministerial taskforce on maternal health in Papua New Guinea. Port Moresby; 2009.

Government of Papua New Guinea National Department of Health. National malaria treatment policy. Port Moresby; 2009.

Government of Papua New Guinea National Department of Health. Manual of standard managements in obstetrics and gynaecology for doctors, H.E.O.s and nurses in Papua New Guinea. Sixth Edition. Port Moresby; 2010.

Government of Papua New Guinea National Department of Health. National health plan 2011–2020. Port Moresby; 2010.

Government of Papua New Guinea National Department of Health. National health service standards for Papua New Guinea 2011–2020. Port Moresby; 2011.

Government of Papua New Guinea National Department of Health. Guidelines for HIV care and treatment in Papua New Guinea. Port Moresby; 2012.

Government of Papua New Guinea National Department of Health. Medical and dental catalogue. 10th Edition. Port Moresby; 2012.

Government of Papua New Guinea National Department of Health. National family planning guidelines. Port Moresby; 2012.

Government of Papua New Guinea National Department of Health. Standard treatment guidelines for adults. Port Moresby; 2012.

Government of Papua New Guinea National Department of Health. Maternal mortality in Papua New Guinea: The stories BEYOND the numbers. Port Moresby; WHO Papua New Guinea and Department of Health; 2013.

Government of Papua New Guinea National Department of Health. National sexual reproductive health policy. Port Moresby; 2013.

Government of Papua New Guinea National Department of Health. PNG community health post policy. Port Moresby; 2013.

Government of Papua New Guinea National Department of Health. Assessment of sector performance 2009–2013. Port Moresby; 2014.

Government of Papua New Guinea National Department of Health. Interim global AIDS response progress & universal access reports. Port Moresby; 2014.

Government of Papua New Guinea National Department of Health. Newborn health policy (draft). Port Moresby; 2014.

Government of Papua New Guinea National Department of Health. Manual of standard managements in obstetrics and gynaecology for doctors, H.E.O.s and nurses in Papua New Guinea. Seventh Edition. Port Moresby; 2016.

Government of Papua New Guinea National Department of Health, National Health Policy and Economics Unit. Free primary health care and subsidized specialist services policy. Port Moresby; 2013.

Government of Papua New Guinea National Department of Health, National Health Service Standards Division. Circular information No. 102/2013: Subject: Magnesium sulphate amps, sutures and misoprostol tabs. Port Moresby; 2013.

Government of Papua New Guinea National Statistics Office (NSO). Papua New Guinea: Demographic and Health Survey 2006. Port Moresby: NSO; 2009.

Government of Papua New Guinea National Statistics Office (NSO). Final Figures: National population and housing census 2011. Port Moresby: NSO; 2013.

Gregorio MA. A glimpse of the healthcare workforce in Papua New Guinea. 2011. Pfizer Global Health Fellows Program (http://www.pfizer.com/files/responsibility/global_health/mark_anthony_gregorio.pdf, accessed 1 November 2017).

Howes S, Mako AA, Swan A, Walton G, Webster T, Wiltshire C. A lost decade? Service delivery and reforms in Papua New Guinea 2002–2012. Canberra: National Research Institute of Papua New Guinea and Development Policy Centre; 2014.

Mola G, Kirby B. Discrepancies between national maternal mortality data and international estimates: the experience of Papua New Guinea. *Reproduct Health Matters*. 2013;21(42):191–202. doi:10.1016/S0968-8080(13)42725-8.

Wiltshire C, Mako A. Financing PNG's free primary health care policy: User fees, funding and performance. Canberra: Australian National University Development Policy Centre and National

Research Institute of PNG; 2014 (<http://devpolicy.org/publications/reports/PEPE/Financing-PNGs-free-primary-health-care-policy-user-fees-funding-and-performance.pdf>, accessed 1 November 2017).

World Health Organization, Department of Health, Papua New Guinea. Health service delivery profile: Papua New Guinea 2012. Geneva: World Health Organization; 2012 (http://www.wpro.who.int/health_services/service_delivery_profile_papua_new_guinea.pdf, accessed 1 November 2017).

Philippines

Agarwal K, Lu R, Deller B. Postpartum family planning, prevention of postpartum hemorrhage and management of pre-eclampsia/eclampsia: MCHIP assessment report on current practices in the Philippines. Washington (DC): USAID; 2012.

Asia Pacific Observatory on Health Systems and Policies. The Philippines health system review. Health Systems in Transition Vol. 1 No. 2 2011. Geneva: World Health Organization; 2011.

Center for Health Solutions and Innovations (CHSI) Philippines, Inc. Balitang BEmONC: The News about basic emergency obstetric & newborn care (BEmONC) in the Philippines. Baseline assessment of BEmONC functionality [PowerPoint presentation]. Manila: CHSI Philippines Inc.; 2014.

Center for Health Solutions and Innovations Philippines, Inc. Baseline assessment of BEmONC functionality joint program on maternal and neonatal health (JPMNH) phase II PRELIMINARY REPORT. Manila: CHSI Inc.; 2014.

Grundy J, Healy V, Gorgolon L, Sandig E. Overview of devolution of health services in the Philippines. *Rural Remote Health*. 2003;3(2):20.

