STANDARDS FOR IMPROVING QUALITY OF MATERNAL AND NEWBORN CARE IN HEALTH FACILITIES

World Health Organization

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Acronyms and abbreviations

ICD	International Classification of Diseases
NICE	National Institute for Health and Care Excellence
UNICEF	United Nations Children's Emergency Fund

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Executive summary

Much progress has been made during the past two decades in coverage of births in health facilities; however, reductions in maternal and neonatal mortality remain slow. With increasing numbers of births in health facilities, attention has shifted to the quality of care, as poor quality of care contributes to morbidity and mortality. The period around childbirth is the most critical for saving the maximum number of maternal and newborn lives and preventing stillbirths. WHO sees a future in which "*Every pregnant woman and newborn receives high-quality care throughout pregnancy, childbirth and the postnatal period*". To realize this vision, WHO has defined "quality of care" and has prepared a framework for improving the quality of care for mothers and newborns around the time of childbirth.

The framework contains eight domains of quality of care that should be assessed, improved and monitored within the health system. The health system provides the structure for access to high-quality care in the two important, inter-linked dimensions of provision and experience of care. Within this framework and in line with the Organization's mandate, WHO will work towards realization of its vision in six strategic areas, which will be the basis for a systematic, evidence-based approach to providing guidance for improving the quality of maternal and newborn care. The six areas are: clinical guidelines, standards of care, effective interventions, measures of quality of care, relevant research and capacity-building

Standards of care and measures of quality were prioritized because there is currently no substantive guidance, although it is the key to ensuring the quality of care. Standards explicitly define what is required in order to achieve high-quality care around the time of childbirth. In the first phase, a rigorous approach was used to identify existing resources, conduct an extensive literature search and map the standards of care of various organizations in order to define and determine their structure. It was proposed that broad standards be set, underpinned by specific quality statements and a number of input, output or process and outcome measures. Eight standards were formulated, one for each of the eight domains of the quality of care framework. To ensure that the standards are specific and focused, 2–13 quality statements were formulated for each standard to drive measurable improvements in the quality of care around childbirth.

A WHO interdepartmental steering group and a core working group were established to review and synthesize the evidence. Between January 2015 and February 2016, the working group reviewed published studies to define "quality of care" and to formulate the framework for ensuring the quality of maternal and newborn care. The framework was presented to the guideline development group at a consultation held in Geneva on 3–4 June 2015, where the group reviewed and discussed the definition of "quality of care", the proposed framework, standards of care, quality statements and criteria for defining measures of quality. Agreement on the definition, the domains of the framework, standards of care and the quality statements

was reached by consensus. The guideline development group also discussed the criteria for defining the measures that would be used to assess, measure and monitor the quality of care.

In the second phase, the interdepartmental guidelines steering group collated, reviewed and formulated input, output and outcome measures for each quality statement. These measures were derived from indicators used by WHO and other internationally recognized organizations in the public domain. Measures were then drafted by the relevant technical department and refined by consultation in the guidelines steering group. The resulting list was reviewed in two rounds of a Delphi process to ensure wider geographical (46 countries) and stakeholder (116 experts) consensus. Health facility teams can use the measures to identify gaps in the quality of care and improve the provision and experience of care according to the standards and quality statements. They are for use by health facility leaders, planners, managers and providers to assess and monitor the availability of resources, performance, areas for improvement and the impact of interventions, leading to better quality.

The eight standards of care and 31 quality statements are listed below.

Standards of care and quality statements

Standard 1: Every woman and newborn receives routine, evidence-based care and management of complications during labour, childbirth and the early postnatal period, according to WHO guidelines.	
Quality statements	
1.1a:	Women are assessed routinely on admission and during labour and childbirth and are given timely, appropriate care.
1.1b:	Newborns receive routine care immediately after birth.
1.1c:	Mothers and newborns receive routine postnatal care.
1.2:	Women with pre-eclampsia or eclampsia promptly receive appropriate interventions, according to WHO guidelines.
1.3:	Women with postpartum haemorrhage promptly receive appropriate interventions, according to WHO guidelines.
1.4:	Women with delay in labour or whose labour is obstructed receive appropriate interventions, according to WHO guidelines.
1.5:	Newborns who are not breathing spontaneously receive appropriate stimulation and resuscitation with a bag-and-mask within 1 min of birth, according to WHO guidelines.
1.6a:	Women in preterm labour receive appropriate interventions for both themselves and their babies, according to WHO guidelines.
1.6b:	Preterm and small babies receive appropriate care, according to WHO guidelines.
1.7a:	Women with or at risk for infection during labour, childbirth or the early postnatal period promptly receive appropriate interventions, according to WHO guidelines.
1.7b:	Newborns with suspected infection or risk factors for infection are promptly given antibiotic treatment, according to WHO guidelines.
1.8:	All women and newborns receive care according to standard precautions for preventing hospital-acquired infections.
1.9:	No woman or newborn is subjected to unnecessary or harmful practices during labour, childbirth and the early postnatal period.

Standard 2: The health information system enables use of data to ensure early, appropriate action to improve the care of every woman and newborn.

Quality statements

2.1: Every woman and newborn has a complete, accurate, standardized medical record during labour, childbirth and the early postnatal period.

2.2: Every health facility has a mechanism for data collection, analysis and feedback as part of its activities for monitoring and improving performance around the time of childbirth.

Standard 3: Every woman and newborn with condition(s) that cannot be dealt with effectively with the available resources is appropriately referred.

Quality statements

3.1: Every woman and newborn is appropriately assessed on admission, during labour and in the early postnatal period to determine whether referral is required, and the decision to refer is made without delay.

3.2: For every woman and newborn who requires referral, the referral follows a pre-established plan that can be implemented without delay at any time.

3.3: For every woman and newborn referred within or between health facilities, there is appropriate information exchange and feedback to relevant health care staff.

Standard 4: Communication with women and their families is effective and responds to their needs and preferences.

Quality statements

4.1: All women and their families receive information about the care and have effective interactions with staff.

4.2: All women and their families experience coordinated care, with clear, accurate information exchange between relevant health and social care professionals.

Standard 5: Women and newborns receive care with respect and preservation of their dignity.

Quality statements

5.1: All women and newborns have privacy around the time of labour and childbirth, and their confidentiality is respected

5.2: No woman or newborn is subjected to mistreatment, such as physical, sexual or verbal abuse, discrimination, neglect, detainment, extortion or denial of services.

5.3: All women have informed choices in the services they receive, and the reasons for interventions or outcomes are clearly explained.

Standard 6: Every woman and her family are provided with emotional support that is sensitive to their needs and strengthens the woman's capability.

Quality statements

6.1: Every woman is offered the option to experience labour and childbirth with the companion of her choice.

6.2: Every woman receives support to strengthens her capability during childbirth.

Standard 7: For every woman and newborn, competent, motivated staff are consistently available to provide routine care and manage complications.

Quality statements

7.1: Every woman and child has access at all times to at least one skilled birth attendant and support staff for routine care and management of complications.

7.2: The skilled birth attendants and support staff have appropriate competence and skills mix to meet the requirements of labour, childbirth and the early postnatal period.

7.3: Every health facility has managerial and clinical leadership that is collectively responsible for developing and implementing appropriate policies and fosters an environment that supports facility staff in continuous quality improvement.

Standard 8: The health facility has an appropriate physical environment, with adequate water, sanitation and energy supplies, medicines, supplies and equipment for routine maternal and newborn care and management of complications.

Quality statements

8.1: Water, energy, sanitation, hand hygiene and waste disposal facilities are functional, reliable, safe and sufficient to meet the needs of staff, women and their families.

8.2: Areas for labour, childbirth and postnatal care are designed, organized and maintained so that every woman and newborn can be cared for according to their needs in private, to facilitate the continuity of care.

8.3: An adequate stock of medicines, supplies and equipment is available for routine care and management of complications.

1. Background

1.1 Introduction

During the past two decades, considerable efforts have been made to ensure skilled birth attendance, with the aim of reducing morbidity and mortality among mothers and newborns. These efforts have substantially improved the number of births in health facilities, the proportion of deliveries attended by skilled health personnel in developing countries having increased from 56% in 1990 to 68% in 2012. Despite this increased coverage, 800 women and 7700 newborns still die each day from complications during pregnancy and childbirth and in the postnatal period; an additional 7300 women experience a stillbirth. With increasing numbers of births in health facilities, more avoidable maternal and perinatal mortality and morbidity are occurring in those facilities. The outcome of the care for women and newborns around the time of birth in health facilities reflects the evidence-based practices used and the overall quality of services provided. The quality of care depends on the physical infrastructure, human resources, knowledge, skills and capacity to deal with both normal pregnancies and complications that require prompt, life-saving interventions. Improving the quality of care in health facilities is thus increasingly recognized as an important focus in the quest to end preventable mortality and morbidity among mothers and newborns.

Research has shown that maximizing coverage of essential interventions is insufficient to reduce maternal mortality and severe morbidity. Additionally, there is a complex interplay between experience of care and pregnancy outcomes. To end preventable maternal and newborn morbidity and mortality, every pregnant woman and newborn should have skilled care at birth with evidence-based practices delivered in a humane, respectful, supportive environment. Good-quality care requires appropriate use of effective clinical and non-clinical interventions, strengthened health infrastructure, optimum skills and a positive attitude of health providers. These will improve health outcomes and give women, their families and the health care providers a positive experience. High-quality care is integral to the right to health and the route to equity and the preservation of dignity for women and children.

Ensuring access to skilled birth attendance and essential obstetric care that is effective and of good quality help reduce maternal and newborn mortality and morbidity (*1*). The WHO standards for the quality of maternal and newborn care are based on prioritized, evidence-based interventions during critical periods of care. WHO envisions a world in which "every pregnant woman and newborn receives quality care throughout pregnancy, childbirth and the immediate postnatal period" (*2*) This statement is aligned with two complementary global action agendas: "Strategies toward ending preventable maternal mortality" (*3*) and the "Every newborn: an action plan to end preventable deaths" (*4*).

1.2 Priorities for reducing maternal and perinatal mortality

Globally, over 70% of maternal deaths are due to complications of pregnancy and childbirth such as haemorrhage, hypertensive disorders, sepsis and abortion (*5*). Complications of preterm birth, asphyxia, intra-partum perinatal death and neonatal infections account for more than 85% of newborn deaths (*6*). Studies show that effective, high-quality care to prevent and manage complications during this critical period is likely to reduce the numbers of maternal deaths, stillbirths and early neonatal deaths significantly (*7*). Hence, the time of childbirth and the period immediately after are particularly critical for maternal, foetal and neonatal survival and represent an opportunity to increase the return on investments to improve care.

Effective prevention and management of conditions in late pregnancy, childbirth and the early newborn period are likely to reduce the numbers of maternal deaths, antepartum and intrapartum-related stillbirths and early neonatal deaths significantly. Therefore, improvement of the quality of preventive and curative care during this critical period could have the greatest impact on maternal, foetal and newborn survival. On the basis of the current evidence on burden and impact, the following thematic areas are considered high priorities for evidence-based practices in routine and emergency care (*2*).

- routine care during childbirth, including monitoring of labour and newborn care at birth and during the first week;
- management of pre-eclampsia, eclampsia and its complications;
- management of difficult labour with safe, appropriate medical techniques;
- management of postpartum haemorrhage;
- newborn resuscitation;
- management of preterm labour, birth and appropriate care for preterm and small babies; and
- management of maternal and newborn infections.

1.3 Rationale

Quality of care is increasingly recognized internationally as a critical aspect of the unfinished maternal and newborn health agenda, mainly with respect to care around labour and delivery and in the immediate postnatal period (*8*). It is recognized that high coverage alone is not enough to reduce mortality. To reduce maternal and neonatal mortality substantially and move towards elimination of preventable causes of maternal and newborn death, increased coverage should be accompanied by improved quality throughout the continuum of care (*9*, *10*).

The WHO Multicounty Survey on Maternal and Newborn Health (*11*), with data on more than 300 000 women attending 359 health care facilities in 29 countries, showed a poor correlation between coverage of "essential interventions" (e.g. the proportion of the population who had received an indicated intervention, such as women with eclampsia who received magnesium sulfate) and maternal mortality in health facilities. Studies also show that high-quality care requires appropriate use of the available infrastructure, staff and commodities to ensure effective case management (*12*). High-quality care requires appropriate use of evidence-based clinical practices and non-clinical interventions, strengthened health infrastructure and optimum skills and a positive attitude of health providers.

Providing high-quality antenatal, intrapartum and postnatal care must be integral to any quality improvement strategy. Human rights norms, medical ethics and technical standards encourage integration of these services, directly or through effective referral, as a fundamental element of the quality of care.[1] The right to health is a fundamental human right that is central to accelerating reductions in maternal, neonatal and child mortality and morbidity and is the route to equity and preservation of the dignity of women and children (*13*).

1.4 Target audience

The quality of care framework, standards of care and quality measures may be used to guide the preparation of national standards of care and measures for improving, assessing and monitoring the quality of care provided to mothers and newborns in health facilities. The framework can also be used as a basis for quality improvement strategies and activities and for incorporating quality into existing national programmes. The framework, standards of care and quality measures are intended primarily for use by policy-makers, programme managers, health planners at national, subnational, district and facility levels, maternal and newborn health care professionals, and professional bodies or technical partners involved in quality of care or which advise ministries of health. They can also be used as a resource in medical training institutions.

In recognition of the differences between countries with regard to the organizational structure of health facilities and the health workers who provide maternal and neonatal care, the document focuses on the standards of care, competence, services and physical resources necessary to ensure that maternal and neonatal health conditions are appropriately assessed, managed or referred within a functioning health system in order to provide the optimal care. The standards of care and quality measures should be adapted to the local context to ensure their applicability and to obtain the desired outcomes for mothers and newborns.

1 Germain A. Meeting human rights norms for the quality of sexual and reproductive health information and services. Commissioned discussion paper presented at the international conference on population and development beyond 2014. International conference on human rights, Noordwijk, 7–10 July 2013.

2. Method and process

2.1 Overview

The vision of the quality of care, the framework, the standards of care and the measures of quality were defined in three phases. In the first, consensus was reached on the WHO vision, and the quality of maternal and newborn care was defined. In the second phase, agreement was reached on a conceptual framework for quality of care, a strategic approach to implementation and strategic areas for improving the quality of care. In the third phase, the group addressed gaps identified in strategic work areas and defined standards of care and measures for monitoring improvement in the quality of care in health facilities. These phases included a literature review, expert consultations and consensus-building in a Delphi process.

2.2 Scope

The scope of the work was such as to provide comprehensive guidance to international and national stakeholders to meet the WHO global vision of improving the quality of care for mothers and newborns. This required a framework to define the domains of measurement, the means by which interventions can be expected to achieve the desired health outcomes and the measures required for assessment.

A consultation was initiated in 2015 under the guidance of the Assistant Director-General of the Family, Women and Children cluster. An interdepartmental guidelines steering group was set up, consisting initially of members from the two departments directly responsible for maternal and newborn health: the Department of Maternal, Newborn, Child and Adolescent Health and the Department of Reproductive Health and Research. Once the vision had been defined, the steering group was expanded to include the departments of Public Health, Environmental and Social Determinants of Health, Service Delivery and Safety, Health Workforce and Nutrition for Health and Development. A core working group with members from the departments of Maternal, Newborn, Child and Adolescent Health and Reproductive Health and Research led evidence retrieval and synthesis and ensured coordination.

The guidelines steering group met every two weeks to achieve consensus on the WHO vision of maternal and newborn quality of care and to define the scope of their work. Three categories of review were identified:

- of definitions of quality of care in the context of maternal and newborn health;
- of existing models of quality of care and the design of a systematic framework of important domains of maternal and newborn quality of care; and

- of the literature and definition of an effective strategy for clinical and health service interventions to improve the quality of care at country level.

These areas were addressed during the first and second phases as the basis for defining quality of care and the quality of care framework and identifying strategic work areas. Definition of standards of care was identified as a major gap.

2.3 Development of the framework and standards of care

The core working group reviewed published and unpublished literature that reported definitions of quality of care, models of care, quality of care frameworks and strategic approaches that have been used to improve the quality of care in general and specifically for maternal and newborn health. The findings were presented to the interdepartmental guidelines steering group for review and discussion, and consensus was reached on a definition of quality of care, the conceptual framework and the strategic implementation approach (*2*).

Standards represent benchmarks against which improvements can be measured and should therefore be measurable. Defining standards of care was identified as a priority, because there was little guidance available, except for evidence-based clinical practice guidelines. In a first step, a definition, taxonomy and structure were devised, and then standards of care were formulated.

Consensus was reached on the definition, draft framework, and standards of care, which were then presented to a meeting of the guideline development group in June 2015 (Annex 1).

2.3.1 Evidence retrieval and synthesis

MEDLINE, WHO publications and other databases were searched for relevant publications that provided definitions and models of quality of care, with the search terms "standard [definition] [criteria], [service delivery], [clinical or guidelines], [standard operating procedures]". Additional searches were conducted by adding 'maternal and newborn' to the key words. Publications were located on organizations' websites by utilizing the site's search box or a specific section of their site dedicated to publications. Organizations that were likely to have developed standards in general and for maternal and newborns in particular including international quality and safety organizations, government agencies, nongovernment and professional organizations were identified. Box 1 lists the organizations the publications of which were used as the main sources for the definition, taxonomy and structure of standards of care. A general internet search with the Google search engine and the same key words was also conducted. The documents were then reviewed and analysed to identify a standard in terms of definition, description, format, measurement and taxonomy. The group also reviewed experience in improving the quality of care in various projects completed by WHO departments.