Herrera ME, Roman FL, Alarilla MC. Overview of health sector reform in the Philippines and possible opportunities for public-private partnerships. Asian Institute of Management Working Paper 10-002. Manila: Asian Institute of Management; n.d.

Keller S. Draft assessment of maternal death review system in the Philippines. [unpublished]

Philippine National AIDS Council (PNAC). Country progress report: Philippines global AIDS response progress reporting. Manila: PNAC; 2014.

Philippine Obstetrical and Gynecological Society. Life saving skills course training materials. Manila; 2007.

Philippine Obstetrical and Gynecological Society. Clinical practice guidelines on caesarean section. Manila; 2012.

Philippine Obstetrical and Gynecological Society. Clinical practice guidelines on hypertensive complications of pregnancy. Manila; 2012.

Philippine Obstetrical and Gynecological Society. Clinical practice guidelines for obstetric hemorrhage. Manila; 2014.

Philippine Obstetrical and Gynecological Society, Department of Health. Clinical practice guidelines on intrapartum and postpartum care. Manila; 2012.

POLICY Project. Maternal and neonatal program effort index: the Philippines. Glastonbury; n.d. (http://www.policyproject.com/pubs/mnpi/philippines_mnpi.pdf, accessed 1 November 2017).

Republic of the Philippines. Republic Act No. 7392 "Philippine Midwifery Act of 1992." An act revising Republic Act No. 2644, as amended, otherwise known as the Philippine Midwifery Act.

1992. Accessed through the Chan Robles Virtual Law Library [website] (http://www.chanrobles.com/republicacts/republicactno7392.html#.VuUf-Cnh5_u, accessed 1 November 2017).

Republic of the Philippines. Republic Act No.10354. An act providing for a national policy on responsible parenthood and reproductive health. 2012. Accessed through the Philippine Laws and Jurisprudence Databank [website] (http://www.lawphil.net/statutes/repacts/ra2012/ra_10354_2012.html, accessed 1 November 2017)

Republic of the Philippines Department of Health. Basic emergency obstetric care: A trainer's guide. Manila; 2004.

Republic of the Philippines Department of Health. Community-managed maternal and newborn care: A guide for primary health care professionals. Manila; 2006.

Republic of the Philippines Department of Health. Implementing health reforms towards rapid reduction in maternal and neonatal mortality: Manual of operations. Manila; 2009.

Republic of the Philippines Department of Health. BEmONC manual for midwives: Participant's manual. Manila; 2010.

Republic of the Philippines Department of Health. Implementing rules and regulations of Republic Act No. 10354. Manila; 2013.

Republic of the Philippines Department of Health. Administrative Order No. 2016-0035. Manila; 2016.

Guidelines on the management of sexually-transmitted infections (STI) in pregnancy. Manila; 2010.

Republic of the Philippines Department of Health National Drug Policy – Pharmaceutical Management Unit. Philippine national drug formulary. Essential Medicines List Volume I, 7th Edition. Manila; 2008.

Republic of the Philippines Department of Health National Malaria Program. Manual of operations: Diagnosis and treatment of malaria. Manila; 2009.

Republic of the Philippines Department of Health Office of the Secretary. Administrative Order No. 45-B s.2000. Prevention and management of abortion and its complications. Manila; 2000.

Republic of the Philippines Department of Health Office of the Secretary. Administrative Order No. 119 s.2003. Updated guidelines on micronutrient supplementation (vitamin A, iron and iodine). Manila; 2003.

Republic of the Philippines Department of Health Office of the Secretary. Administrative Order No. 2008-0029. Implementing health reforms towards rapid reduction in maternal and neonatal mortality. Manila; 2008.

Republic of the Philippines Department of Health Office of the Secretary. Administrative Order No. 2009-0016. Policies and guidelines on the prevention of mother to child transmission (PMTCT) of human immunodeficiency virus (HIV). Manila; 2009.

Republic of the Philippines Department of Health Office of the Secretary. Administrative Order No. 2014-0031. Guidelines on antiretroviral therapy (ART) among people living with human immunodeficiency virus (HIV) and HIV-exposed infants. Manila; 2014.

Republic of the Philippines Philippine Statistics Authority. Philippines National Demographic and Health Survey. Rockville: ICF International; 2014.

Sobel HL, Oliveros YE, Nyunt-U S. Secondary analysis of a national health survey on factors influencing women in the Philippines to deliver at home and unattended by a healthcare professional. *Int J Gynaecol Obstet.* 2010;111(2):157–60. doi:10.1016/j.ijgo.2010.06.020.

Tan MC. Basic emergency obstetric and newborn care (BEMONC) [PowerPoint presentation]. n.d. (<http://www.ppsstc.com/files/BEMONC%20%20ob%20part%20%5BCompatibility%20Mode%5D.pdf>, accessed 1 November 2017).

World Health Organization Regional Office for the Western Pacific. Nursing and midwifery data bank: The Philippines. Manila: WHO Regional Office for the Western Pacific; 2013 (http://www.wpro.who.int/hrh/about/nursing_midwifery/db_philippines_2013.pdf, accessed 1 November 2017).

Solomon Islands

ANUedge. 2013 SIG RAMSI people's survey report. Canberra: Australian National University; 2013.

Appleyard B, Tunj M, Cheng Q, Chen N, Bryan J, McCarthy JS. Malaria in pregnancy in the Solomon Islands: barriers to prevention and control. *Am Trop Med Hyg.* 2008;78(3):449-54.

Asante A, Roberts G, Hall J. A review of health leadership and management capacity in Solomon Islands. Sydney: University of New South Wales; 2011.

Asia Pacific Observatory on Health Systems and Policies. Solomon Islands health system review. *Health Systems in Transition* Vol. 5 No. 1 2015. Geneva: World Health Organization; 2015.

Solomon Islands College of Higher Education. Diploma in advanced nursing (midwifery): Student's logbook. Honiara: Solomon Islands College of Higher Education; n.d.

Solomon Islands Government, Ministry of Health and Medical Services (MHMS). Manual of obstetrics and gynaecology for doctors, midwives and nurses in Solomon Islands. Third Edition. Honiara: MHMS; 2005.

Solomon Islands Government, Ministry of Health and Medical Services (MHMS). National malaria strategic Vision 2007–2016. Honiara: MHMS; 2007.

Solomon Islands Government, Ministry of Health and Medical Services (MHMS). Solomon Islands malaria treatment protocol. Honiara: MHMS; 2009.

Solomon Islands Government, Ministry of Health and Medical Services (MHMS). National Pharmacy Division. Solomon Islands essential medicines list. Honiara: MHMS; 2010.

Solomon Islands Government, Ministry of Health and Medical Services (MHMS). National health strategic plan 201–2015. Honiara: MHMS; 2011.

Solomon Islands Government, Ministry of Health and Medical Services (MHMS). Solomon Islands child health strategy 2011–2015. Honiara: MHMS; 2011.

Solomon Islands Government, Ministry of Health and Medical Services (MHMS). Core indicator report 2014 – provisional results. Honiara: MHMS; 2015.

Solomon Islands Government, Ministry of Health and Medical Services (MHMS). Descriptive core indicator report 2014 – provisional data. Honiara: MHMS; 2015.

Solomon Islands Government, Ministry of Health and Medical Services (MHMS). Mother's health book. Honiara: MHMS; n.d.

Solomon Islands Government, Ministry of Health and Medical Services (MHMS). National consolidated guidelines on the use of HAART for treating and preventing HIV infections in adults, adolescents and children. Honiara: MHMS; 2017.

Solomon Islands Government, Ministry of Health and Medical Services (MHMS). National guidelines for diagnosis and treatment of sexually transmitted infections. Honiara: MHMS; 2017.

Solomon Islands Government, National AIDS Council (SINAC). Solomon Islands global AIDS response progress report 2014. Honiara: SINAC; 2014.

Solomon Islands Government, National Statistics Office and Macro International. Solomon Islands Demographic and Health Survey 2006–2007. Nouméa: Secretariat of the Pacific Community; 2009.

Solomon Islands Government, National Statistics Office and Ministry of Finance and Treasury. 2009 Population & housing census national report. Honiara: Solomon Islands National Statistics Office; 2009.

Statistics for Development Division. Solomon Islands DHS main report 2015. Nouméa; 2017 (<https://sdd.spc.int/en/news/latest-news/134-solomon-islands-dhs-main-report-2015>, accessed 6 November 2017).

United Nations Children's Fund. Solomon Islands: Situation analysis for children, women and youth. Suva: UNICEF Pacific Office; 2005.

United Nations Population Fund Office for the Pacific. Adolescent sexual and reproductive health situation analysis for Solomon Islands. Suva; 2006.

United Nations Population Fund Office for the Pacific. Family planning and emergency obstetric care facility assessment in seven pacific countries: Federated States of Micronesia, Kiribati, Samoa, Solomon Islands, Tonga, Tuvalu & Vanuatu. Suva; 2008.

World Health Organization, Ministry of Health, Solomon Islands. Health service delivery profile: Solomon Islands. WHO Regional Office for the Western Pacific; 2012 (http://www.wpro.who.int/health_services/service_delivery_profile_solomon_islands.pdf, accessed 1 November 2017).

World Health Organization Solomon Islands Country Office. Draft: A situational analysis on reproductive health in Solomon Islands. [unpublished]

Viet Nam

Government of the Socialist Republic of Viet Nam General Statistics Office. Viet Nam multiple indicator cluster survey 2011: Final Report. Hanoi; 2011.

Government of the Socialist Republic of Viet Nam General Statistics Office, National Institute of Hygiene and Epidemiology (NIHE), ORC Macro. Vietnam population and AIDS indicator survey 2005. Calverton; 2006.

Government of the Socialist Republic of Viet Nam General Statistics Office, UNICEF. Viet Nam multiple indicator cluster survey 2014: Hanoi: GSO and WHO; 2014.

Government of the Socialist Republic of Viet Nam Ministry of Health. Health management information system 2016. Hanoi; 2016.

Government of the Socialist Republic of Viet Nam Ministry of Health. Health statistics year book 2014. Hanoi; 2014.

Government of the Socialist Republic of Viet Nam Ministry of Health. Joint annual health report 2015. Hanoi; 2015.

Government of the Socialist Republic of Viet Nam Ministry of Health. National action plan on reproductive health care with a focus on safe motherhood and infant care period of 2011–2015. Hanoi; 2010.