Box 1. Resources reviewed to define standards

- International Organization for Standardization
- International Society for Quality in Health Care
- The Joint Commission (USA)
- National Institute for Health and Care Excellence (NICE), United Kingdom
- Council for Health Service Accreditation of Southern Africa
- National Department of Health: National Core Standards for Health Establishment in South Africa (2011)
- Safecare Basic Health Care Standards (PharmAccess Foundation of the Netherlands, the Joint Commission International of the USA and the Council for Health Service Accreditation of Southern Africa)
- Australian Commission on Safety and Quality in Health Care: National safety and quality health service standards (2012)
- WHO standards for maternal and newborn health. Group 1: General standards of care for healthy pregnancy and childbirth (2007)
- WHO Regional Office for South-East Asia: Standards of Midwifery Care (1999)

2.3.2 Expert review and consensus-building

In order to reflect the diversity of expert opinion and technical perspectives appropriately, the quality of care framework and standards of care were defined in a participatory process. The draft was reviewed by relevant WHO departments to ensure technical accuracy and consistency and with WHO regional offices and country representatives to assess their applicability in different contexts. The consultation was conducted electronically and at face-to-face meetings, followed by a one-day meeting of the members of the interdepartmental guideline development group to review, finalize and draft the framework and standards of care for presentation and discussion by the guideline development group.

In June 2015, an expert meeting (Annex 1) was held to review the WHO vision and framework and to achieve consensus on the WHO approach and the draft standards of care. The experts reviewed the background information and drafts to determine the comprehensiveness of the review and whether the proposed definition of quality of care, framework and standards of care reflected current knowledge and understanding of quality of care, their applicability to values in low-resource settings and the feasibility of implementation. Consensus was reached on most items and by a show of hands only exceptionally. The drafts were finalized on the basis of the outcome of the meeting.

2.4 Development of quality measures

Measures of quality are a fundamental component of standards of care. They are required to measure inputs, the process of care or service provision and, if appropriate, the outcome of care and thus to monitor progress towards achievement of a particular standard of care. Defining measures of quality is challenging, however, in view of variations in definitions, complex interactions among the factors responsible for outcomes and the context of their use and application.

The group sought realistic parameters and a balanced approach to measuring interventions in health facilities. They sought both appropriate direct measures and measures that reflect the combined effect of interventions

The initial step was to identify the elements of interventions that define the standards of care, on the basis of WHO guidelines and other relevant sources. A list of quality measures was then collated, and the relevant WHO technical unit formulated a quality statement. These were reviewed by the interdepartmental guidelines steering group before a Delphi process for consensus-building.

2.4.1 Collating and drafting quality measures

WHO technical departments drafted the quality measures for each statement in collaboration with the core working group. The group mapped and collated existing measures from WHO guidelines, several WHO tools for assessing health facilities and collecting data and from national and international partners. When no measures were found in these sources, new measures were formulated on the basis of current guidelines and discussed within the relevant WHO units. The measures were collated, and the interdepartmental guidelines steering group drafted a list of 318 measures for the 31 quality statements, to be reviewed in the wider consultation.

2.4.2 Consensus-building on quality measures

To build consensus on the quality measures, a wider consultation was undertaken, initially within WHO technical units and regional and country offices and then globally in a Delphi process. Prospective participants in the global consultation were identified who had a wide spectrum of expertise, from the provision of care to the experience of care. They included experts in quality of care, professionals (e.g. obstetricians, a neonatologist, paediatricians, midwives, nurses, communication specialists, lawyers), researchers, academics, users and implementers at various levels and representatives of consumer organizations, professional societies and international and bilateral agencies. Invitations were sent to 215 prospective participants in 60 countries to gauge their interest and obtain consent to participate. The aim was to recruit approximately equal numbers of participants in the various sectors of health and social care, with global representation.

Of 215 invitees, 130 (60%) in 48 low-, middle- and high-income countries agreed to participate. The quality measures were sent to those who consented to participate in the consultation, which was conducted in two rounds over 14 weeks. Online software (SurveyMonkey®) allowed participants to submit their comments and rankings of measures in two rounds. In the first round, participants were asked to review the list of 318 quality measures for validation and completeness, provide comments and propose any additional measures. In the second round, participants were asked to prioritize the measures on the basis of the criteria agreed at the guideline development group expert meeting.

Round one of the Delphi survey

In the first round, the 130 participants were sent the list of quality measures divided into three sections, the first covering provision of care (standards 1–3), the second covering experience of care (standards 4–6) and the third on cross-cutting areas (standards 7 and 8). Participants could choose to address either provision or experience of care plus cross-cutting areas or all three sections, depending on their expertise. They were asked to provide general comments on the validity and completeness of the measures for each quality statement and, if necessary,

to propose additional measures. The survey was open for two weeks, during which time three reminder e-mails were sent. The participants were encouraged to complete the survey at their own pace and to review their answers before submitting them.

The core working group analysed the text comments and the quality measures proposed by the respondents and grouped them for each quality statement. Text comments were analysed and organized into categories, which were refined and clustered by the aspects of care covered by the quality statements. The categories included comments that provided insight into areas that were not covered but considered important, those that suggested reformulation of a measure and those that extended a statement in some way. The proposed additional quality measures were also grouped into themes. The relevant technical units then reviewed the grouped comments and additional measures and compiled a list for round 2 of the Delphi process.

Round two of the Delphi survey

The second round was conducted six weeks after the first, when the list was sent to 116 respondents who had expressed preferences in the first round. Three surveys were designed: one on the provision of care plus the cross-cutting areas (standards 1–3, 7 and 8), a second on experience of care plus cross-cutting areas (standards 4–6, 7 and 8) and the third on all the quality statements. The online survey was open for four weeks, and four reminder e-mails were sent during this period.

In this round, respondents were asked to score the quality measures on the basis of the following five criteria, agreed upon by the guideline development group:

- *Importance*: The topic of the measure is significant and strategically important to stakeholders (e.g. patients, clinicians, purchasers, public health officials, policy-makers). *Health importance*: The aspect of health that the measure addresses is important, as indicated by high prevalence or incidence and/or a significant effect on the burden of illness (i.e. effect on mortality and morbidity in a population).
- *Measurability*: The requirements for data collection for the measure are understandable and feasible. The data source required for implementing the measure is available and accessible within the timeframe for measurement.
- *Reliability*: The results of the measurement are reproducible for a fixed set of conditions, irrespective of who makes the measurement or when it is made.
- *Validity*: The measure truly measures what it purports to measure.
- *Usefulness*: The measure provides a meaningful measure of change over time, for decision-making.

For each of the above criteria, participants had six graded options, from which to choose one:

- No: This quality measure does not fulfil this criterion.
- Probably no: This quality measure probably does not fulfil this criterion.
- Not sure: I am not sure whether this quality measure fulfils this criterion.
- Probably yes: This quality measure probably fulfils this criterion.
- Yes: This quality measure fulfils this criterion.
- No expertise: I don't have expertise in this area.

Ranking of quality measures

The ratings given in round 2 by the survey respondents were used to estimate a mean score for each quality measure, as follows:

- No: This quality measure does not fulfil this criterion. = 0 points
- Probably no: This quality measure probably does not fulfil this criterion. = 0.25 point
- Not sure: I am not sure whether this quality measure fulfils this criterion. = 0.5 point
- Probably yes: This quality measure probably fulfils this criterion. = 0.75 point
- Yes: This quality measure fulfils this criterion. = 1 point
- No expertise: I don't have expertise in this area. = Blank

"Blank" responses were not included in calculation of the mean scores.

Calculation of mean scores

A mean score was calculated for each quality measure on each criterion and termed the "intermediate" score, calculated as equal to the sum of all the scores for a particular criterion divided by the number of respondents (excluding blanks).

The intermediate score for a quality measure for one criterion = mean score (C) for that quality measure by the number of participants. "C" is equal to the sum of the scores for that criterion divided by the total number of respondents (excluding blanks).

As there were five criteria, the mean of the five intermediate score was calculated to obtain the final priority score for each quality measure. The final priority score for each quality measure was calculated by adding the intermediate scores for that measure on the five criteria, divided by 5.

Final score for a quality measure = Mean of the intermediate scores for the five criteria
= (C1+C2+C3+C4+C5)/5.

The input, output and outcome quality measures were then ranked for each quality statement, according to the final priority score.

3. Definition and framework of quality of care

3.1 Evidence and summary of findings

No one, universally accepted definition of quality of care was found in the literature (14–18). Quality of care was found to be multi-faceted and described from different perspectives and dimensions, including by health care providers, managers or patients and the health care system; on the basis of quality characteristics such as safety, effectiveness, timeliness, efficiency, equity and patient-centredness; and as the provision and experience of care (Box 2).

A number of models of quality of care have been proposed since that of Donabedian in 1988 (18): Maxwell (19), Ovretveit et al. (20), Hulton et al. (21), the Institute of Medicine (16) and WHO (17). The three models most commonly used and most clearly defined were perspective, characteristics and systems models, which have been used to operationalize the characteristics of quality of care on the basis of various elements. The most compelling was the WHO model (17), which advanced health systems thinking by identifying six building blocks – service delivery; health workforce; information, medical products, vaccines and technology; financing, leadership and governance; and a structure for establishing health systems analysis and points of intervention. The health system creates the structure that enables access to high-quality care. These models were used to design a conceptual framework for defining, assessing and monitoring the quality of maternal and newborn care.

The definition and framework of maternal and newborn quality of care described below were based on the above analysis and the consensus reached at the guideline development group expert meeting.

3.2 Definition of quality of care

On the basis of several definitions in the literature, the WHO definition of quality of care is "the extent to which health care services provided to individuals and patient populations improve desired health outcomes. In order to achieve this, health care must be safe, effective, timely, efficient, equitable and people-centred" (*2*).

Box 2. Operational definitions of the characteristics of quality of care

- ***Safe*** – delivering health care that minimizes risks and harm to service users, including avoiding preventable injuries and reducing medical errors
- ***Effective*** – providing services based on scientific knowledge and evidence-based guidelines
- ***Timely*** – reducing delays in providing and receiving health care
- ***Efficient*** – delivering health care in a manner that maximizes resource use and avoids waste
- ***Equitable*** – delivering health care that does not differ in quality according to personal characteristics such as gender, race, ethnicity, geographical location or socioeconomic status
- ***People-centred*** – providing care that takes into account the preferences and aspirations of individual service users and the culture of their community

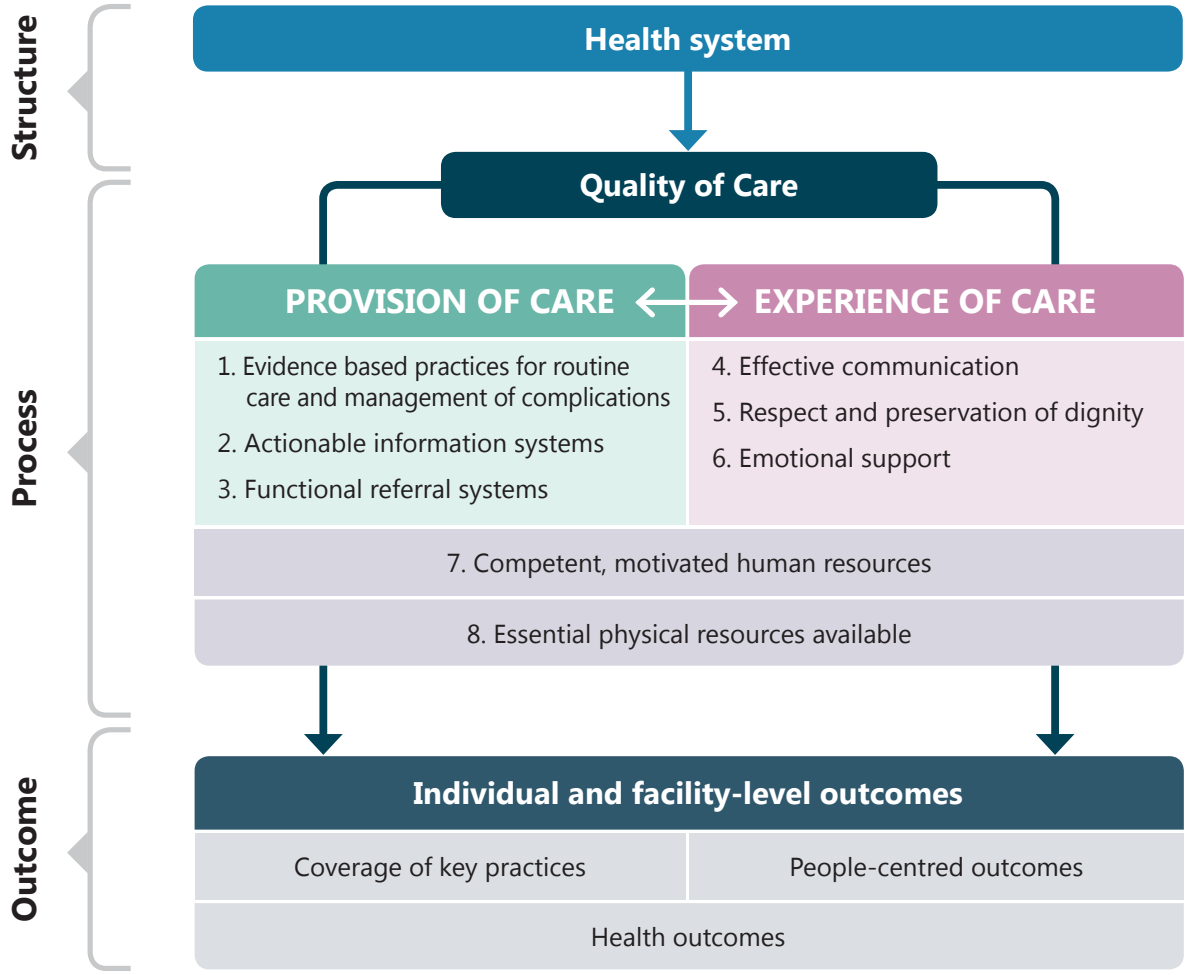
The quality of care for women and newborns is therefore the degree to which maternal and newborn health services (for individuals and populations) increase the likelihood of timely, appropriate care for the purpose of achieving desired outcomes that are both consistent with current professional knowledge and take into account the preferences and aspirations of individual women and their families. This definition takes into consideration the characteristics of quality of care and two important components of care: the quality of the provision of care and the quality of care as experienced by women, newborns and their families.

3.3 Quality of care framework

As quality of care is multidimensional, various models were used to prepare a conceptual framework to guide health care providers, managers and policy-makers in improving the quality of health services for mothers and newborns. Building on these models and the WHO health systems approach, a quality of care framework (Fig. 1) was designed by identifying domains that should be targeted to assess, improve and monitor care in health facilities in the context of the health system (*2*).

The framework has eight domains of quality of care within the overall health system. Although it focuses on the care provided in facilities, it also accounts for the critical role of communities and service users in identifying their needs and preferences and in managing their own health. The perspectives of women, their families and their communities on the quality of maternity care services influence their decision to seek care and are essential components in creating a demand for and access to high-quality maternal and newborn services (*12*). Community engagement is therefore an important aspect to be considered, beyond health facilities, and should be an integral component of improving the quality of care for women and newborns.

Fig. 1. WHO framework for the quality of maternal and newborn health care



The framework of eight domains of quality of care for pregnant women and newborns in facilities increases the likelihood that the desired individual and facility outcomes will be achieved. The health system approach provides the structure for quality improvement in the two linked dimensions of provision and experience of care. Provision of care includes use of evidence-based practices for routine and emergency care, information systems in which record-keeping allows review and auditing and functioning systems for referral between different levels of care. Experience of care consists of effective communication with women and their families about the care provided, their expectations and their rights; care with respect and preservation of dignity; and access to the social and emotional support of their choice. The cross-cutting areas of the framework include the availability of competent, motivated human resources and of the physical resources that are prerequisites for good quality of care in health facilities.

This framework can be used to assess the characteristics or dimensions of quality of care in various sectors of the health system, from the perspectives of service users, service providers and managers. On the basis of this framework and in line with the organizational mandate, six strategic areas of work were identified for improving the quality of maternal and newborn care. These six areas were used as the basis for a systematic, evidence-based approach to preparing guidelines, standards of care, effective interventions, indicators of quality of care and research and capacity-building for improving the quality of maternal and newborn care.

3.4 Strategic areas of work

The six strategic areas for improving the quality of care and ending preventable mortality and morbidity among mothers and newborns are research, guidelines, standards of care, effective intervention strategies, indicators for monitoring at global, national and facility levels and strengthening capacity for quality improvement, measurement and programming (*2*).

Guided by the framework, work in these strategic areas will support improvement of the quality of maternal and newborn care, with targeted national capacity strengthening and technical support. A review indicated, however, that, whereas evidence-based clinical practice guidelines are generally available, there was no guidance on expected standards of care and appropriate measures of quality. Therefore, standards of care and quality measures were prioritized as the first normative products.