Government of the Socialist Republic of Viet Nam Ministry of Health. National guidelines for HIV/Aids care and treatment. Hanoi; 2015.

Government of the Socialist Republic of Viet Nam Ministry of Health. National guidelines for reproductive health care services. Hanoi; 2009.

Government of the Socialist Republic of Viet Nam Ministry of Health. National guidelines for reproductive health care services. Hanoi; 2016.

Government of the Socialist Republic of Viet Nam Ministry of Health. National malaria guidelines. Hanoi; 2013.

Government of the Socialist Republic of Viet Nam Ministry of Health. National medicines list. Hanoi; 2008.

Government of the Socialist Republic of Viet Nam Ministry of Health. Plan of strengthening skilled birth attendant staff period 2011–2015. Hanoi; 2011.

Government of the Socialist Republic of Viet Nam Ministry of Health. Strategy on population – reproductive health in Viet Nam for the period 2011–2020. Hanoi; 2010.

Government of the Socialist Republic of Viet Nam Ministry of Health, Department of Maternal Child Health. Situation analysis of reproductive health care network and service provision capacity in Vietnam 2010. Hanoi; 2011.

Government of the Socialist Republic of Viet Nam National Committee for AIDS, Drug and Prostitution Prevention and Control. Viet Nam AIDS response progress report 2014. Hanoi; 2014.

Schwind B. Barriers to health care for the poor and ethnic minorities in Northwest Viet Nam. Discussion papers on social protection. April 2010 No. 2. Eschborn: German Technical Cooperation (GTZ); 2010.

Tran VT, Hoang TP, Mathauer I, Nguyen TK. A health financing review of Viet Nam with a focus on social health insurance. Manila: WHO Regional Office for the Western Pacific; 2011 (http://www.who.int/health_financing/documents/oasis_f_11-vietnam.pdf, accessed 1 November 2017).

World Health Organization, Ministry of Health, Viet Nam. Health service delivery profile: Viet Nam. WHO Regional Office for the Western Pacific; 2012 (http://www.wpro.who.int/health_services/service_delivery_profile_vietnam.pdf, accessed 1 November 2017).

Annex 2. Country assessment frameworks (template)

I. Content of maternal health care (technical soundness)

A. Routine antenatal care (ANC)

1. National protocols guideline in place and disseminated for ANC?
2. Is a minimum of 4 ANC visits promoted?
3. Is the timing of first ANC = first trimester?
4. Are woman-held case notes promoted?
5. Does ANC at all levels of care include:
<ul style="list-style-type: none"> • History of past pregnancies?
<ul style="list-style-type: none"> • Measurement of blood pressure (BP)?
<ul style="list-style-type: none"> • Measurement of haemoglobin?
<ul style="list-style-type: none"> • Urine test for protein?
<ul style="list-style-type: none"> • HIV test and counselling?
<ul style="list-style-type: none"> • Syphilis screening/treatment?
<ul style="list-style-type: none"> • Malaria test (<i>endemic locations only</i>)?
<ul style="list-style-type: none"> • Abdominal palpation to estimate gestation and (third trimester) presentation?
<ul style="list-style-type: none"> • Auscultation of fetal heart rate (FHR) (third trimester)?
<ul style="list-style-type: none"> • Birth planning?
<ul style="list-style-type: none"> • Provision of at least 90 days iron/folate?
<ul style="list-style-type: none"> • 1.5–2 g elemental calcium supplementation per day started around 20th week?²⁰
<ul style="list-style-type: none"> • Low-dose acetylsalicylic acid (aspirin 75 mg/day) initiated before 20 weeks of pregnancy in women at high risk of developing pre-eclampsia.²¹
<ul style="list-style-type: none"> • Mebendazole 1 dose in second to third trimester?²²
<ul style="list-style-type: none"> • Tetanus toxoid immunization?
<ul style="list-style-type: none"> • Vitamin A distribution only for xerophthalmia/other sign of clinical deficiency?²³
<ul style="list-style-type: none"> • Malaria prophylaxis? (<i>endemic areas only, and only if consistent with national guidelines</i>)
<ul style="list-style-type: none"> • Diagnosis/treatment of vaginal discharge
<ul style="list-style-type: none"> • Nutrition counselling?
<ul style="list-style-type: none"> • Counselling on breastfeeding and infant and young child feeding?
<ul style="list-style-type: none"> • Counselling on postpartum family planning (FP)?
<ul style="list-style-type: none"> • Counselling on use of insecticide-treated nets (ITNs) (<i>endemic areas only</i>)?
<ul style="list-style-type: none"> • Counselling in danger signs during pregnancy?
<ul style="list-style-type: none"> • Advice against smoking, alcohol, medication?
<ul style="list-style-type: none"> • One ultrasound scan before 24 weeks of gestation (early ultrasound) is mentioned in national protocol?
<ul style="list-style-type: none"> • Does any instruction exist to deal with morning sickness, heartburn, leg cramps, low back and pelvic pain, constipation, and varicose veins?