4. Standards of care

4.1 Evidence and summary of findings

The search for definitions, taxonomy and the structure of standards of care resulted in no consistent "definition" or specific, standardized "structure". The majority of the sources identified were from non-health related areas that defined a standard as a statement that provides guidance to ensure consistency in processes and products (*22*). Health related standards were predominantly from high-income settings (*23*, *24*). The National Centre for Health and Care Excellence (NICE) provided examples of maternal and newborn standards, including standards for antibiotics for neonatal infection, hypertension in pregnancy, induction of labour, caesarean section, postnatal care and antenatal care (*25*). The PharmAccess Foundation in the Netherlands (*26*), the Joint Commission International in the USA (*23*) and the Council for Health Service Accreditation of Southern Africa (*24*) have issued standards for low- and middle-income countries. In 2007, WHO published a limited number of standards for maternal and newborn care (*27*), none of which were specific to the time around childbirth.

These health-related sources defined standards primarily for "accreditation", although a few were for "quality improvement", providing "criteria" for meeting standards in "prioritized areas", with recognized gaps in quality and safety. While most recommended the need for "measurement criteria", few provided such measurements.

4.2 Definition and structure of standards

On the basis of these findings, for maternal and newborn care, a "standard" is defined as "a description of what is expected to be provided to achieve high-quality care around the time of childbirth". The standard of care has two main components: the quality statement and the quality measure (Fig. 2). A quality statement sets out the requirements to achieve compliance with the standard and quality measures provide objective evidence for determining whether or not the requirements have been met.

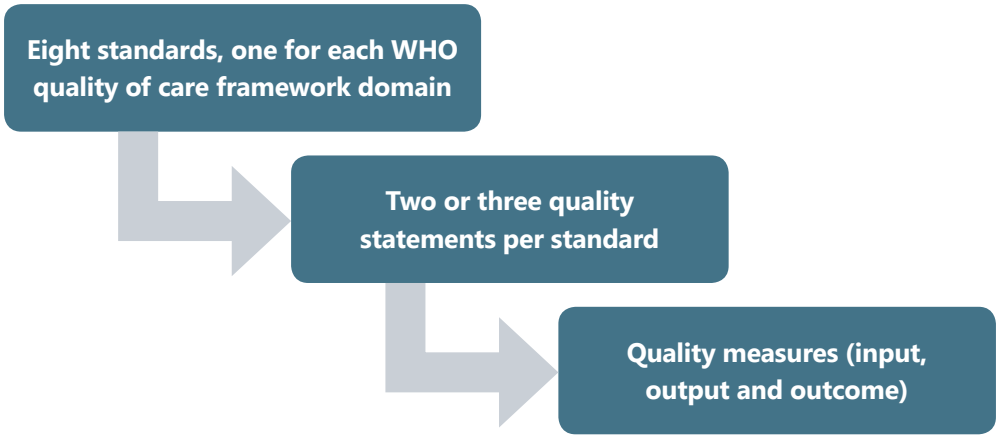
Quality statements are concise statements of priorities for measurably improving quality of care around childbirth (adapted from NICE quality standards (*25*). They define the markers of quality derived from evidence on the thematic area and the resources required.

Quality measures are criteria for assessing, measuring and monitoring the quality of care as specified in the quality statement. They are of three types:

- *input*: what must be in place for the desired care to be provided (e.g. physical resources, human resources, policies, guidelines),

- *output*: whether the desired process of care was provided as expected and
- *outcome*: the effect of the provision and experience of care on health and people-centred outcomes.

Fig. 2. Structure of standards



In line with the eight domains in the WHO quality of care framework, eight standards have been formulated to define the priorities for quality improvement:

1. evidence-based practices for routine care and management of complications;
2. actionable information systems;
3. functioning referral systems;
4. effective communication;
5. respect and preservation of dignity;
6. emotional support;
7. competent, motivated personnel; and
8. availability of essential physical resources.

The standards are accompanied by two or three quality statements; the exception is standard 1 on evidence-based practices for routine care and management of complications, for which there are 13 quality statements to reflect specific priorities for intervention. There are a total of 31 quality statements. For standard 1, some are annotated with 'a' if they cover only the woman, 'b' if they cover the baby and 'c' if they cover both the mother and the baby. Each of the 31 quality statements has 6–18 measures of input, output and outcome.

4.3 Scope and use of standards and quality statements

The standards of care cover the routine care and management of complications occurring for women and their babies during labour, childbirth and the early postnatal period, including those of small babies during the first week of life. They are centred on the woman, the newborn and the family and are applicable to all health facilities that offer maternity services. They are in line with WHO guidelines and designed to address the specific priorities identified in section 1.2.

The standards of care provide a basis for what is expected and required, support the monitoring and measurement of performance against measures of best practice in order to identify priorities for improvement and provide information on how best practice can be used to support high-quality care or service delivery. They define priorities for improving the quality of maternal and newborn care for use by planners, managers and health care providers to:

- prepare evidence-based national and subnational standards of care to ensure high-quality, effective maternal and neonatal health services around the time of childbirth;
- introduce the expected standards of care and delivery in order to identify the components of care that require improvement to ensure high-quality service;
- use available resources to achieve optimal health care outcomes and improve the use by and satisfaction of individuals, families and communities with maternal and neonatal health services;
- monitor service improvements, show that high-quality maternal and newborn care or services are being provided and highlight areas for improvement; and
- provide a benchmark for national health facility audits, accreditation and rewards for provider performance.

They should be adopted and streamlined within national quality of care strategies and frameworks for the delivery of maternal and newborn health services to ensure that the services provided are of high quality.

4.4 List of standards and quality statements

Evidence-based practices for routine care and management of complications

Standard 1: Every woman and newborn receives routine, evidence-based care and management of complications during labour, childbirth and the early postnatal period, according to WHO guidelines.

Aim: The aim of this standard is to ensure the expected evidence-based management of labour, childbirth and the immediate postnatal period to mothers and to newborns in the first few days of life. It includes routine care, early diagnosis of complications and their appropriate management. Many conditions require attention during this period; the standard has therefore been limited to those associated with high morbidity and mortality. Managing these conditions appropriately will drastically reduce the number of deaths and improve outcomes of women and newborns during this period.

Quality statements

Quality statement 1.1a: Women are assessed routinely on admission and during labour and childbirth and are given timely, appropriate care.

Quality statement 1.1b: Newborns receive routine care immediately after birth.

Quality statement 1.1c: Mothers and newborns receive routine postnatal care.

Quality statement 1.2: Women with pre-eclampsia or eclampsia promptly receive appropriate interventions, according to WHO guidelines.

Quality statement 1.3: Women with postpartum haemorrhage promptly receive appropriate interventions, according to WHO guidelines.

Quality statement 1.4: Women with delay in labour or whose labour is obstructed receive appropriate interventions, according to WHO guidelines.

Quality statement 1.5: Newborns who are not breathing spontaneously receive appropriate stimulation and resuscitation with a bag-and-mask within 1 min of birth, according to WHO guidelines.

Quality statement 1.6a: Women in preterm labour receive appropriate interventions for both themselves and their babies, according to WHO guidelines.

Quality statement 1.6b: Preterm and small babies receive appropriate care, according to WHO guidelines.

Quality statement 1.7a: Women with or at risk for infection during labour, childbirth or the early postnatal period promptly receive appropriate interventions, according to WHO guidelines.

Quality statement 1.7b: Newborns with suspected infection or risk factors for infection are promptly given antibiotic treatment, according to WHO guidelines.

Quality statement 1.8: All women and newborns receive care according to standard precautions for preventing hospital-acquired infections.

Quality statement 1.9: No woman or newborn is subjected to unnecessary or harmful practices during labour, childbirth and the early postnatal period.

Actionable information systems

Standard 2: The health information system enables use of data to ensure early, appropriate action to improve the care of every woman and newborn.

Aim: The aim of this standard is to record all information in the health facility accurately and to use it appropriately to improve the care of women and newborns. This will require the availability of standard forms for collecting information on all patients throughout their stay in the facility and trained, skilled staff for data collection, analysis and use of the results to provide feedback to monitor and improve performance at all levels of the health care system, including the performance of health care staff.

Quality statements

Quality statement 2.1: Every woman and newborn has a complete, accurate, standardized medical record during labour, childbirth and the early postnatal period

Quality statement 2.2: Every health facility has a mechanism for data collection, analysis and feedback as part of its activities for monitoring and improving performance around the time of childbirth.

Functional referral systems

Standard 3: Every woman and newborn with condition(s) that cannot be dealt with effectively with the available resources is appropriately referred.

Aim: The aim of this standard is to ensure timely, appropriate referral of all patients who need care that cannot be provided in the health facility. The decision to refer a patient should be made as soon as a condition that cannot be treated in the health facility is diagnosed, once the required pre-referral treatment has been given. Communication should be made with the centre to which the referral is made before transfer of the patient, so that appropriate arrangements can be made to receive the patient. A complete hand-over should be given to the receiving health facility, and feedback on the condition of the patient should be sought periodically to improve care in both the referring and referral health facility.

Quality statements

Quality statement 3.1: Every woman and newborn is appropriately assessed on admission, during labour and in the early postnatal period to determine whether referral is required, and the decision to refer is made without delay.

Quality statement 3.2: For every woman and newborn who requires referral, the referral follows a pre-established plan that can be implemented without delay at any time.

Quality statement 3.3: For every woman and newborn referred within or between health facilities, there is appropriate information exchange and feedback to relevant health care staff.

Effective communication

Standard 4: Communication with women and their families is effective and responds to their needs and preferences.

Aim: The aim of this standard is effective communication, which is an essential component of the experience of care received by the patient and her family. The patient should receive all information about her care and should feel involved in all decisions taken regarding her treatment. Effective communication between the health care provider and the patient can reduce unnecessary anxiety and make childbirth a positive experience for the woman.

Quality statements

Quality statement 4.1: All women and their families receive information about the care and have effective interactions with staff.

Quality statement 4.2: All women and their families experience coordinated care, with clear, accurate information exchange between relevant health and social care professionals

Respect and preservation of dignity

Standard 5: Women and newborns receive care with respect and can maintain their dignity.

Aim: The aim of this standard is to give total respect and to preserve the dignity of all women throughout their stay in the health facility. Their privacy and confidentiality should be respected at all times, and any kind of mistreatment, such as physical, sexual or verbal abuse, discrimination, neglect, detainment, extortion or denial of services, should be avoided.

Quality statements

Quality statement 5.1: All women and newborns have privacy around the time of labour and childbirth, and their confidentiality is respected.

Quality statement 5.2: No woman or newborn is subjected to mistreatment, such as physical, sexual or verbal abuse, discrimination, neglect, detainment, extortion or denial of services.

Quality statement 5.3: All women can make informed choices about the services they receive, and the reasons for interventions or outcomes are clearly explained.

Emotional support

Standard 6: Every woman and her family are provided with emotional support that is sensitive to their needs and strengthens the woman's capability.

Aim: Emotional support is an essential component of the experience of care. Having the birth companion of her choice helps a woman to go through childbirth more confidently. Every woman receives support that strengthens her own capability during childbirth.

Quality statements

Quality statement 6.1: Every woman is offered the option to experience labour and childbirth with the companion of her choice.

Quality statement 6.2: Every woman receives support to strengthen her capability during childbirth.

Competent, motivated human resources

Standard 7: For every woman and newborn, competent, motivated staff are consistently available to provide routine care and manage complications.

Aim: All labour and childbirth areas of the health facility should have competent, well-trained staff and skilled birth attendants present 24 h a day in sufficient numbers for the expected work load. Good leadership and management in the health facility are essential to provide support and ensure continuous quality improvement.

Quality statements

Quality statement 7.1: Every woman and child has access at all times to at least one skilled birth attendant and to support staff for routine care and management of complications.

Quality statement 7.2: The skilled birth attendants and support staff have appropriate competence and skills mix to meet the requirements of labour, childbirth and the early postnatal period.

Quality statement 7.3: Every health facility has managerial and clinical leadership that is collectively responsible for developing and implementing appropriate policies and fosters an environment that supports facility staff in continuous quality improvement.

Essential physical resources available

Standard 8: The health facility has an appropriate physical environment, with adequate water, sanitation and energy supplies, medicines, supplies and equipment for routine maternal and newborn care and management of complications.

Aim: Every health facility should have basic infrastructure and amenities, including water, sanitation, hygiene and electricity, waste disposal, a stock of essential medicines, supplies and equipment to meet the health care needs of the women and newborns in the facility. Areas for labour, childbirth and postnatal care should be hygienic, comfortable and logically designed and organized to maintain continuity of care.

Quality statements

Quality statement 8.1: Water, energy, sanitation, hand hygiene and waste disposal facilities are functioning, reliable, safe and sufficient to meet the needs of staff, women and their families.

Quality statement 8.2: Areas for labour, childbirth and postnatal care are designed, organized and maintained so that every woman and newborn can be cared for according to their needs in private, to facilitate the continuity of care.

Quality statement 8.3: Adequate stocks of medicines, supplies and equipment are available for routine care and management of complications.

5. Quality statements and measures

5.1 Outcome of the Delphi process

Most of the 318 measures drafted for the online Delphi consultation were input and output measures, as outcome measures are not necessarily covered by a single quality statement. Outcomes measures are mainly those that could be used at local level to reliably assess the quality of care and allow comparisons between facilities or changes over time.

In round 1, 116 of the 130 participants who received the survey (89%) responded. In general, they agreed that the quality measures considered covered the inputs, process and outcomes of the quality of the care that women and newborns receive around the time of birth. Of the comments received, some indicated important areas that had not been covered, proposed reformulation of some measures or extended the reflection beyond the quality statements. Some were not directly related to the quality statements but reflected participants' general views on the quality of care. A number of quality statements were clarified on the basis of the comments, 10 were deleted, and 41 new measures were added, resulting in a total of 350 quality measures for consideration in round 2.

In round 2, a total of 81 participants in 46 high-, middle- and low-income countries completed one of the three surveys, for a response rate of 70% (81/116). Sixty-one of 83 respondents commented on the provision of care and 48 of 74 on the experience of care.

Most of the quality measures were ranked highly, from a high of 94.8 to a low of 64.3; only three measures were ranked below 70. For provision of care, the mean score was > 90 for 35 measures, 80–90 for 116 measures and < 80 for 45 measures. For experience of care, the mean score was > 90 for nine measures, 80–90 for 47 measures and < 80 for 16 measures. For cross-cutting measures, the mean score was ≥ 90 for 12 measures, 80–90 for 50 measures and ≤ 80 for 16 measures. Thus, 56 quality measures received a ranking of > 90. Most of the most highly ranked quality statements were input measures.

5.2 Using quality measures

Health facility teams can use the quality measures to identify gaps in the quality of care and to improve the provision and experience of care according to the standard and the relevant quality statement. Health facility leaders, planners, managers and providers can use them to assess and monitor the availability of resources, the performance of processes, areas that require improvement and the impact of interventions, hence driving quality improvement. The

measures should be adapted to each context, but standards must be implemented consistently to ensure quality improvement.

The quality measures include input, output/process and outcome measures. Input measures include physical resources, human resources, policies, protocols and guidelines. Output measures include coverage of key practices and most are expressed as proportions, such as "*The proportion of all women who gave birth in the health facility whose urinalysis result was appropriately recorded during labour, childbirth and the early postpartum period.*" The outcome measures include people centred and health outcomes.

Most quality statements are followed by measures that are highly specific to that statement; however, some measures might be relevant to more than one statement, especially with regard to physical resources (standard 8). The numbering of the quality measures reflects the order in which they were listed in the survey. The score received by each measure is given in brackets, and the three most highly ranked quality measures for each statement are marked with an asterisk.

5.3 Measures for quality statements

Standard 1: Every woman and newborn receives routine, evidence-based care and management of complications during labour, childbirth and the early postnatal period, according to WHO guidelines.

Quality statement 1.1a: Women are assessed routinely on admission and during labour and childbirth and are given timely, appropriate care.

Rationale: Assessment of women and regular monitoring on admission and during labour and birth are critical to ensure essential care that is appropriate to the woman's case, to prevent the onset of complications and to identify risks or complications that require urgent action or referral for better outcomes of pregnancy and labour for both the mother and the newborn.

On admission, women undergo a full review of their antenatal care records, pregnancy and labour history, a vaginal examination and confirmation of labour. Fetal heart rate, fetal lie, position and presentation, blood pressure, pulse and temperature are determined and recorded. Blood group and Rhesus typing, haemoglobin, urine protein and glucose, and HIV status, if appropriate, are tested and recorded.

The progress of labour is monitored with a partograph; blood pressure, pulse, temperature and fetal heart rate are assessed regularly and at a 4-h action line. Pain relief is offered, and the mother's choice is respected. Spontaneous vaginal birth is supported and guided by the mother's urge to push. The third stage of labour is managed actively, with intravenous or intramuscular oxytocin given immediately after the birth.

Any complications at admission and during labour and birth are rapidly identified and appropriately managed (see quality statements 1.2, 1.3, 1.4, 1.5, 1.6a and b, 1.7a and b).