20. Calcium intake is low in China.

21. Not applicable if the first ANC is later than 20 weeks.

22. Hookworm is endemic in China.

23. Per WHO, Vitamin A deficiency is not a severe problem in China.

<ul style="list-style-type: none"> Is any systematic screening for active tuberculosis (TB) at ANC mentioned? (Example: ask about TB symptoms, chest x-ray, etc.)
6. Women living with HIV
<ul style="list-style-type: none"> Is lifelong triple therapy antiretroviral therapy (ART) initiated for all HIV+ pregnant women? If no, is ART prophylaxis given until 1 week after breastfeeding (BF) stopped? (describe protocol) Is pre-exposure prophylaxis (PrEP) for HIV prevention mentioned? If yes, is oral PrEP containing tenofovir disoproxil fumarate (TDF) offered?
7. Asymptomatic bacteriuria (ASB)
<ul style="list-style-type: none"> Method of diagnosis of ASB mentioned? A seven-day antibiotic regimen is recommended for all pregnant women with ASB?
8. Clinical enquiry about the possibility of intermittent partner violence (IPV) mentioned? If yes, WHO minimum requirements ²⁴ is referred?
9. Measurement of glycaemia is mentioned? If yes, is it aligned with WHO protocol? ²⁵

B. Management of antenatal complications

1. Hypertension in pregnancy
<ul style="list-style-type: none"> National standards/protocol exist? At what level of care is treatment available? Describe protocol/guideline with reference to WHO recommendations.
2. Pre-eclampsia/eclampsia
<ul style="list-style-type: none"> National standards/protocol exist? At what level of care is treatment available? Describe protocol/guideline with reference to WHO recommendations.
3. Threatened/inevitable/incomplete/complete abortion
<ul style="list-style-type: none"> National standards/protocol exist? At what level of care is treatment available? Describe protocol/guideline with reference to WHO recommendations.
4. Anaemia in pregnancy
<ul style="list-style-type: none"> National standards/protocol exist? At what level of care is treatment available? Describe protocol/guideline with reference to WHO recommendations.
5. Gestational diabetes
<ul style="list-style-type: none"> National standards/protocol exist? At what level of care is treatment available? Describe protocol/guideline with reference to WHO recommendations.

24. Minimum requirements are: a protocol/standard operating procedure; training on how to ask about IPV, and on how to provide the minimum response or beyond; private setting; confidentiality ensured; system for referral in place; and time to allow for appropriate disclosure. This is consistent with *Responding to intimate partner violence and sexual violence against women: WHO clinical and policy guidelines* (2013).

25. WHO publication *Diagnostic criteria and classification of hyperglycaemia first detected in pregnancy* (2013), which states: Gestational diabetes mellitus (GDM) should be diagnosed at any time in pregnancy if one or more of the following criteria are met:

- fasting plasma glucose 5.1–6.9 mmol/L (92–125 mg/dL)
- 1-hour plasma glucose > 10.0 mmol/L (180 mg/dL) following a 75 g oral glucose load
- 2-hour plasma glucose 8.5–11.0 mmol/L (153–199 mg/dL) following a 75 g oral glucose load.

Diabetes mellitus in pregnancy should be diagnosed if one or more of the following criteria are met:

- fasting plasma glucose > 7.0 mmol/L (126 mg/dL)
- 2-hour plasma glucose > 11.1 mmol/L (200 mg/dL) following a 75 g oral glucose load
- random plasma glucose > 11.1 mmol/L (200 mg/dL) in the presence of diabetes symptoms.

<p>6. Ectopic pregnancy</p> <ul style="list-style-type: none"> • National standards/protocol exist? • At what level of care is treatment available? • Describe protocol/guideline with reference to WHO recommendations.
<p>7. Molar pregnancy</p> <ul style="list-style-type: none"> • National standards/protocol exist? • At what level of care is treatment available? • Describe protocol/guideline with reference to WHO recommendations.
<p>8. Intrauterine death</p> <ul style="list-style-type: none"> • National standards/protocol exist? • At what level of care is treatment available? • Describe protocol/guideline with reference to WHO recommendations.
<p>9. Preterm labour</p> <ul style="list-style-type: none"> • National standards/protocol exist? • At what level of care is treatment available? • Describe protocol/guideline with reference to WHO recommendations.
<p>10. Antenatal steroid use for expected preterm births</p> <ul style="list-style-type: none"> • National standards/protocol exist? • At what level of care is treatment available? • Describe protocol/guideline with reference to WHO recommendations.
<p>11. Placenta abruptio</p> <ul style="list-style-type: none"> • National standards/protocol exist? • At what level of care is treatment available? • Describe protocol/guideline with reference to WHO recommendations.
<p>12. Placenta praevia</p> <ul style="list-style-type: none"> • National standards/protocol exist? • At what level of care is treatment available? • Describe protocol/guideline with reference to WHO recommendations.
<p>13. Malaria in pregnancy</p> <ul style="list-style-type: none"> • National standards/protocol exist? • At what level of care is treatment available? • Describe protocol/guideline with reference to WHO recommendations and national malaria guidelines.
<p>14. UTI in pregnancy</p> <ul style="list-style-type: none"> • National standards/protocol exist? • At what level of care is treatment available? • Describe protocol/guideline with reference to WHO recommendations.
<p>15. Is there a clear protocol for stabilization measures and other care to be given at lower levels prior to referral of women with severe antenatal complications?</p>

C. Normal delivery

1. National protocols/guidelines in place and disseminated for delivery care?
2. Policy encouraging delivery only by persons trained in core midwifery skills?
3. Policy encouraging delivery in health facilities?
4. Trained birth attendants (core midwifery skills) available at all primary health-care facilities? (If no, describe gaps.)
5. Does the delivery protocol include:
<ul style="list-style-type: none"> • Use of partograph starting from active labour phase (≥ 4 cm dilation)? • Monitoring frequency, intensity and duration of contractions hourly in early (not active) labour and every 30 minutes in active labour? • Monitoring of FHR every 30 minutes during active labour? • Vaginal exam to measure cervical dilation and fetal presentation every 4 hours? • Monitoring status of membranes and appearance of amniotic fluid? • Measuring blood pressure every 4 hours? • Monitoring temperature every 2 hours? • Encouraging ample fluids, and food during labour as desired? • Encouraging support from chosen birth companion throughout labour? • Encouraging ambulation during the first stage of labour? • Allowing the woman to adopt whatever position she prefers at each stage of labour and delivery? • Ensuring the woman is never left unattended? • Controlled delivery of the head? • Checking for compressed cord after head delivered? • Routine administration of oxytocin 10 iu intermuscular (IM) immediately after delivery? (PPH prevention) • No use of enemas in labour? • No routine artificial rupture of membrane? • Episiotomy done only when indicated? • Cord clamping after cord pulsations have stopped (unless cord is around neck and too tight to remove, or other fetal distress)? • Controlled cord traction in 3rd stage of labour optional and limited to skilled birth attendants? • Abdominal palpation in third stage of labour to detect uterine atony? • No uterine massage in absence of postpartum haemorrhage (PPH) in women who have received oxytocics? • Inspection of placenta to ensure no retained fragments? • Inspection of cervix and perineum for tears following delivery of placenta?
6. Is provider-initiated voluntary HIV test done during labour if HIV status not already known?
7. In newly identified HIV+ pregnant women, is lifelong triple-therapy ART ²⁶ initiated? If no, is ART prophylaxis given until 1 week after BF stopped? (describe protocol)
8. In trained settings where oxytocin is unavailable (if applicable) is there a protocol for use of ergotamine/methylergometrine or misoprostol in 3rd stage of labour to prevent PPH?
9. Is there a policy allowing administration of oral misoprostol (600 mcg) by community health workers (CHWs) when no trained health personnel are available?
10. Are there any respectful care components in delivery guidelines/protocols?

26. TDF + 3 TC (or FTC) + EFV

D. Management of complications during labour and delivery

1. Is there an emergency obstetric care strategy that identifies a network of facilities designated to provide basic emergency obstetric and newborn care (BEmONC) and comprehensive emergency obstetric and newborn care (CEmONC), including the services, staff and equipment at each, and referral procedures? (compare to WHO guidelines)
2. Premature rupture of membranes <ul style="list-style-type: none"> • National standards/protocol exist? • At what level of care is treatment available? • Describe protocol/guideline with reference to WHO recommendations.
3. Preterm labour <ul style="list-style-type: none"> • National standards/protocol exist? • At what level of care is treatment available? • Describe protocol/guideline with reference to WHO recommendations.
4. Prolonged/obstructed labour <ul style="list-style-type: none"> • National standards/protocol exist? • At what level of care is treatment available? • Describe protocol/guideline with reference to WHO recommendations.
5. Malpresentations <ul style="list-style-type: none"> • National standards/protocol exist? • At what level of care is treatment available? • Describe protocol/guideline with reference to WHO recommendations.
6. Malpositions (breech, transverse lie) <ul style="list-style-type: none"> • National standards/protocol exist? • At what level of care is treatment available? • Describe protocol/guideline with reference to WHO recommendations.
7. Shoulder dystocia <ul style="list-style-type: none"> • National standards/protocol exist? • At what level of care is treatment available? • Describe protocol/guideline with reference to WHO recommendations.
8. Fetal distress <ul style="list-style-type: none"> • National standards/protocol exist? • At what level of care is treatment available? • Describe protocol/guideline with reference to WHO recommendations.
9. Prolapsed cord <ul style="list-style-type: none"> • National standards/protocol exist? • At what level of care is treatment available? • Describe protocol/guideline with reference to WHO recommendations.
10. Cord around neck <ul style="list-style-type: none"> • National standards/protocol exist? • At what level of care is treatment available? • Describe protocol/guideline with reference to WHO recommendations.
11. Retained placenta/placental fragments <ul style="list-style-type: none"> • National standards/protocol exist? • At what level of care is treatment available? • Describe protocol/guideline with reference to WHO recommendations.