Quality measures
Input measures
1. *The health facility has the basic essential equipment and supplies for routine care and detection of complications (thermometers, sphygmomanometers, fetal stethoscopes, urine dipsticks) available in sufficient quantities at all times in the areas of the maternity unit for labour and childbirth*. (93.38)*
2. *The health facility has written, up-to-date clinical protocols for assessing intrapartum care and action in the labour and childbirth areas of the maternity unit that are consistent with WHO guidelines*. (89.37)*
3. *Health-care staff in the labour and childbirth areas of the maternity unit receive in-service training and regular refresher sessions at least once every 12 months in the identification and management of obstetric emergencies during labour and childbirth. (83.42)*
4. *Health-care staff in labour and childbirth areas receive at least monthly drills or simulation exercises and supportive supervision in routine care and detection of obstetric complications during labour and childbirth. (78.65)*
Output/process measures
1. *The proportion of all women who gave birth in the health facility whose blood pressure, pulse and temperature were appropriately recorded during labour, childbirth and the early postpartum period (and acted on if appropriate). (87.25)*
2. *The proportion of all women who gave birth in the health facility who received oxytocin within 1 min of the birth of their baby. (86.18)*
3. *The proportion of all women who gave birth in the health facility whose progress in labour was correctly monitored and documented with a partograph and a 4-h action line. (84.56)*
4. *The proportion of all women who gave birth in the health facility whose urinalysis result was appropriately recorded during labour, childbirth and the early postpartum period (and acted on if appropriate). (78.45)*
5. *The proportion of all women who gave birth in the health facility who received any option for pain relief during labour and childbirth. (73.04)*
Outcome measures
1. *The health facility perinatal mortality rate [number of foetal death (stillbirths) or early neonatal deaths / the total number of births of babies weighing at least 1000 g or of 28 weeks' gestation (stillbirths + live births) x 1000] *. (91.39)*
2. *Intrapartum stillbirth rate (number of stillbirths occurring during the intrapartum period per 1000 births). (88.42)*
3. *The proportion of all women admitted to the health facility in active labour who gave birth within 12 h. (72.83)*

Quality statement 1.1b: Newborns receive routine care immediately after birth.

Rationale: Routine care of newborns immediately after birth facilitates adaptation of the newborn to the new environment, meets his or her immediate needs in the best possible way and avoids preventable complications.

Immediately after birth, newborns are dried thoroughly and placed in skin-to-skin contact with the mother for at least 1 h. Clamping of the umbilical cord is delayed until 1–3 min after birth, and breastfeeding is supported in the first hour after birth. Any complications are identified and managed appropriately.

Quality measures
Input
1. *The health facility has written, up-to-date, clinical protocols for essential newborn care that are consistent with WHO guidelines and are available in the labour and childbirth areas of the maternity unit*. (91.09)*
2. *The health facility has supplies of sterile cord ties (or clamps) and scissors (or blades), available in sufficient quantities at all times for the expected number of births*. (89.86)*
3. *The health facility has supplies of clean towels in the labour and childbirth areas for immediate drying of newborns, available in sufficient quantities at all times for the expected number of births. (84.83)*
4. *Health-care staff in the labour and childbirth areas of the maternity unit receive in-service training or regular refresher sessions in essential newborn care and breastfeeding support at least once every 12 months. (83.94)*
5. *The health facility has local arrangements and a mechanism to maintain a documented room temperature in the labour and childbirth areas at or above 25 °C and free of draughts. (77.9)*
6. *Health-care staff in the labour and childbirth areas receive at least monthly drills or simulation exercises and supportive supervision in essential newborn care and supporting breastfeeding. (77.82)*
Output/process
1. *The proportion of all newborns who were breastfed within 1 h of birth*. (86.42)*
2. *The proportion of all newborns who were kept in skin-to-skin contact (with body and head covered) with their mothers for at least 1 h after birth. (83.34)*
3. *The proportion of all newborns who received all four elements of essential newborn care: immediate and thorough drying, immediate skin-to-skin contact, delayed cord clamping and initiation of breastfeeding in the first hour. (78.93)*
4. *The proportion of all newborns whose umbilical cord was clamped 1–3 min after birth. (76.56)*
5. *The proportion of all newborns who were dried immediately and thoroughly at birth. (76.53)*
Outcome
1. *The proportion of all newborns who had a normal body temperature (36.5–37.5 °C) at the first complete examination (60–120 min after birth). (85.37)*

Quality statement 1.1c: Mothers and newborns receive routine postnatal care.

Rationale: Routine postnatal care represents the use of best practices for prevention, early detection and treatment of complications in the mother and baby and counselling of mothers on how best to take care of themselves and their newborns.

Postnatal care, the individualized care provided to a mother and her baby after childbirth should address any variation from the expected normal recovery after birth. Blood pressure, temperature, bleeding and urine voiding are monitored frequently during the first 48 h after childbirth. Complications are identified and managed, and exclusive breastfeeding is supported. Mothers are counselled on danger signs in themselves and their babies and on birth spacing and family planning methods.

Newborns receive a complete physical assessment, are kept in skin-to-skin contact with the mother and given eye and umbilical cord care. Bathing is delayed for 24 h, vitamin K and vaccines are given as per the national guidelines, temperature is monitored, and complications are identified and managed. Low-birth-weight and small babies are given additional care as needed (see Quality statement 1.6b).

Quality measures
Input
1. *The health facility has written, up-to-date clinical protocols for postnatal care in the maternity and/or postnatal care areas of the maternity unit that are consistent with WHO guidelines*. (90.10)*
2. *The health facility practises and enables rooming-in to allow mothers and babies to remain together 24 h a day*. (86.57)*
3. *The health facility has a written breastfeeding policy that is routinely communicated to all health care and support staff. (83.18)*
4. *Health-care staff in the maternity unit receive in-service training and regular refresher sessions in routine postnatal care and breastfeeding at least every 12 months. (83.04)*
5. *The health facility has local arrangements to ensure that every mother knows when and where postnatal care for herself and her newborn will be provided after discharge from the hospital. (79.98)*
6. *The health facility has local arrangements for alternative feeding methods, including cup or cup-and-spoon feeding, and avoids bottle-feeding. (78.97)*
7. *The health facility has local arrangement to inform pregnant women and their families about the benefits and management of breastfeeding. (74.49)*
8. *The health facility ensures that feeding of infant formula is demonstrated to mothers and family members of newborns only when needed, with a full explanation of the hazards of improper use. (71.85)*
Output/process
1. *The proportion of all newborns on postnatal care wards or areas in the health facility who received vitamin K and full vaccination as per national guidelines*. (91.23)*
2. *The proportion of all stable newborns in the health facility who are fed exclusively on breast milk from birth to discharge. (84.37)*
3. *The proportion of all women in postnatal care wards or areas in the health facility who have documented problems of blood pressure, pulse rate, vaginal bleeding, lochia or breastfeeding. (84.02)*
4. *The proportion of all newborns in the health facility who received a full clinical examination before discharge. (83.13)*
5. *The proportion of all healthy mothers and newborns who received care for at least 24 h after an uncomplicated vaginal birth in a health facility. (82.50)*
6. *The proportion of all newborns on postnatal care wards or areas in the health facility for whom there is documented information on the newborn body temperature, respiratory rate, feeding behaviour and the absence or presence of danger signs. (82.41)*
7. *The proportion of all healthy mothers on postnatal wards or areas in the health facility who received breastfeeding counselling and support from a skilled health care provider. (82.14)*
8. *The proportion of all women who gave birth in the health facility who were allowed to room-in with their newborn 24 h a day. (78.90)*
9. *The proportion of all postpartum women in the health facility who were offered counselling on birth spacing and family planning methods before discharge. (77.84)*
Outcome
1. *The proportion of all newborns in the health facility who were exclusively breastfed at the time of discharge from hospital. (85.55)*
2. *The proportion of all postpartum women in the health facility who received contraception counselling on birth spacing and family planning before discharge. (84.03)*

Quality statement 1.2: Women with pre-eclampsia or eclampsia promptly receive appropriate interventions.

Rationale: Pregnancy-induced hypertension, pre-eclampsia and eclampsia are major causes of maternal mortality, stillbirth and neonatal mortality. Prevention, early diagnosis and timely, appropriate treatment can drastically reduce the associated mortality and morbidity.

Women with severe pre-eclampsia are immediately given intravenous or intramuscular magnesium sulfate and an antihypertensive, as appropriate. A pre-referral loading dose of magnesium sulfate should be given if the woman is to be transferred. Signs of organ dysfunction and other danger signs (blood pressure, respiratory rate, fluid balance, urine output, tendon reflexes and foetal heart rate) are monitored. Laboratory testing of urea and electrolytes determines the progression of disease. If the woman is at term or the foetus is nonviable, labour is induced with instrumental intervention or caesarean section, as appropriate. For preterm pregnancies, proactive management with corticosteroids is undertaken if the condition is stable.

Quality measures
Input
1. *The health facility has supplies of oral and intravenous antihypertensive agents and magnesium sulfate available in sufficient quantities at all times in the antenatal, labour and childbirth areas of the maternity unit*. (91.8)*
2. *The health facility has written, up-to-date clinical protocols on the management of pre-eclampsia that are available in the labour, childbirth and postnatal areas of the maternity unit and are consistent with WHO guidelines. (90.59)*
3. *Health-care staff in the maternity unit receive in-service training and regular refresher sessions in the use of antihypertensive agents, intravenous infusion and magnesium sulfate for treating pre-eclampsia and eclampsia at least once every 12 months. (84.54)*
Output/process
1. *The proportion of all women with severe pre-eclampsia or eclampsia in the health facility who received the full dose of magnesium sulfate*. (91.37)*
2. *The proportion of all women with severe pregnancy-induced hypertension in the health facility who received the recommended antihypertensives. (88.02)*
3. *The proportion of all women with pre-eclampsia in the health facility whose condition progressed to eclampsia. (81.9)*
Outcome
1. *The proportion of all women with pre-eclampsia or eclampsia in the health facility who died as a result of pre-eclampsia or eclampsia*. (91.22)*
2. *The proportion of all women with pre-eclampsia or eclampsia who arrived at the health facility with a live foetus whose baby died in the perinatal period (stillbirths or early neonatal deaths). (86.55)*
3. *The proportion of all women with pre-eclampsia or eclampsia in the health facility who experienced maternal near-misses due to pre-eclampsia or eclampsia. (76.88)*

Quality statement 1.3: Women with post-partum haemorrhage promptly receive appropriate interventions.

Rationale: Post-partum haemorrhage is the leading cause of preventable maternal mortality, most deaths occurring in the first 24–48 h of delivery. Early diagnosis and timely, adequate management are the basis for effectively reducing mortality.

Postpartum bleeding is monitored routinely. If haemorrhage occurs, it should be promptly managed with intravenous oxytocin, uterine massage, manual removal of retained placenta as appropriate, temporizing measures or surgical interventions when indicated. Continued blood loss, pulse and blood pressure are closely monitored, and shock is managed with immediate resuscitation with intravenous fluid and blood transfusion, if indicated.

Quality measures
Input
4. *The health facility has written, up-to-date clinical protocols for post-partum haemorrhage management that are available in the childbirth and postnatal care areas and are consistent with WHO guidelines*. (90.76))*
5. *The health facility has uterotonic drugs and supplies for intravenous fluid and blood administration (syringes, needles, intravenous cannulas, intravenous fluid solutions, blood) available in sufficient quantities at all times in the childbirth and postnatal care areas. (89.55)*
6. *A functional blood transfusion service is available in the health facility at all times. (86.82)*
7. *Health-care staff in the labour, childbirth and postnatal care areas of the maternity unit receive in-service training and regular refresher sessions in management of post-partum haemorrhage at least once every 12 months. (84.25)*
Output/process
1. *The proportion of all women with post-partum haemorrhage in the health facility who received therapeutic uterotonic drugs*. (89.75)*
2. *The proportion of all women in the health facility with post-partum haemorrhage due to a retained placenta for whom manual removal of the placenta was performed by a skilled birth attendant. (80.48)*
Outcome
1. *The proportion of all women who had post-partum haemorrhage in the health facility who died as a result of post-partum haemorrhage*. (92.98)*
2. *The proportion of all women who gave birth in the health facility by caesarean section who received a blood transfusion. (85.80)*
3. *The proportion of all women who gave birth vaginally in the health facility who received a blood transfusion. (85.58)*
4. *The proportion of all women who gave birth in the health facility who had severe post-partum haemorrhage (abnormal bleeding of >1000 mL or any bleeding with hypotension or requiring blood transfusion). (83.69)*
5. *The proportion of all women who had post-partum haemorrhage in the health facility who experienced maternal near-misses due to post-partum haemorrhage. (77.97)*

Quality statement 1.4: Women whose progress in labour is delayed or whose labour is obstructed receive appropriate interventions, according to WHO guidelines.

Rationale: Obstructed labour is a major cause of both maternal and newborn morbidity and mortality. Undiagnosed obstructed labour can lead to a ruptured uterus, vesico- vaginal fistula or recto-vaginal fistula in the mother and higher risks for stillbirth, neonatal asphyxia, meconium aspiration syndrome and other conditions. Proper monitoring of labour to avoid prolongation and its complications and early detection and timely management of obstructed labour can decrease the incidence of these complications.

Interventions for delayed labour include digital vaginal examination at intervals of 4 h and prompt confirmation of the delay in labour with a partograph with a 4-h action line, checking for cephalopelvic disproportion and assessing and managing the woman's hydration. Labour augmentation with intravenous oxytocin (and with amniotomy if the membrane is not ruptured) is used if there is delay in the first stage with no cephalopelvic disproportion. Delay in the second stage of labour is treated by appropriate use of instrumental delivery (vacuum or forceps) or by caesarean section if there is evidence of foetal compromise or signs of obstruction of labour.

Note: Augmentation should be used only in confirmed delay of labour after exclusion of cephalopelvic disproportion and in facilities capable of close, regular monitoring of the foetal heart rate and the pattern of uterine contraction and can manage any adverse effects.

Quality measures
Input
1. *The health facility has written, up-to-date clinical protocols for preventing and managing prolonged labour, which are available in the labour and childbirth areas and are consistent with WHO guidelines*. (90.88)*
2. *The health facility has the essential supplies and equipment for vacuum or forceps-assisted delivery, including newborn resuscitation equipment, available in sufficient quantities at all times in the childbirth area of the maternity unit*. (90.33)*
3. *The health facility has an adequately equipped operating theatre close to the childbirth area of the maternity unit*. (90.13)*
4. *The health facility has an adequate number of staff skilled in performing caesarean section, 24 h a day. (87.93)*
5. *Health-care staff in the labour and childbirth areas of the maternity unit receive in-service training and regular refresher sessions (every 6 months) in managing prolonged and obstructed labour. (82.19)*
Output/process
1. *The proportion of all nulliparous women in the health facility with a singleton cephalic foetus at ≥ 37 weeks' gestation who underwent caesarean section during spontaneous labour (Robson group 1). (87.27)*
2. *The proportion of all women in the health facility with prolonged and/or obstructed labour who gave birth by caesarean section. (86.03)*
3. *The proportion of all women who gave birth in the health facility who underwent instrumental vaginal birth for delayed second stage of labour. (83.21)*
4. *The proportion of women with prolonged or obstructed labour who underwent emergency caesarean section within 30 min of the decision to perform caesarean section. (79.9)*
5. *The proportion of all women in the health facility with confirmed delay in progress of the first stage of labour who received oxytocin for augmentation. (79.06)*

6. *The proportion of all women who gave birth in the health facility whose active phase of first stage of labour exceeded 12 h. (76.79)*
7. *The proportion of all women who gave birth in the health facility who had a prolonged second stage of labour. (74.82)*
Outcome
1. *The proportion of all women who gave birth in the health facility whose uterus ruptured during labour. (89.35)*
2. *The proportion of all perinatal deaths that occurred in the health facility after prolonged or obstructed labour. (85.23)*
3. *The proportion of all newborns born in the health facility who had birth injuries (brachial palsy, fractures, cephalhaematoma). (83.75)*
4. *The proportion of women with prolonged and/or obstructed labour in the health facility who experienced maternal near-misses due to prolonged and/or obstructed labour. (78.0)*

Quality statement 1.5: Newborns who are not breathing spontaneously receive appropriate stimulation and resuscitation with a bag-and-mask within 1 min of birth, according to WHO guidelines.

Rationale: Birth asphyxia is one of the leading causes of neonatal deaths within the first week of life and is also responsible for long-term neurological disability and impairment. It can be prevented by appropriate, effective resuscitation of newborns who are not breathing at birth.

Newborns who are not breathing spontaneously after thorough drying are rubbed two to three times on the back for extra stimulation. Suction is used only if the newborn had meconium-stained liquor or if secretions are present in the mouth or nose. Positive-pressure ventilation with a self-inflating bag-and-mask is initiated within 1 min of birth, with air for newborns > 32 weeks' gestation and with 30% oxygen for preterm babies at < 32 weeks' gestation. The adequacy of ventilation is monitored by measuring the heart rate, chest movement and pulse oximetry (if available). A higher oxygen concentration is given only if the heart rate is < 60/min after 60 s of resuscitation.

Quality measures
Input
1. *The health facility has a suction device, at least two sizes of neonatal mask and a self-inflating bag in the childbirth and neonatal areas of the maternity unit*. (93.83)*
2. *The health facility has written, up-to-date clinical protocols for managing newborns who are not breathing spontaneously in the childbirth areas of the maternity unit that are consistent with WHO guidelines*. (91.86)*
3. *All health-care workers providing care for pregnant and postpartum women and newborns in the health facility are skilled in basic newborn resuscitation, as demonstrated by simulating positive-pressure ventilation with a bag-and-mask on a manikin. (89.64)*
4. *Health care staff in the childbirth and neonatal areas of the maternity unit receive in-service training and regular refresher sessions s in basic newborn resuscitation at least once every 12 month. (87.06)*
5. *Health care staff in the childbirth and neonatal areas of the maternity unit receive monthly drills or simulation exercises and supportive supervision in basic newborn resuscitation. (83.91)*

Output/process
1. *The proportion of all newborns who were not breathing spontaneously after additional stimulation at the health facility who were resuscitated with a bag-and-mask. (81.10)*
2. *The proportion of all newborns who were not breathing spontaneously after additional stimulation at the health facility who were resuscitated with a bag-and-mask within 1 min of birth. (75.56)*
Outcome
1. *The proportion of all live babies born at term (≥ 37 weeks) with no major congenital malformations in the health facility who died within 7 days of birth (early neonatal mortality) *. (91.14)*
2. *The proportion of all live babies born at term (≥ 37 weeks) in the health facility who were not breathing spontaneously but were breathing spontaneously 5 min after resuscitation. (77.92)*

Quality statement 1.6a: Women in preterm labour receive appropriate interventions for both themselves and their babies, according to WHO guidelines.

Rationale: Preterm labour (before 37 completed weeks of pregnancy) can result in numerous health risks to the baby, which increase the earlier the baby is delivered. Prevention of preterm labour and appropriate management of imminent preterm labour are imperative to reduce the associated risks to the baby, prevent avoidable complications and improve the outcome and survival of preterm babies.

Women in preterm labour are admitted to a facility that has the capacity to manage preterm babies and their complications, conduct a thorough assessment and evaluation to confirm gestational age by ultrasound or date of the last menstrual period, assess them for signs and symptoms of infection and evaluate whether birth is imminent or can be delayed.

Antenatal corticosteroids are given, after ruling out chorioamnionitis, for imminent risk of preterm birth at 24–34 weeks of gestation, with tocolysis as appropriate. Antenatal magnesium sulfate is given for preterm labour at < 32 weeks of gestation to protect the foetus from neurological complications. Women with confirmed preterm pre-labour rupture of membranes are routinely given antibiotics.

Quality measures
Input
1. *The health facility has written, up-to-date clinical protocols for management of preterm labour in the childbirth areas of the maternity unit that are consistent with WHO guidelines*. (91.46)*
2. *The health facility has supplies of antenatal corticosteroids (dexamethasone or betamethasone), antibiotics and magnesium sulfate available in sufficient quantities at all times to manage preterm birth in accordance with WHO guidelines*. (90.06)*
3. *Health-care staff in the maternity unit receive in-service training and regular refresher sessions in the management of preterm labour at least once every 12 months. (85.52)*
4. *Health-care staff in the maternity unit receive monthly drills or simulation exercises and supportive supervision in the management of preterm labour. (79.18)*

Output/process
1. *The proportion of all preterm newborns born between 24 and 34 weeks of gestation in the health facility whose mothers received at least one dose of antenatal corticosteroids when indicated. (86.11)*
2. *The proportion of all preterm newborns born before 32 weeks of gestation in the health facility whose mothers received magnesium sulfate to protect their baby from foetal neurological complications. (78.52)*
3. *The proportion of all women with preterm pre-labour rupture of membranes who gave birth in the health facility who received prophylactic antibiotics. (87.60)*
Outcome
1. *The proportion of all women with preterm pre-labour rupture of membranes who gave birth in the health facility who received prophylactic antibiotics*. (87.60)*
2. *The proportion of all babies at risk for birth in the health facility at 24 to < 34 weeks of gestation who were exposed to antenatal corticosteroids. (73.61)*
3. *The proportion of all babies at risk for birth in the health facility at ≥ 34 weeks of gestation who were exposed to antenatal corticosteroids. (72.43)*

Quality statement 1.6b: Preterm and small babies receive appropriate care, according to WHO guidelines.

Rationale: Preterm and small babies are at much greater risk for death during the neonatal period and for long-term health problems and lifelong disabilities. They should be cared for in well-equipped neonatal units with well-trained staff present round the clock.

Preterm and low-birth-weight babies (< 2500 g) are kept warm at all times and closely monitored for complications; their mothers are given support in providing exclusive breastfeeding or alternative feeding (expressed breast milk, donor breast milk or formula). Clinically stable preterm newborns weighing ≤ 2000 g are given kangaroo mother care. Those who are unstable are cared for in a clean incubator or under a radiant warmer, and their temperature is closely monitored. The risks for common complications (hypothermia, feeding problems, apnoea, respiratory distress syndrome and infections) are assessed, monitored, recognized early and appropriately managed. Antibiotics, safe oxygen therapy, continuous positive airway pressure and surfactant replacement are given as appropriate.

Quality measures
Input
1. *The health facility has written, up-to-date clinical protocols for the care of small and preterm babies in the childbirth areas of the maternity unit that are consistent with WHO guidelines*. (91.41)*
2. *The health facility has supplies and materials to provide optimal thermal care to stable and unstable preterm babies, including kangaroo mother care (support binders, baby hats, socks), clean incubators and radiant warmers*. (89.14)*
3. *The health facility has the supplies and materials to provide optimal feeding to preterm babies and support for breastfeeding or alternative feeding (feeding cups and spoons, infant formula, breast pumps, milk-storage facilities, pasteurizers, milk banks if possible, nasogastric tubes, syringe drivers, intravenous fluids and tubing). (86.56)*
4. *Health care staff in the health facility who work with pregnant and postpartum women and newborns receive in-service training and regular refresher sessions in appropriate care of preterm and low-birth-weight babies at least once every 12 months. (85.82)*

Output/process
1. *The proportion of all low-birth-weight newborns born in the health facility with a birth weight ≤ 2000 g who received near-continuous kangaroo mother care in the first week of life. (83.35)*
2. *The proportion of all unstable low-birth-weight newborns weighing ≤ 2000 g who cannot receive kangaroo mother care in the health facility who were cared for in a thermo-neutral environment, either under radiant warmers or in incubators, as appropriate. (79.29)*
3. *The proportion of all low-birth-weight newborns born in the health facility whose mothers received additional support to establish breastfeeding. (77.13)*
Outcome
1. *The proportion of all preterm babies (< 28 weeks, 28–32 weeks and 32–37 weeks of gestational age) born in the health facility who died within the first 7 days of life*. (90.15)*
2. *The proportion of all low-birth-weight newborns born in the health facility who were exclusively fed on their mother's milk during their stay in the health facility. (84.57)*
3. *The proportion of all live preterm babies born in the health facility who had severe neonatal morbidity (respiratory distress syndrome, intraventricular haemorrhage, necrotizing enterocolitis). (81.20)*
4. *The proportion of low-birth-weight baby deaths in the facility attributed to possible serious bacterial infection or sepsis. (80.30)*

Quality statement 1.7a: Women with or at risk for infections during labour, childbirth or the early postnatal period promptly receive appropriate interventions, according to WHO guidelines.

Rationale: Puerperal sepsis is one of the leading causes of maternal mortality and can also cause early-onset sepsis in newborns. The prevention of predisposing factors, aseptic precautions in all interventions and procedures, early, accurate diagnosis and use of appropriate antibiotics for treatment of maternal infection will reduce the occurrence of both maternal and neonatal sepsis and the associated morbidity and mortality.

Women at risk for infection are given prophylactic antibiotics if they are undergoing elective or emergency caesarean section, in protracted labour with pre-labour rupture of membranes, in cases of retained placental products, with third- or fourth-degree perineal tears or before manual removal of the placenta. Specimens are obtained for culture and sensitivity before starting antibiotic treatment. Women with signs and symptoms of infection (fever > 38 °C before delivery or during labour, membranes ruptured ≥18 h before birth, foul-smelling or purulent amniotic fluid and abdominal pain and/or offensive vaginal discharge in the postnatal period) are treated with antibiotics and monitored closely, and their management is assessed regularly.

Quality measures
Input
1. *The health facility has supplies of oral and injectable first- and second-line antibiotics (ampicillin or penicillin and gentamicin, clindamycin, cephalosporin and metronidazole) available in sufficient quantities at all times for the expected case load*. (92.15)*
2. *The health facility has written, up-to-date clinical protocols for treatment of women with, or at risk for, infections during labour, childbirth and the early postnatal period in the childbirth and postnatal care areas of the maternity unit that are consistent with WHO guidelines*. (91.75)*
3. *Health care staff in the health facility who deal with pregnant and postpartum women receive in-service training and regular refresher sessions in the recognition and management of maternal peri-partum infections at least once every 12 months. (85.20)*

Output/process
1. *The proportion of all women who underwent caesarean section in the health facility who received prophylactic antibiotics before caesarean section*. (90.37)*
2. *The proportion of all women who gave birth in the health facility with preterm pre-labour rupture of membranes who received antibiotics. (87.44)*
3. *The proportion of all women in the health facility with third- or fourth-degree perineal tears who received antibiotics. (83.45)*
4. *The proportion of all birthing or postpartum women in the health facility with signs of infection who received injectable antibiotics. (83.39)*
5. *The proportion of all women who gave birth in the health facility who had a temperature of > 38 ˚C or other signs of infection (foul-smelling or purulent lochia) after childbirth. (82.87)*
Outcome
1. *The proportion of all women who underwent caesarean section in the health facility who had severe systemic infection or sepsis after the caesarean section. (86.56)*
2. *The proportion of all women who gave birth in the health facility who had severe systemic infection or sepsis in the postpartum period. (86.15)*

Quality statement 1.7b: Newborns with suspected infection or risk factors for infection are promptly given antibiotic treatment, according to WHO guidelines.

Rationale: Newborns are at higher risk for infection because of their immature immune system. Infections in newborns can lead to death or to long-term disabilities in survivors. Good hand hygiene, cord care and other appropriate aseptic precautions, screening of neonatal sepsis according to the presence of one or more risk factor, early diagnosis of signs and symptoms of neonatal sepsis and appropriate treatment with antibiotics are essential to prevent sepsis and the associated morbidity and mortality.

Newborns with risk factors for infection or with signs of infection are given antibiotic treatment according to WHO guidelines. Risk factors for infection are maternal fever (> 38 °C) before delivery or during labour, membranes ruptured ≥ 18 h before birth and foul-smelling or purulent amniotic fluid. Newborns with signs of serious bacterial infection present with inability to feed (or have stopped feeding well), convulsions, fast breathing (> 60 breaths/min) severe chest in-drawing, fever (≥ 38 °C) or low body temperature (< 35 °C), lethargy, movement only when stimulated or no movement at all. A blood culture is obtained before initiation of antibiotics in newborns at risk or with signs of infection. They are treated with an empirical injectable antibiotic for sepsis or suspected sepsis and closely monitored for reassessment of their management. Culture reports are the basis for deciding any change in antibiotics and the duration of treatment.

Quality measures
Input
1. *The health facility has supplies of injectable antibiotics (at least first- and second-line antibiotics for neonatal sepsis and meningitis) available in sufficient quantities at all times for the expected case load*. (92.14)*
2. *The health facility has a written, up-to-date clinical protocol for early diagnosis and management of neonatal infection in the childbirth areas of the maternity unit that is consistent with WHO guidelines*. (90.47)*

3. *Health care staff in the health facility who care for pregnant and postpartum women and newborns receive in-service training and regular refresher sessions in the recognition and management of suspected newborn infections at least once every 12 months. (85.95)*
4. *Health care staff in the health facility know the signs of newborn sepsis and how to treat it, according to WHO guidelines. (84.29)*
Output/process
1. *The proportion of all newborns in the health facility with signs of infection who received injectable antibiotics. (86.94)*
2. *The proportion of all newborns of mothers with signs of infection in the health facility who received injectable antibiotics. (77.53)*
Outcome
1. *The proportion of newborns treated for sepsis in the health facility who died (case fatality rate) *. (89.32)*
2. *The proportion of all neonatal deaths in the health facility that were due to sepsis. (86.96)*
3. *The proportion of all severe neonatal morbidity in the health facility that was due to neonatal sepsis. (77.53)*

Quality statement 1.8: All women and newborns receive care that includes standard precautions for preventing hospital-acquired infections.

Rationale: Hospital-acquired infections increase morbidity and mortality, the cost of care and the duration of stay in hospital. Standard precautions are essential to prevent hospital-acquired infections.

Standard precautions are observed at all times, including hand hygiene with soap and water or alcohol-based hand rub before and after examining a woman or newborn and appropriate use of gloves; safe storage and disposal of infectious waste and sharps; safe handling of equipment for patient care and soiled linen; and sterilization and disinfection of instruments and the childbirth surface.

Quality measures
Input
1. *The health facility has a reliable water source on site and soap and towels (preferably disposable) or alcohol-based hand rub for hand hygiene*. (94.27)*
2. *The health facility ensures safe handling, storage and final disposal of infectious waste*. (94.08)*
3. *The health facility ensures safe handling, storage (puncture resistant) and final disposal of sharps waste*. (93.36)*
4. *The health facility has appropriate sterilizing facilities and disinfectants for instruments. (92.99)*
5. *The health facility has a functioning incinerator or other appropriate method for treatment of infectious waste and used instruments. (92.56)*
6. *The health facility has written, up-to-date guidelines for standard infection control and precautions for transmission. (92.35)*
7. *Health care staff in the childbirth and neonatal areas of the maternity unit receive training in standard infection control and precautions for transmission at least once every 12 months. (87.27)*

Output/process
1. *The percentage of health care staff in the health facility who clean their hands correctly as per the WHO "5 moments for hand hygiene" audit tool. (87.78)*
2. *The proportion of newborns with suspected severe bacterial infection who received appropriate antibiotic therapy. (84.76)*
3. *Safe management of health care waste, from the point of generation to the point of disposal. (82.73)*
4. *The percentage of staff members in the health facility who meet biosafety standards when administering parenteral drugs. (81.85)*
Outcome
1. *The proportion of all women who gave birth in the health facility who had a severe systemic infection or sepsis in the postnatal period, including at readmission after delivery in the facility. (81.41)*
2. *The proportion of all women who gave birth in the health facility who had proven hospital-acquired infections. (78.43)*
3. *The proportion of all neonates born in the health facility who had hospital-acquired infections. (78.00)*

Quality statement 1.9: No woman or newborn is subjected to unnecessary or harmful practices during labour, childbirth and the early postnatal period.

Rationale: Unnecessary and harmful practices can lead to complications and harm mothers and their newborns. They should be avoided and replaced with evidence-based health practices.

Unnecessary or harmful practices are not used or practised. These practices include: routine enemas and pubic or perineal shaving before vaginal birth; fundal pressure to facilitate the second stage of labour; augmentation of labour with oxytocin before confirmation of delayed labour; episiotomy (unless indicated); uterine packing to control bleeding (unless indicated); instrumental vaginal childbirth (unless indicated); caesarean section (unless indicated) and suctioning of a newborn (unless indicated); immediate bathing of the baby, keeping well babies in the nursery away from the mother, advertising and promotion of breastfeeding substitutes and bottle-feeding, and applying substances to the cord.

Quality measures
Input
1. *The health facility has written, up-to-date guidance on harmful practices and unnecessary interventions during labour, childbirth and the early postnatal period*. (89.03)*
2. *The health facility does not display infant formula or bottles and teats, including on posters or placards*. (88.98)*
3. *The health facility does not give newborns food or drink other than breast milk, unless medically indicated, and does not give pacifiers (also called "dummies" or "soothers") to breastfeeding babies. (85.13)*
4. *Health care staff in the facility receive in-service training and regular refresher sessions on harmful practices and unnecessary interventions at least once every 12 months. (83.00)*
5. *The health facility does not promote infant formula on the wards, and samples are not distributed to mothers or staff. (82.93)*
6. *Health-care staff in the health facility receive monthly supportive supervision and mentoring on harmful practices and unnecessary interventions. (75.38)*

Output/process
1. *The proportion of all uncomplicated, spontaneous vaginal births in the health facility in which an episiotomy was performed*. (86.01)*
2. *The proportion of women undergoing caesarean section in the health facility according to Robson classification groups. (83.2)*
3. *The proportion of all women who gave birth in the health facility who received augmentation of labour with no indication of delay in progress of labour. (80.01)*
4. *The proportion of all babies born in the health facility who received early bathing and removal of the vernix within 6 h of birth. (79.30)*
5. *The proportion of all women who gave birth in the health facility who received routine pubic or perineal shaving before a vaginal birth. (77.59)*
6. *The proportion of all babies born through clear amniotic fluid in the health facility who received routine suctioning. (77.35)*
7. *The proportion of all women who gave birth in the health facility who received routine enemas at any time before vaginal birth. (76.02)*

References used in setting standard 1

Bhutta ZA, Das JK, Bahl R, Lawn JE, Salam RA, Paul VK, et al. Can available interventions end preventable deaths in mothers, newborn babies, and stillbirths, and at what cost? Lancet 2014; 384:347–370.

Boulkedid R, Sibony O, Goffinet F, Fauconnier A, Branger B, Alberti C. Quality indicators for continuous monitoring to improve maternal and infant health in maternity departments: a modified Delphi survey of an international multidisciplinary panel. PLoS One 2013;8:e60663.