<p>12. Intrapartal haemorrhage – placenta praevia/abruptio</p> <ul style="list-style-type: none"> • National standards/protocol exist? • At what level of care is treatment available? • Describe protocol/guideline with reference to WHO recommendations.
<p>13. Uterine rupture</p> <ul style="list-style-type: none"> • National standards/protocol exist? • At what level of care is treatment available? • Describe protocol/guideline with reference to WHO recommendations.
<p>14. Amnionitis</p> <ul style="list-style-type: none"> • National standards/protocol exist? • At what level of care is treatment available? • Describe protocol/guideline with reference to WHO recommendations.
<p>15. Delivery of multiple pregnancy</p> <ul style="list-style-type: none"> • National standards/protocol exist? • At what level of care is treatment available? • Describe protocol/guideline with reference to WHO recommendations.
<p>16. Placenta accreta</p> <ul style="list-style-type: none"> • National standards/protocol exist? • At what level of care is treatment available? • Describe protocol/guideline with reference to WHO recommendations.
<p>17. Perineal, cervical tears</p> <ul style="list-style-type: none"> • National standards/protocol exist? • At what level of care is treatment available? • Describe protocol/guideline with reference to WHO recommendations.
<p>18. Is there a clear protocol for induction of labour that includes indications and technique? (compare to WHO guidelines)</p>
<p>19. Is there a clear protocol for augmentation of labour that includes indications and technique? (compare to WHO guidelines)</p>
<p>20. Is there a clear protocol for caesarean section that includes indications, anaesthesia and surgical technique? (compare to WHO guidelines)</p>
<p>21. Is there a clear protocol for episiotomy that includes indications, anaesthesia and technique? (compare to WHO guidelines)</p>
<p>22. Is there a clear protocol for the use of vacuum extraction that includes indications and technique? (compare to WHO guidelines)</p>
<p>23. Is there a clear protocol for stabilization measures and other care to be given at lower levels prior to referral of women with complicated delivery?</p>

E. Routine postnatal care

1. National protocols/guidelines in place and disseminated for postnatal care (PNC)?
2. Do healthy mothers and newborns (NBs) stay at least 24 hours after birth in a health facility? (look at both policy + survey results where available)
3. PNC check within 24 hours of a home delivery? (look at both policy + survey results where available)
4. Home visits in the first week after delivery? (look at both policy + survey results where available)
5. Policy = a minimum of four PNC checks? (1st = within 24 hours; 2nd = day 2–3 (48–72 hrs); 3rd = between days 7–14; 4th = 6 weeks after birth)
6. Is BP measured at least twice (1st: immediately after the delivery; 2nd: within 6 hours after delivery) in the first 24 hours (more often if abnormal)?
7. Does routine PNC include the following maternal health interventions:
<ul style="list-style-type: none"> • Mother's temperature, pulse and BP? • Checking for headache? • Assessment of vaginal bleeding/lochia? • Abdominal palpation to assess uterine tone, any tenderness and fundal height? • Assessment of urinary function (retention/incontinence)? • Assessment for anaemia (pallor; measure hgb if high blood loss)? • Assessment of bowel function? • Assessment of perineal wound healing? • Assessment of BF progress? • Assessment for breast tenderness, nipple cracking? • Asking about emotional well-being? • Administration of tetanus toxoid if due? • Mebendazole if none received in past six months? • 90 days of iron/folate given to all postpartum women? • Preventive antibiotics for women with third to fourth degree perineal tears only? • Vitamin A distribution no longer routinely given postpartum? • Counselling on post partum danger signs? • Counselling on hygiene? • Counselling on nutrition and BF, including promotion of exclusive BF for six months (0–5 months)? • Counselling on use of ITNs (malaria endemic areas only)? • Counselling on FP and provision of methods? Postpartum IUD insertion and tubal ligation available? • Counselling on mobility, rest and resumption of sexual relations?
8. Is provider-initiated voluntary HIV testing done on postpartum women if HIV status not already established?
9. In newly identified HIV+ pregnant women, is lifelong triple therapy ART ²⁷ initiated? If no, is ART prophylaxis given until one week after BF stopped? (describe protocol)
10. Have national HIV/AIDS authorities clearly established recommendations for infant feeding for HIV+ mothers, and are HIV+ mothers counselled accordingly?
11. Do infants born to HIV+ women receive six weeks nevirapine (NVP) if breastfeeding (BF); 4–6 weeks NVP or zidovudine if not BF?

27. TDF + 3 TC (or FTC) + EFV

F. Management of postpartum complications

<p>1. Postpartum haemorrhage:</p> <ul style="list-style-type: none"> • National standards/protocol exist? • At what level of care are the following available: manual removal of placenta, administration of oxytocics, tranexamic acid, IV volume replacement/stabilization of shock, blood transfusion, uterine massage/compression, balloon tamponade, aortic compression, uterine embolization, surgery? • Describe protocol/guidelines with reference to WHO recommendations.
<p>2. Is there a clear protocol for clinical management of hypovolaemic shock (fluid resuscitation, transfusion)? Describe with reference to WHO guidelines.</p>
<p>3. Endometritis</p> <ul style="list-style-type: none"> • National standards/protocol exist? • At what level of care is treatment available? • Describe protocol/guideline with reference to WHO recommendations.
<p>4. Breast abscess/mastitis</p> <ul style="list-style-type: none"> • National standards/protocol exist? • At what level of care is treatment available? • Describe protocol/guideline with reference to WHO recommendations.
<p>4. Anaemia</p> <ul style="list-style-type: none"> • National standards/protocol exist? • At what level of care is treatment available? • Describe protocol/guideline with reference to WHO recommendations.
<p>5. Wound infection</p> <ul style="list-style-type: none"> • National standards/protocol exist? • At what level of care is treatment available? • Describe protocol/guideline with reference to WHO recommendations.
<p>6. Hypertension</p> <ul style="list-style-type: none"> • National standards/protocol exist? • At what level of care is treatment available? • Describe protocol/guideline with reference to WHO recommendations.
<p>7. Perineal trauma</p> <ul style="list-style-type: none"> • National standards/protocol exist? (If no, are there other guidelines used, such as from professional associations?) • At what level of care is treatment available? • Describe protocol/guideline with reference to WHO recommendations.
<p>8. Postpartum depression</p> <ul style="list-style-type: none"> • National standards/protocol exist? (If no, are there other guidelines used, such as from professional associations?) • At what level of care is treatment available? • Describe protocol/guideline with reference to WHO recommendations.
<p>9. Is there a clear protocol for stabilization measures and other care to be given at lower levels prior to referral of women with PPH/other severe postpartum complications?</p>