Gülmezoglu MA, Lawrie TA. Impact of training on emergency resuscitation skills: impact on Millennium Development Goals (MDGs) 4 and 5. Best Pract Res Clin Obstet Gynaecol 2015); doi: 10.1016/j.bpobgyn.2015.03.018.

Hussein J, Mavalankar DV, Sharma S, D'Ambruoso L. A review of health system infection control measures in developing countries: what can be learned to reduce maternal mortality. Globalization Health 2011;7:14.

Khaskheli MN, Baloch S, Sheeba A. Risk factors and complications of puerperal sepsis at a tertiary healthcare centre. Pak J Med Sci 2013;29:972–976.

National Institute for Health Care Excellence. NICE guidelines on routine intrapartum care (CG 190). London; 2014 (http://www.nice.org.uk/guidance/cg190/resources/guidance-intrapartum-care-care-of-healthy-women-and-their-babies-during-childbirth-pdf).

Polin RA, Committee on Fetus and Newborn. Management of neonates with suspected or proven early-onset bacterial sepsis. Paediatrics 2012;129:1006 –1015.

Raven J, Hofman J, Adegoke A, van den Broek N. Methodology and tools for quality improvement in maternal and newborn health care. Int J Gynaecol Obstet 2011;114:4–9.

Schuchat A, Zywicki SS, Dinsmoor MJ, Mercer B, Romaguera J, O'Sullivan MJ, et al. Risk factors and opportunities for prevention of early-onset neonatal sepsis: a multicentre case-control study. Pediatrics. 2000;105:21–26.

Sibanda T, Fox R, Draycott TJ, Mahmood T, Richmond D, Simms RA. Intrapartum care quality indicators: a systematic approach for achieving consensus. Eur J Obstet Gynecol Reprod Biol 2013;166:23–29.

Spector JM, Agrawal P, Kodkany B, Lipsitz S, Lashoher A, Dziekan G, et al. Improving quality of care for maternal and newborn health: prospective pilot study of the WHO safe childbirth checklist program. PLoS One 2012;7:e35151.

Tietjen L, Bossemeyer D, McIntosh N. Infection prevention guidelines for healthcare facilities with limited resources. Baltimore, Maryland: JHPIEGO; 2003.

World Health Organization. International code of marketing of breast-milk substitutes. Geneva; 1981 (http://www.who.int/nutrition/publications/infantfeeding/9241541601/en/).

World Health Organization. Standard precautions in health care: aide-memoire. Geneva; 2007 (http://www.who.int/csr/resources/publications/EPR_AM2_E7.pdf).

World Health Organization. WHO guidelines on hand hygiene in health care. Geneva; 2009 (http://www.who.int/gpsc/information_centre/hand-hygiene-2009/en/).

World Health Organization. Evaluating the quality of care for severe pregnancy complications. The WHO near-miss approach for maternal health. Geneva; 2011 (http://whqlibdoc.who.int/publications/2011/9789241502221_eng.pdf).

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

World Health Organization. WHO recommendations for the prevention and treatment of postpartum haemorrhage. Geneva; 2012 (http://www.who.int/reproductivehealth/publications/maternal_perinatal_health/9789241548502/en/).

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

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?ua=1).

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/).

World Health Organization. Safe management of wastes from health-care activities Geneva; 2014 (http://apps.who.int/iris/bitstream/10665/85349/1/9789241548564_eng.pdf?ua=1).

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

World Health Organization. The role of WHO in public health. Geneva; 2015 (http://www.who.int/about/role/en/).

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

World Health Organization, Partnership for Maternal, Newborn and Child Health. Consultation on improving measurement of the quality of maternal, newborn and child care in health facilities. Geneva; 2014 (http://apps.who.int/iris/bitstream/10665/128206/1/9789241507417_eng.pdf).

World Health Organization, UNICEF. Baby-friendly Hospital Initiative: revised, updated and expanded for integrated care. Geneva; 2009 (http://www.who.int/nutrition/publications/infantfeeding/bfhi_trainingcourse/en/).

World Health Organization, UNICEF. Indicators for assessing health facility practices that affect breastfeeding. Geneva; 1993 (http://apps.who.int/iris/handle/10665/62140).

World Health Organization Regional Office for Europe. Making pregnancy safer: assessment tool for the quality of hospital care for mothers and newborn babies. Copenhagen; 2009 (http://www.euro.who.int/__data/assets/pdf_file/0008/98792/E93128.pdf).

World Health Organization Regional Office for Europe. Hospital care for mothers and newborn babies: quality assessment and improvement tool. Copenhagen; 2014 (http://www.euro.who.int/en/health-topics/Life-stages/maternal-and-newborn-health/publications/2014/hospital-care-for-mothers-and-newborn-babies-quality-assessment-andimprovement-tool.pdf?ua=1).

Standard 2: The health information system enables use of data to ensure early, appropriate action to improve the care of every woman and newborn.

Quality statement 2.1: Every woman and newborn has a complete, accurate, standardized medical record during labour, childbirth and the early postnatal period.

Rationale: Complete, accurate medical recording during labour is important for documenting care, clinical follow-up, accurate hand-over, early detection of complications and health outcomes and provides information for identifying areas for improvement.

Standardized patient care registers and clinical records for mothers and newborns from admission to discharge are in place and are accurate, complete and legible. Continuity of care records are available (e.g. referral notes, records of antenatal and intrapartum care). Demographic data, times of admission, childbirth and discharge, progress of labour, actions taken and the outcome of childbirth, including stillbirths, are appropriately recorded. Details of newborns, including identification, gestational age, birth weight and examination findings, are recorded in a system that allows linkage of women and their newborns in all records. The International Classification of Diseases (ICD) is used to code diagnoses.

Quality measures
Input
1. *The health facility has registers, data collection forms, clinical and observation charts in place at all time for routine recording and monitoring of all care processes for women and newborns*. (90.34)*
2. *The health facility has a birth and death registration system in place that is linked to the national vital registration system at all times*. (89.44)*
3. *The health facility has a system for classifying diseases and birth outcomes, including death, which is aligned with the ICD. (86.33)*
Output/process
1. *The proportion of all newborns currently in the health facility who have a patient identifier and individual clinical medical record*. (89.15)*
2. *The proportion of all newborns discharged from the health facility within the past 24 h who had an accurately completed record of processes of care, treatments, outcomes and diagnoses (with ICD code). (83.28)*
3. *The proportion of all women discharged postpartum within the past 24 h who had an accurately completed record of processes of care, treatments, outcomes and diagnoses (with ICD code). (82.88)*

Quality statement 2.2: Every health facility has a mechanism for data collection, analysis and feedback as part of its activities for monitoring and improving performance around the time of childbirth.

Rationale: The purpose of data collection is to provide information that can be analysed and used appropriately to provide feedback and improve health outcomes.

Data are collected, verified, analysed and used routinely to make clinical and management decisions for planning and improving clinical services. They are available to, and used by, facility staff for continuous improvement of processes of care and used by physicians, midwives, nurses, supervisors and mentors to plan and improve activities and clinical services. Accurate, complete data are submitted to the appropriate levels in a timely manner and are used for periodic reviews of mortality and morbidity in order to improve quality.

Quality measures
Input
1. *The health facility has conducted reviews of maternal and perinatal deaths and near-misses at least once a month within the past six months and has a mechanism for implementing the recommendations of reviews*. (88.20)*
2. *The health facility has standard operating procedures and protocols in place at all times for checking, validating and reporting data. (86.35)*
3. *The health facility has a data system for collecting and analysing relevant indicators and can produce visual outputs and timely reporting on paper or digitally at all times. (85.74)*
4. *Managers and health care workers in the health facility met at least once a month within the past six months to review process and outcome data. (85.12)*
5. *Managers and health care workers in the health facility used the recommendations in reviews of data for decision-making and for mentoring improved performance within the past six months. (80.10)*
Output/process
1. *The proportion of all perinatal deaths occurring in the health facility that were reviewed with standard audit tools*. (90.26)*
2. *The proportion of all maternal deaths and near-misses occurring in the health facility that were reviewed with standard audit tools*. (88.24)*
3. *The proportion of all maternal deaths and near-misses occurring in the health facility that were notified. (86.84)*
Outcome
1. *Data are collected routinely in the health facility during labour, childbirth and the postnatal period and used regularly to make decisions on quality improvement. (83.08)*
2. *The proportion of all recommendations in perinatal death reviews at the health facility that have been fully implemented. (81.51)*
3. *The proportion of all recommendations in maternal death reviews at the health facility that have been fully implemented. (81.37)*

References used in setting standard 2

Brien ES, Lorenzetti LD, Lewis S, Kennedy J, Ghali AW. Overview of a formal scoping review on health system report cards. Implementation Sci 2010;5:2.

Graham WJ, Campbell OM. Maternal health and the measurement trap. Soc Sci Med 1992;35:967–977.

Lippeveld T, Sauerborn R, Bodart C. Design and implementation of health information systems. Geneva: World Health Organization; 2000.

Murray SF, Davies S, Phiri RK, Ahmed Y. Tools for monitoring the effectiveness of district maternity referral systems. Health Policy Plan 2001;16:353–361.

UNICEF. The state of the world's children 2009. Geneva (http://www.unicef.org/sowc09/docs/SOWC09-FullReport-EN.pdf).

World Health Organization. Service availability and readiness assessment (SARA). An annual monitoring system for service delivery. Reference manual, version 2.2 Geneva; 2015 (http://www.who.int/healthinfo/systems/sara_indicators_questionnaire/en/).

World Health Organization, United Nations Population Fund, UNICEF, World Bank. Pregnancy, childbirth, postpartum and newborn care: a guide for essential practice, 3rd edition. Geneva: World Health Organization; 2015.

Standard 3: Every woman and newborn with condition(s) that cannot be dealt with effectively with the available resources is appropriately referred.

Quality statement 3.1: Every woman and newborn is appropriately assessed on admission, during labour and in the early postnatal period to determine whether referral is required, and the decision to refer is made without delay.

Rationale: It is vital to recognize cases that require referral rapidly in order to ensure that every patient receives timely, appropriate care and to avoid unnecessary complications.

Up-to-date referral protocols and guidelines are in place, are accessible and reflect the health facility's capacity and resources. There is a triage system at admission, and a mechanism on the wards to assess, identify and respond to emergencies immediately. Facilities are available to provide pre-referral stabilization care and treatment.

Quality measures
Input
1. *The health facility has written, up-to-date clinical protocols and guidelines for the identification, management (including pre-referral care) and referral of women with complications related to pregnancy and childbirth and in newborns*. (89.94)*
2. *The health facility is equipped with appropriate medicines and medical supplies for stabilization and pre-referral treatment for referred women and newborns*. (89.20)*
3. *Health care staff in the maternity unit receive in-service training and regular refresher sessions in referral protocols and guidelines at least once every 12 months*. (85.33)*
Output/Process
1. *The proportion of women and newborns seen in the health facility in the past three months who fulfilled the facility's criteria for referral who were actually referred. (81.79)*
2. *The proportion of all pregnant or postpartum women who could not be managed at the health facility who were transferred to a higher-level facility for childbirth or further management without delay, accompanied by a health care professional and a completed standardized referral note. (81.47)*
3. *The proportion of all sick, preterm or small newborns who could not be managed at the health facility who were transferred to an appropriate level of care within 1 h of a decision, accompanied by a health care professional and a completed standardized referral note. (79.90)*
Outcome
1. *The proportion of all women admitted to the labour ward who reported receiving immediate attention on arrival at the health facility. (82.83)*

Quality statement 3.2: For every woman and newborn who requires referral, the referral follows a pre-established plan that can be implemented without delay at any time.

Rationale: A pre-established plan for referral expedites the process, prevents unnecessary delay and results in better, more timely care for patients.

Availability of adequately equipped transport services that operate 24 h a day, 7 days a week, to transport women and newborns as necessary. A list of known network facilities and their telephone numbers is in place. The referral system is supervised and accountable, with a policy that protects women from financial barriers to referral, and there is a procedure to monitor and evaluate the system.

Quality measures
Input
1. *The health facility has ready access to a functioning ambulance or other vehicle for emergency transport of women and newborns to referral facilities*. (90.35)*
2. *There is an up-to-date list of network facilities in the same geographical area that provide referral care for women and children*. (89.20)*
3. *The health facility has local arrangements to ensure that women and newborns who cannot be managed at the health facility are referred to an appropriate level of care without delay, 24 h a day, 7 days a week. (87.11)*
Output/process
1. *The proportion of all newborns who died before or during transfer to a higher-level facility for further management*. (87.74)*
2. *The proportion of all pregnant or postpartum women who died before or during transfer to a higher-level facility for childbirth for further management. (87.04)*
3. *The proportion of pregnant and postpartum women and newborns who were referred without appropriate emergency transport. (75.62)*
4. *The proportion of all women referred from the health facility who contributed financially to communication or to transport. (68.93)*
Outcome
1. *The proportion of all women referred from the health facility who completed their referral. (80.97)*
2. *The proportion of all newborns referred from the health facility who completed their referral. (80.95)*
3. *The proportion of newborns referred from the facility who reached the referral facility without hypothermia. (76.34)*

Quality statement 3.3: For every woman and newborn referred within or between health facilities, there is appropriate information exchange and feedback to relevant health care staff.

Rationale: Appropriate information exchange and feedback within and between health facilities improves patient care, increases the motivation of health care workers, helps learning from experience and leads to improved patient care.

A functioning communication system (e.g. radio, telephone) within the referral network operates at all times, and formal agreements and arrangements for communication and consultations are in place. Information exchange and feedback protocols on referral and standardized referral and counter-referral forms are available when needed.

Quality measures
Input
1. *The health facility has a standardized referral form to document relevant demographic and clinical information, which includes clinical findings, diagnosis, pre-referral interventions or treatment given and reason for referral*. (89.13)*
2. *The health facility has reliable communication methods, including a mobile phone, land line or radio, which is functioning at all times, for referrals and consultation on complicated cases*. (87.14)*
3. *Evidence that the health facility has formal agreements, communication arrangements and a feedback system with referral centre(s) *. (85.55)*

Output/process
1. *The proportion of all referred women seen at the referring facility for whom there was complete counter-referral feedback information. (80.65)*
2. *The proportion of all referred newborns seen at the referring facility for whom there was complete counter-referral feedback information. (80.12)*
3. *The proportion of all referred women and newborns seen at the referring facility who received timely care at the referral facility. (79.57)*

References used in setting standard 3

Lawn J, McCarthy BJ, Ross R. The healthy newborn: a reference manual for program managers. Atlanta, Georgia: Centers for Disease Control, CARE International; 2001.

Maine D, Ward V, Eitahir AH. Meeting the community halfway: programming guidelines for the reduction of maternal mortality. New York City, New York: UNICEF; 1993.

Murray SF, Pearson S. Maternity referral systems in developing countries: current knowledge and future research needs. Soc Sci Med 2006;62:2205–2215.

Murray SF, Davies S, Phiri RK, Ahmed Y. Tools for monitoring the effectiveness of district maternity referral systems. Health Policy Plan 2001;16:353–361.

World Health Organization. Essential elements of obstetric care at first referral level. Geneva: 1991.

World Health Organization. Service availability and readiness assessment (SARA). An annual monitoring system for service delivery. Reference manual, version 2.2. Geneva; 2015 (http://www.who.int/healthinfo/systems/sara_indicators_questionnaire/en/).

World Health Organization Regional Office for the Western Pacific. District health facilities: Guidelines for development and operations. Manila; 1998.

Standard 4: Communication with women and their families is effective and responds to their needs and preferences.

Quality statement 4.1: All women and their families receive information about the care and have effective interactions with staff.

Rationale: Effective communication with women and their families helps them feel more involved in their care, avoids unnecessary anxiety, misunderstanding and wrong expectations and gives them control of their condition, which contribute to a positive experience.

Health care staff have interpersonal communication and counselling skills and are readily approachable. They have a positive attitude, use simple, clear language that women and their families can understand and recognize the communication needs and preferences of all women under their care.

Quality measures
Input
1. *Easily understood health education materials, in an accessible written or pictorial format, are available in the languages of the communities served by the health facility*. (91.01)*
2. *Health care staff in the maternity unit are oriented and receive in-service training at least once every 12 months to improve their interpersonal communication and counselling skills and cultural competence*. (85.74)*

3. *The health facility has a written, up-to-date policy that outlines clear goals, operational plans and monitoring mechanisms to promote the interpersonal communication and counselling skills of health care staff. (84.69)*
4. *Health care staff in the maternity unit receive supportive supervision in interpersonal communication, counselling and cultural competence every three months. (80.12)*
Output/process
1. *The proportion of all women discharged from the labour and childbirth area of the facility who received written and verbal information and counselling on the following elements before discharge: nutrition and hygiene, birth spacing and family planning, exclusive breastfeeding and maintaining lactation, keeping their baby warm and clean, communication and play with the baby, danger signs for the mother and newborn and where to go in case of complications*. (85.83)*
2. *The proportion of all women who gave birth in the health facility who reported that they were given the opportunity to discuss their concerns and preferences. (82.79)*
3. *The proportion of health care staff in the health facility who demonstrated the following skills: active listening, asking questions, responding to questions, verifying the understanding of women and their families and supporting women in problem-solving. (76.67)*
Outcome
1. *The proportion of all women who gave birth in the health facility who felt they were adequately informed by the care provider(s) about the examinations, actions and decisions taken for their care. (83.58)*
2. *The proportion of all women who gave birth in the health facility who reported that their needs and preferences were taken into account during labour, childbirth and postnatal care. (80.67)*
3. *The proportion of all women who gave birth in the health facility who expressed satisfaction with the health services. (80.66)*
4. *The proportion of all women who gave birth in the health facility who reported that they were satisfied with the health education and information they received from care providers. (76.25)*

Quality statement 4.2: All women and their families experience coordinated care, with clear, accurate information exchange between relevant health and social care professionals.