II. Service accessibility and coverage

A. Economic access

1. Average user fee for:
<ul style="list-style-type: none"> • Complete package of routine ANC services (excluding sonogram) at: <ul style="list-style-type: none"> • primary level (health centre) • secondary level (hospital)
• Medically indicated sonogram (if additional to ANC fee)
• Delivery at health centre or other primary-level facility
• Normal delivery at district or provincial hospital
• Normal delivery at national hospital
• Assisted vaginal delivery at district or provincial hospital
• Assisted vaginal delivery at national hospital
• Caesarean section at district or provincial hospital
• Complete package of routine postnatal care
• Transport from primary to secondary/tertiary levels
• ART for pregnant/postpartum mother and newborn
2. Is there any form of national health insurance, equity fund or national free-of-charge policy to reduce economic barriers to facility delivery, caesarean section, hospitalization for complicated pregnancy/delivery and other essential maternal health services? (describe)
3. Are “unofficial” fees reported to be common (maternal health services)?

B. Geographic access

1. Distance to primary facilities – average and in most remote locations?
2. Mountains/rivers/other unusual barriers to accessing health facilities? (where/describe)
3. At what level of care is ART treatment for pregnant women and infants born to HIV+ mothers available?
If not the level where most deliveries occur, what are the referral mechanisms? Cost barriers to travel?

C. Adequacy of physical infrastructure

1. Does Essential Drug/Supply List for both primary- and secondary-care levels include urine dipsticks, rapid syphilis test materials, equipment and peripherals for haemoglobin testing, oxytocin, and magnesium sulfate and IV solution/catheters?
3. Adequate supply of delivery kits, stethoscopes, fetoscopes, sphygmomanometers at all primary-level facilities?
4. Adequate blood supply in all designated CEmONC facilities? (identify locations with gaps)
5. Do all designated BEmONC facilities have: vacuum extractor and persons trained in its use; forceps and persons trained in forceps delivery; manual vacuum aspiration (MVA) kit; dilatation & curettage kit; magnesium sulfate; parenteral antibiotics? (identify locations with gaps)

D. Adequacy of human resources

1. Are cadres of care providers optimally utilized? (compare to WHO guideline, “Optimizing health worker roles to improve access to key maternal and newborn health interventions through task shifting”)
2. Do all primary-care levels have: (a) any provider; and (b) a female provider trained in core midwifery functions available 24/7? (identify locations with gaps)
3. Is there any form of monetary/non-monetary incentive for health-care providers to increase the coverage of facility delivery/other maternal health care?

E. Coverage

1. ANC 4
2. % of deliveries attended by trained health personnel
3. Delivery in a health facility
4. PNC 4
5. % C-section among deliveries in public facilities
6. Estimated met need for emergency obstetric care (%)
7. # functional EmONC facilities per 500 000 population (total and per province or other administrative division)
8. # fully functional CEmONC facilities per 500 000 population (total and per province or other administrative division)
9. Proportion of all births which take place in EmONC facilities
10. Direct obstetric case fatality rate in EmONC facilities

III. Monitoring and evaluation

<p>1. How are technical protocols communicated to service providers?</p> <ul style="list-style-type: none"> • Workshops? • Written guidelines disseminated? • Other? • Any measures to systematically disseminate protocols to private providers/facilities and/or enforce their use?
<p>2. Are the following indicators used to monitor performance at national level:</p> <ul style="list-style-type: none"> • ANC 4? • PNC 4? • Delivery attended by trained health personnel? • Facility delivery? • Estimated met need for EmONC? • C-Section rate? • Proportion of births occurring in EmONC facilities? • Direct obstetric case fatality rate in EmONC facilities?
<p>3. Is there a national plan (health strategic plan or reproductive, maternal, newborn and child health strategic plan) with targets for the above indicators?</p>
<p>4. Method and frequency of data collection:</p> <ul style="list-style-type: none"> • Population-based surveys (frequency/type)? • Supervisory checklists? • Facility assessments (frequency/type)? • Health management information system (facility reports)? • Other (describe)
<p>5. Date and key findings from most recent assessment of EmONC facilities?</p>
<p>6. Date and findings from most recent assessment of maternal health-care providers?</p>
<p>7. Is there a system of maternal death reviews in place?</p>
<p>8. Is there a regular system of technical supervision to monitor the implementation of national protocols at all levels? (describe)</p>
<p>9. Is there budgetary provision for technical supervision?</p>

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