Rationale: Coordinated care and accurate hand-over of information among health care providers is essential to maintain continuity in patient care and to avoid unnecessary delays in treatment.

A standard format is used for information exchange between care providers (e.g. during staff shift changes and referrals, with social care services, sending laboratory results), and effective verbal and/or telephone communication is used among caregivers involved in the hand-over of care. There is timely reporting of the results of critical diagnostic tests.

Quality measures
Input
1. *The health facility has a standard form for clinical progress notes and monitoring events during labour (partograph), birth and after birth to facilitate written hand-over*. (91.75)*
2. *The health facility has written, up-to-date protocols for verbal and written hand-over of women and newborns at shift changes, during intra-facility transfer, on referral to other facilities and at discharge*. (89.14)*

3. *Health-care staff in the maternity unit are oriented and receive in-service training and regular refresher sessions at least once every 12 months in the clinical hand-over policy and communication of important information for hand-over, referral or discharge. (81.53)*
4. *The health facility has a functioning, reliable communication system for information exchange among relevant service providers. (78.26)*
Output/process
1. *The proportion of women attended during labour and childbirth for whom a partograph has been completed. (81.87)*
2. *The proportion of all women who gave birth in the health facility who reported that health care staff introduced themselves and showed good knowledge of the women's history and the care that had been given to date. (73.47)*
Outcome
1. *The proportion of all women who gave birth in the health facility who expressed satisfaction with the health services*. (83.53)*
2. *The proportion of health care staff, by cadre, and social professionals who were satisfied with the communication during clinical hand-over among members of the health care team in the health facility. (68.98)*

References used in setting standard 4

de Silva A. A framework for measuring responsiveness. Geneva: World Health Organization; 2000 (http://www.who.int/responsiveness/papers/paper32.pdf?ua=1).

Anderson L, Scrimshaw S, Fullilove M, Fielding J, Normand H. Culturally competent healthcare systems: a systematic review. Am J Prev Med 2003;24:68–79.

Dwamena F, Holmes-Rovner M, Gaulden CM, Jorgenson S, Sadigh G, Sikorskii A, et al. Interventions for providers to promote a patient-centred approach in clinical consultations. Cochrane Database Syst Rev 2012;12:CD003267.

Fealy G, Riordan F. Communication and clinical handover practices: a systematic review. Dublin: University College Dublin and Health Service Executive; 2014.

Iedema R, Manidis M. Patient–clinician communication: an overview of relevant research and policy literatures. In: Communication (clinical handover) in maternity services. Sydney: Australian Commission on Safety and Quality in Health Care and UTS Centre for Health Communication; 2014 (National clinical guideline No. 5) (http://health.gov.ie/wp-content/uploads/2015/01/National-Clinical-Guideline-No.-5-Clinical-Handover-Nov2014.pdf).

Johnson A, Sandford J, Tyndall J. Written and verbal information versus verbal information only for patients being discharged from acute hospital settings to home. Cochrane Database Syst Rev 2003;4:CD003716.

Kongnyu E, van den Broek N. Criteria for clinical audit of women friendly care and providers' perception in Malawi. BMC Pregnancy Childbirth 2008;8:28.

National Institute for Health Care Excellence. Patient experience in adult NHS services. London; 2012 (https://www.nice.org.uk/guidance/qs15/chapter/quality-statement-2-demonstrated-competency-in-communication-skills#quality-statement-2).

The Joint Commission. Advancing effective communication, cultural competence, and patient- and family-centered care: a roadmap for hospitals. Oakbrook Terrace, Illinois; 2010 (http://www.jointcommission.org).

Standard 5: Women and newborns receive care with respect and preservation of their dignity.

Quality statement 5.1: All women and newborns have privacy around the time of labour and childbirth, and their confidentiality is respected.

Rationale: Privacy and confidentiality of information make women and families feel respected at all times, protect them from any stigma associated with their problems and build trust in health care providers.

Health care staff respect the privacy and confidentiality of care and information. Linen, curtains and screens are available to ensure privacy, and verbal and written records of women's and newborns' conditions are kept confidential.

Quality measures
Input
3. *The physical environment of the health facility allows privacy and the provision of respectful, confidential care, including the availability of curtains, screens, partitions and sufficient bed capacity*. (94.80)*
4. *The health facility has written, up-to-date protocols to ensure privacy and confidentiality for all women and newborns in all aspects of care*. (89.27)*
5. *The health facility has accountability mechanisms for redress in the event of violations of privacy, confidentiality or consent. (85.16)*
Output/process
1. *The proportion of procedures in the health facility that require written consent for which there is an associated record of the woman's consent*. (86.90)*
2. *The proportion of all women undergoing examinations or procedures in the health facility who reported that their permission was sought before the examination or procedures were performed. (84.41)*
Outcome
1. *The proportion of all women who gave birth in the health facility who were satisfied with the degree of privacy during their stay in the labour and childbirth areas. (85.63)*
2. *The proportion of all women examined and treated in the health facility who expressed satisfaction with the degree of privacy during examinations and treatment. (85.48)*
3. *The proportion of all women who gave birth in the health facility who expressed satisfaction with the health services. (81.90)*

Quality statement 5.2: No woman or newborn is subjected to mistreatment, such as physical, sexual or verbal abuse, discrimination, neglect, detainment, extortion or denial of services.

Rationale: Every woman has the basic human right to the highest attainable standard of health care without discrimination or maltreatment.

Health care staff treat all women with kindness, compassion, courtesy, respect, understanding and honesty and preserve their dignity. Women are free to complain without fear of repercussions, and there is no restriction on their movement into or out of the health facility.

Quality measures
Input
1. *The health facility has written, up-to-date, zero-tolerance non-discriminatory policies with regard to mistreatment of women and newborns*. (91.19)*
2. *The health facility has a system whereby the mothers of small, sick newborns can be close to and nurse their babies*. (89.59)*
3. *The fee structures for maternity and newborn care are equitable, affordable and clearly displayed*. (89.07)*
4. *The health facility has written accountability mechanisms for redress in the event of mistreatment. (88.50)*
5. *The health facility has a written, up-to-date policy and protocols that outline women's and families' right to make a complaint about the care received and has an easily accessible mechanism (e.g. a box) for handing in complaints. (88.34)*
6. *Health care staff in the maternity unit receive in-service training and supportive supervision in respecting the rights of mothers and newborns, respectful care and accountability mechanisms. Orientation is provided for new staff. (87.36)*
7. *The health facility policy for payment specifically precludes detention of a woman or baby for non-payment. (86.00)*
8. *The health facility has a complaints box, which is easily accessible to women and their families, is periodically emptied and the contents reviewed. (77.22)*
Output/process
1. *The proportion of all women who gave birth in the health facility who reported physical, verbal or sexual abuse, to themselves or their newborns, during labour or childbirth or after birth. (86.68)*
2. *The proportion of women who gave birth in the health facility who were satisfied that the facility met their religious and cultural needs. (78.15)*
3. *The proportion of women who attended the health facility who were refused care because of their inability to pay. (76.97)*
4. *The proportion of complaints received about respect and preservation of the dignity of women and their families. (74.37)*
5. *The proportion of women who gave birth in the health facility who were aware of the existence and location of a complaints box. (70.90)*
Outcome
1. *The proportion of all women who gave birth in the health facility who expressed satisfaction with the health services. (85.93)*
2. *The proportion of all women who gave birth in the health facility who reported having been treated with respect and their dignity preserved. (84.13)*
3. *The proportion of all women in the health facility who made a complaint whose complaints were acted upon without repercussions. (72.82)*

Quality statement 5.3: All women can make informed choices about the services they receive, and the reasons for interventions or outcomes are clearly explained.

Rationale: It is essential that women feel involved in their treatment and care and can make informed choices in order to improve their compliance and satisfaction with the treatment.

Women are informed about their rights and options for care and encouraged to ask questions. They are supported in making decisions about all aspects of their care and treatment; their personal values and beliefs are respected, and their consent is obtained before procedures are carried out.

Quality measures
Input
1. *The health facility has a written, up-to-date policy for obtaining informed consent from women before examinations and procedures*. (90.98)*
2. *The health facility has a standard informed consent form that helps health care staff to provide easily understandable information to women in order to obtain their fully informed consent*. (90.39)*
3. *Health care staff in the health facility receive in-service training and supportive supervision in effective informed consent procedures and in women's right to choose care at childbirth. Orientation is provided for new staff*. (87.51)*
4. *The health facility has written accountability mechanisms for redress in the event that women are denied informed choice, and the mechanism is displayed. (81.41)*
Output/process
1. *The proportion of procedures in the health facility that require written consent for which there is an associated record of consent signed by the woman or a family member. (84.32)*
2. *The proportion of all women who gave birth in the health facility who felt adequately informed by health care staff regarding decisions taken about their care. (80.82)*
3. *The proportion of women who received care in the health facility who were aware that they had the right to accept or refuse treatment. (78.55)*
Outcome
1. *The proportion of women who gave birth in the health facility by caesarean section who were aware of the reason for the caesarean section. (87.13)*
2. *The proportion of all women who gave birth in the health facility who expressed satisfaction with the health services. (82.74)*
3. *The proportion of women who gave birth in the health facility who felt they had shared decisions about their labour, birth and postnatal care. (75.86)*

References used in setting standard 5

Bohren MA, Vogel JP, Hunter EC, Lutsiv O, Makh SK, Souza JP, et al. The mistreatment of women during childbirth in health facilities globally: a mixed-methods systematic review. PLoS Med 2015;12:e1001847.

de Silva A. A framework for measuring responsiveness. Geneva: World Health Organization; 2000 (http://www.who.int/responsiveness/papers/paper32.pdf?ua=1).

Dwamena F1, Holmes-Rovner M, Gaulden CM, Jorgenson S, Sadigh G, Sikorskii A, et al. Interventions for providers to promote a patient-centred approach in clinical consultations. Cochrane Database Syst Rev 2012;12:CD003267.

International Federation of Gynecology and Obstetrics, International Confederation of Midwives, White Ribbon Alliance, International Pediatric Association, World Health Organization. Mother–baby friendly birthing facilities. Int J Gynaecol Obstet 2015;128:95–99.

Kongnyuy E, van den Broek N. Criteria for clinical audit of women friendly care and providers' perception in Malawi. BMC Pregnancy Childbirth 2008;8:28.

Lothian JA. Do not disturb: the importance of privacy in labor, J Perinat Educ 2004;13:4–6.

National Institute for Health and Care Excellence. Patient experience in adult NHS services: improving the experience of care for people using adult NHS services. London; 2012 (http://www.nice.org.uk/guidance/cg138).

Reader TW, Gillespie A. Patient neglect in healthcare institutions: a systematic review and conceptual model. BMC Health Serv Res 2013;13:156.

Valentine NB, de Silva A, Kawabata K, Darby C, Murray CJL, Evans DB. Health system responsiveness: concepts, domains and measurement. In: Murray CJL, Evans DB, editors, Health systems performance assessment: debates, methods and empiricism. Geneva: World Health Organization; 2003.

World Health Organization. WHO statement on the prevention and elimination of disrespect and abuse during facility-based childbirth. Geneva; 2015 (http://apps.who.int/iris/bitstream/10665/134588/1/WHO_RHR_14.23_eng.pdf?ua=1&ua=1).

Standard 6: Every woman and her family or the companion of her choice are given emotional support that is sensitive to their needs and strengthens the woman's capability.

Quality statement 6.1: Every woman is offered the option to experience labour and childbirth with the companion of her choice.

Rationale: Birth companions provide physical, emotional and spiritual support to women during labour and deliver and thus have a positive impact on the women and improved birth outcomes.

Women are allowed and encouraged to choose a companion to be present during her labour and childbirth. The companion is oriented in supporting the woman during labour and childbirth, and both the woman and her companion are encouraged to participate actively in the woman's care.

Quality measures
Input
1. *The labour and childbirth areas are organized in such a way as to allow a physical private space for the woman and her companion at the time of birth*. (91.59)*
2. *The health facility has a written, up-to-date protocol, which is explained to women and their families, to encourage all women to have at least one person of their choice, as culturally appropriate, with them during labour, childbirth and the immediate postnatal period*. (91.25)*
3. *Health care staff in the health facility are oriented and receive in-service refresher training sessions at least once every 12 months on the evidence for and positive impact of the presence of a chosen companion during labour and birth. (84.63)*
4. *Orientation sessions and information (written or pictorial) are available to orient the companion on his or her role in supporting the woman during labour and birth. (83.40)*
Output/process
1. *The proportion of all women who gave birth in the health facility who had a companion of their choice during labour and childbirth*. (91.76)*
2. *The proportion of all companions who were satisfied with the orientation given on their role during labour and childbirth. (75.19)*
Outcome
1. *The proportion of all women who gave birth in the health facility who expressed satisfaction with the health services. (84.84)*

Quality statement 6.2: Every woman receives support to strengthen her capability during childbirth.

Rationale: Every woman should be given emotional support to improve her mental health, give her a positive outlook and improve the overall health outcomes of the mother and baby.

Care at the facility optimizes biological, psychological, social and cultural well-being. Women are encouraged to adopt the position of their choice during labour, to walk around freely during the first stage and to eat and drink enough to ensure adequate nutrition and hydration. Women with complex emotional needs (e.g. previous newborn death, experience of gender-based violence, rape, mental health problems) are identified and supported. Grief support is provided to families if the mother or baby dies.

Quality measures
Input
2. *Health care staff in the labour and childbirth areas of the maternity unit were oriented in non-pharmacological and pharmacological pain relief and received in-service training or sessions at least once in the preceding 12 months*. (87.07)*
3. *The health facility has a written, up-to-date protocol, which is explained to women and their families, to minimize unnecessary interventions, support normal labour and strengthen the woman's capability, so that she feels in control of her childbirth experience. (83.21)*
4. *Health care staff in the labour and childbirth areas of the maternity unit were oriented and received in-service training or refresher sessions at least once in the preceding 12 months to strengthen their interpersonal and cultural competence in providing emotional support. (82.34)*
5. *The health facility has a referral mechanism for women and families with complex emotional needs, and refers them for specialist care. (79.71)*
Output/process
1. *The proportion of all women who gave birth in the health facility who did so in the labour position of their choice. (82.02)*
2. *The proportion of all women undergoing bereavement or an adverse outcome who received additional emotional support from health facility staff. (80.64)*
3. *The proportion of all women who gave birth in the health facility who reported having sufficient food and drink during labour. (80.10)*
4. *The proportion of all women who gave birth in the health facility who were ambulatory during the first stage of labour. (77.30)*
Outcome
1. *The proportion of all women who gave birth in the health facility who expressed satisfaction with the health services*. (84.69)*
2. *The proportion of all women who gave birth in the health facility who would recommend childbirth in that facility*. (84.46)*
3. *The proportion of all women who gave birth in the health facility who reported a positive birth experience. (83.23)*
4. *The proportion of all women who gave birth in the health facility who were satisfied that their choices and preferences were respected. (82.36)*

References used in setting standard 6

Hodnett ED, Gates S, Hofmeyr G, Sakala C. Continuous support for women during childbirth. Cochrane Database Syst Rev 2013;7: CD003766.

International Federation of Gynecology and Obstetrics, International Confederation of Midwives, White Ribbon Alliance, International Pediatric Association, World Health Organization. Mother–baby friendly birthing facilities. Int J Gynaecol Obstet 2015;128:95–99.

National Institute for Health Care Excellence. Using organisational change to enhance the experience of women giving birth by focusing on normalising births. London; 2013 (https://www.nice.org.uk/sharedlearning/using-organisational-change-to-enhance-the-experience-of-women-giving-birth-by-focusing-on-normalising-births).

National Institute for Health Care Excellence. NICE guidelines on routine intrapartum care (CG 190). London; 2014 (http://www.nice.org.uk/guidance/cg190/resources/guidance-intrapartum-care-care-of-healthy-women-and-their-babies-during-childbirth-pdf).

Renfrew MJ. Optimising the contribution of midwifery to preventing stillbirths and improving the overall quality of care: co-ordinated global action needed. Midwifery 2016;36:99–101.

Royal College of Midwives. Maternal emotional wellbeing and infant development, a good practice guide for midwives, London; 2012 (https://www.rcm.org.uk/sites/default/files/Emotional%2. Wellbeing_Guide_WEB.pdf).

Sandall J. Soltani H, Gates S, Shennan, A, Devane, D. Midwife-led continuity models versus other models of care for childbearing women. Cochrane Database Syst Rev 2013;8: CD004667.

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/).

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

Standard 7: For every woman and newborn, competent, motivated staff are consistently available to provide routine care and manage complications.

Quality statement 7.1: Every woman and child has access at all times to at least one skilled birth attendant and support staff for routine care and management of complications.

Rationale: The availability of health care staff around the clock is essential for optimal routine and emergency care of patients and timely management of complications.

A health facility staffing policy is in place, reviewed regularly and updated as necessary, which specifies the number, types and necessary competence of staff to ensure an adequate number and skill mix of health care staff for the volume of work, 24 h a day, 7 days a week. Clinical and nonclinical staff are oriented to their specific roles and responsibilities in the facility or unit to which they are assigned. A staff roster listing duties and the times staff will be on duty is always updated and on display. Written information is available on how to access services, and signs indicate key service areas (e.g. emergency department) and what to do in case of an emergency. Women are triaged to prioritize emergency conditions.

Quality measures
Input
1. *The health facility has skilled birth attendants available at all times, in sufficient numbers to meet the anticipated work load*. (89.50)*
2. *The health facility has a written, up-to-date staffing policy, listing the numbers, types and competence of staff, that is reviewed continuously according to the work load*. (89.05)*
3. *The health facility has a roster that is displayed in all areas, giving the names of staff on duty, the times of their shifts and their specific roles and responsibilities. (86.43)*
4. *The health facility has a written, up-to-date policy on triage and waiting times for emergency and non-emergency consultations and treatment. (86.32)*
5. *The health facility has clear communication channels to reach staff on duty at all times. (82.87)*
Output/process
1. *The proportion of available posts in the health facility that were filled by staff with the necessary competence for the job description to allow the facility to provide 24-h service. (80.72)*
2. *The proportion of staff who have been oriented to their functions, roles and responsibilities in the facility or unit to which they are assigned. (78.79)*
3. *The proportion of women who attended the health facility who reported receiving attention within the appropriate time for their condition as per facility policy on triage and waiting time. (73.08)*
Outcome
1. *The proportion of women and their newborns in the health facility who were attended by a skilled birth attendant (as per the definition) during and after childbirth*. (90.11)*
2. *The proportion of all women who gave birth at the health facility who reported having been informed about danger signs for her and her baby and emergency preparedness. (84.27)*
3. *The proportion of women who attended the health facility who were satisfied with the health care they received. (80.87)*

Quality statement 7.2: The skilled birth attendants and support staff have appropriate competence and skills to meet requirements during labour, childbirth and the early postnatal period.

Rationale: Qualification, training and orientation of staff improve their performance of their roles and responsibilities.

All staff have a job description that lists the necessary competence, roles and responsibilities, supported by the desired qualifications and other requirements. The education, licensure or registration and other credentials required by law or regulation are verified for all health care staff and kept current. There are established programmes for recruitment, retention, professional development and continuing education of all staff.

All staff receive continuing orientation on protocols and responsibilities, supportive supervision and professional development activities, with an annual performance appraisal and recognition of good performance. Effective, efficient case management systems are in place to ensure that patients receive adequate, safe, timely care, and health care staff can demonstrate appropriate competence in providing routine care and managing complications for mothers and newborns.

Quality measures
Input
4. The health facility has a programme for continuing professional development and skills development for all skilled birth attendants and other support staff and conducts regular training. (86.62)*
5. The health facility has standard procedures and plans for recruitment, deployment, motivation (recognition and reward scheme) and retention of all staff. (84.21)*
6. The health facility periodically appraises all staff and has a mechanism for recognizing good performance. (82.76)
7. The health facility has sufficient numbers of educated, competent, licensed, motivated, regulated skilled birth attendants with an appropriate skills mix, working in multidisciplinary teams. (81.83)
8. The health facility provides an enabling, supportive environment for professional staff development, with regular supportive supervision and mentoring. (79.24)
9. The health facility facilitates inter-professional collaborative practice, with clear roles and responsibilities based on the professional scope of practice and care needs during labour, childbirth and the early postnatal period. (75.82)
Output/process
1. The proportion of skilled birth staff at the health facility who received a written job description on deployment to the facility. (85.81)*
2. The proportion of skilled birth attendants at the health facility who received in-service training, a refresher session or mentoring within the past 12 months. (81.80)
3. The number of supervisory visits to support clinical competence and performance improvement (in the past three months). (80.85)
4. The proportion of staff at the health facility who were assessed at least once in the preceding 12 months. (77.54)
5. The number of team meetings held per month to review competence and quality improvement activities. (76.33)
6. The number of interactions per month with professional mentors to ensure clinical competence and improve performance. (75.17)
7. The proportion of all staff at the health facility who were engaged in at least two active quality improvement team meetings and participated in quality improvement activities in the preceding six months. (74.70)
Outcome
1. The proportion of all women who gave birth at the health facility who were satisfied with the care and support from facility staff. (82.51)
2. The proportion of skilled birth attendants and support staff at the health facility whose preceding performance appraisal was satisfactory.
3. The proportion of all staff at the health facility who reported being "highly satisfied" with their job. (76.35)
4. The proportion of all staff at the health facility who could identify and report on at least one clinical improvement activity in which they were personally involved in the past six months. (75.97)
5. The proportion of all staff at the health facility who were actively considering looking for a new job. (64.26)

Quality statement 7.3: The managerial and clinical leadership of every health facility is collectively responsible for creating and implementing appropriate policies and fosters an environment that supports facility staff in continuous quality improvement.

Rationale: Good managerial and clinical leadership improve performance by showing direction and inspiring employees and create an environment of support for staff in undertaking continuous quality improvement.

There is managerial and clinical leadership, collective responsibility, appropriate government policies and procedures and an environment that supports staff in undertaking continuous quality improvement. There is a defined leadership structure and authority, lines of accountability and a defined quality improvement team with resources. Staff collectively develop and implement quality improvement and patient safety programmes and receive support, supervision and mentoring.

A policy and plan are in place to manage financial risks, and the facility undertakes regular audits (maternal and perinatal deaths and near-misses), with recommendations for improving quality. A system is in place for regular review of the data collected and reporting and communication of quality management matters to guide decision-making and monitor performance. Patient care and satisfaction are reviewed regularly, and the status of quality improvement is documented.

Quality measures
Inputs
1. *The health facility has a written, up-to-date plan for improving the quality of care and a patient safety programme*. (88.08)*
2. *The health facility has a written, up-to-date leadership structure, with defined roles and responsibilities and lines of accountability for reporting*. (87.19)*
3. *The health facility has a designated quality improvement team and responsible personnel*. (85.38)*
4. *The health facility has a mechanism for regular collection of information on patient and provider satisfaction. (84.98)*
5. *The health facility holds at least one monthly meeting to review data, monitor quality improvement performance, make recommendations to address any identified problems, honour those who have performed well and encourage staff who are struggling to improve. (83.19)*
6. *All standard governing procedures (policies and protocols) are in place and accessible to all relevant staff. (82.61)*
7. *The proportion of all health facility leaders who were trained in quality improvement and leading change (use of information, enabling behaviour, continuous learning). (81.07)*
8. *The health facility holds at least two annual meetings with stakeholders (e.g. the community, service users, partners) to review its performance, identify problems and make recommendations for joint actions to improve quality.*
9. *The proportion of all health facility leaders who were trained in leadership and management skills. (80.89)*
10. *A policy is in place for staff to provide feedback to the facility management on quality improvement and their performance. (80.82)*

OutputProcess
1. Health facility leaders communicated the performance of the facility through established mechanisms for monitoring (e.g. a dashboard of key metrics) to all relevant staff. (79.75)
2. The proportion of monthly meetings on the quality of care that were actually held in the preceding 12 months. (78.69)
Outcome
1. The proportion of all women who gave birth at the health facility who were satisfied with the care and support from facility staff. (83.95)
2. Evidence for improved performance of the system (according to the facility dashboard). (82.50)

References used in setting standard 7

Gülmezoglu MA, Lawrie TA. Impact of training on emergency resuscitation skills: impact on Millennium Development Goals (MDGs) 4 and 5. Best Pract Res Clin Obstet Gynaecol 2015); doi: 10.1016/j.bpobgyn.2015.03.018.

ten Hoope-Bender P, de Bernis L, Campbell J, Downe S, Fauveau V, Fogstad H, et al. Improvement of maternal and newborn health through midwifery. Lancet 2014;384:1226–1235.

International Confederation of Midwives. Essential competencies for basic midwifery practice. The Hague; 2011 (http://www.internationalmidwives.org).

Renfrew MJ, McFadden A, Bastos MH, Campbell J, Channon AA, Cheung NF, et al. Midwifery and quality care: findings from a new evidence-informed framework for maternal and newborn care. Lancet 2014; 384:1129–1145.

The Lancet. Midwifery. An executive summary for The Lancet's series. London; 2014 (http://www.thelancet.com/pb/assets/raw/Lancet/stories/series/midwifery/midwifery_exec_summ.pdf).

United Nations Population Fund. The state of the world's midwifery: delivering health, saving lives. New York; 2011.

Whittaker S, Shaw C, Spieker N, Linegar A. Quality standards for healthcare establishments in South Africa. In: Padarath A, English R, editors. South African Health Review. Pretoria: National Department of Health; 2011:59–68 (http://www.cohsasa.co.za/sites/cohsasa.co.za/files/publication_pdfs/ chap_5_quality_standards_pgs_59-_68_0.pdf).

World Health Organization. Making pregnancy safer: the critical role of the skilled attendant – a joint statement by WHO, ICM and FIGO. Geneva; 2004 (http://www.who.int/maternal_child_adolescent/documents/9241591692/en/).

World Health Organization. World health report 2005. Make every mother and child count. Geneva; 2005 (http://www.who.int/whr/2005/whr2005_en.pdf).

World Health Organization. World health report 2006. Working together for health. Geneva; 2006 (http://www.who.int/whr/2006/en/).

World Health Organization. District planning tool for maternal and newborn health strategy implementation: a practical tool for strengthening health management system. Geneva; 2011.

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

World Health Organization Regional Office for Europe. Hospital care for mothers and newborn babies: quality assessment and improvement tool. Copenhagen; 2014 (http://www.euro.who.int/en/health-topics/Life-stages/maternal-and-newborn-health/publications/2014/hospital-care-for-mothers-and-newborn-babies-quality-assessment-andimprovement-tool.pdf?ua=1).

Standard 8: The health facility has an appropriate physical environment, with adequate water, sanitation and energy supplies, medicines, supplies and equipment for routine maternal and newborn care and management of complications.

Quality statement 8.1: Water, energy, sanitation, hand hygiene and waste disposal facilities are functioning, reliable, safe and sufficient for the needs of staff, women and their families.

Rationale: A safe, clean, hygienic environment with continuous supplies of clean water and electricity, good sanitation and safe waste disposal are the basis of appropriate care of patients, for carrying out all procedures and interventions and for controlling infection.

A consistent supply of safe water is available on site at all times for drinking, cleaning and hand-washing in all clinical areas, including labour, childbirth and newborn areas and operating theatres. Sanitation services are available, clearly separated by gender and accessible to all women, their families and staff. The health facility and its ancillary facilities (e.g. staff quarters) have reliable access to a source of electricity (e.g. solar, generator or grid) at all times. A mechanism for the segregation, collection, transport, treatment and safe disposal of waste is in place. The facility has a budget and protocol for the operation and maintenance of energy, safe water and sanitation services.

Quality measures
Input
1. *The health facility has a functioning source of safe water located on the premises that is adequate to meet all demands for drinking, personal hygiene, medical interventions, cleaning, laundry and cooking for use by staff, women, newborns and their families*. (90.90)*
2. *The health facility has leak-proof, covered, labelled waste bins and impermeable sharps containers available in every treatment area, to allow segregation of waste into four categories: sharps, non-sharps infectious waste, general non-infectious waste (e.g. food, packaging) and anatomical waste (e.g. placenta)*. (90.88)*
3. *The health facility has at least one functioning hand hygiene station per 10 beds, with soap and water or alcohol-based hand rubs, in all wards*. (89.53)*
4. *The health facility has energy infrastructure (e.g. solar, generator, grid) that can meet all the electricity demands of the facility and associated infrastructure at all times, with a back-up power source. (89.41)*
5. *The health facility has written, up-to-date protocols and awareness-raising materials (posters) on cleaning and disinfection, hand hygiene, operating and maintaining water, sanitation and hygiene facilities and safe waste management; these are posted in the areas in which the activities are conducted. (88.05)*
6. *The health facility has sanitation facilities on premises that are usable, appropriately illuminated at night, accessible to people with limited mobility and separated by gender for staff and patients; they include at least one toilet that meets the needs for menstrual hygiene management, with hand-washing stations and soap and water (at least 1 latrine per 20 users for inpatient settings). (87.46)*
7. *The health facility has sufficient trained, competent staff on site when needed, with clear descriptions of their responsibilities for cleaning, operating and maintaining water, sanitation, hygiene and health care waste facilities. (86.44)*
8. *The health facility has sufficient funds for rehabilitation, improvement and continuous operation and maintenance of water, sanitation, hygiene and health care waste services. (83.13)*

9. *The heath facility has a fuel management plan and a local buffer stock, supported by an adequate budget for all the fuel needs for vehicles, cooking and heating, as relevant and as required, at all times. (83.02)*
10. *The health facility has a preventive risk plan for managing and improving water, sanitation and hygiene services, including for infection prevention and control. (81.34)*
11. *The heath facility has an energy management plan supported by an adequate budget, maintained by appropriately trained staff and regulated by a competent authority. (77.26)*
Outcome
1. *The proportion of women and their families who attended the health facility who were satisfied with the water, sanitation and energy services and would recommend the health facility to friends and family. (76.75)*
2. *The proportion of all health care staff at the health facility who were satisfied with the water, sanitation and energy services and considered that these services contribute positively to providing high-quality care. (76.23)*
3. *The proportion of women and their families who attended the health facility who were satisfied with the power and lighting source and would recommend the health facility to friends and family. (74.20)*

Quality statement 8.2: Areas for labour, childbirth and postnatal care are designed, organized and maintained so that every woman and newborn can be cared for according to their needs in private, to facilitate the continuity of care.

Rationale: The infrastructure of the health facility should be adequate and well maintained, with basic services, good ventilation, a power source and hygiene.

The general infrastructure is organized into dedicated service areas close to the labour and childbirth areas or rooms (reception, triage and assessment area, immediate postnatal high-care area, rooming-in postnatal wards or rooms, newborn corners, sick newborn ward, kangaroo mother care ward, neonatal intensive care unit, theatre for performing caesarean sections) and adequately equipped for effective, consistent provision of optimal care. The service areas are clean, well ventilated and illuminated, particularly at night, and conducive to privacy (e.g. curtain, wall); adequate, safe, clean, well-maintained basic facilities (beds, mattresses, bed linen, washing and bathing facilities, toilet) are in place.

Quality measures
Input
1. *The health facility has a dedicated area in the labour and childbirth area for resuscitation of newborns, which is adequately equipped with a table or resuscitaire, radiant warmer, light and appropriate resuscitation equipment and supplies*. (94.67)*
2. *The health facility has a labour ward and an adequate number of birthing rooms or areas for the estimated number of births in the service area*. (90.12)*
3. *The health facility has clean, appropriately illuminated, well-ventilated labour, childbirth and neonatal areas and surroundings that allow for privacy and are adequately equipped, regularly cleaned and maintained*. (89.52)*
4. *The health facility practises and enables rooming-in for all women to allow mothers and babies to remain together 24 h a day. (86.57)*
5. *The health facility has a labour and childbirth area or room with a functional, clean and accessible bathroom or shower room and toilet for use only by women in labour. (88.94)*

6. *A facility offering surgical services has an adequately equipped operating theatre located close to and easily accessible from the labour and childbirth areas. (88.84)*
7. *The facility has a dedicated recovery room or area for care of women with complications. (86.54)*
8. *The health facility has a dedicated ward for admitting sick and unstable small babies. (86.37)*
Output/process
1. *The proportion of all pregnant women who attended the health facility who reported that it has a clean physical environment conducive for childbirth. (82.65)*
Outcome
1. *The proportion of all women who gave birth in the health facility who were satisfied with the environment of the labour and childbirth area, including the cleanliness, proximity to a toilet, general lighting, level of crowding and privacy. (81.81)*

Quality statement 8.3: Adequate stocks of medicines, supplies and equipment are available for routine care and management of complications.

Rationale: Available, adequate essential medicines, equipment and other supplies are critical for provision of optimal quality care.

There is a list of essential medicines and supplies (e.g. laboratory reagents) and their uses and orderly, clean, secure storage for these items, with an efficient system to avoid stock-outs. All suitable medicines are available in the clinical areas (e.g. magnesium sulfate in the labour and childbirth areas). Essential equipment is available in the right places, at all times, with a system for regular maintenance and guidelines for appropriate use of the equipment. Laboratory tests are available (e.g. haemoglobin, blood group, urine protein) for routine use and management of complications. Blood is available for transfusion services, and an uninterrupted supply of oxygen is available in the labour and neonatal areas.

Quality measures
Input
1. *The health facility has supplies of antihypertensive agents and magnesium sulfate in sufficient quantities, available at all times, in antenatal, labour, childbirth and postnatal areas for the management of women with pre-eclampsia*. (92.81)*
2. *The health facility has uterotonic drugs and supplies for intravenous infusion (syringes, needles, infusion sets, intravenous fluid solutions and blood) available in sufficient quantities at all times in the childbirth and postnatal care areas for the management of women with postpartum haemorrhage*. (92.31)*
3. *The health facility has supplies of antenatal corticosteroids (dexamethasone or betamethasone), antibiotics and magnesium sulfate available in sufficient quantities at all times to manage preterm births*. (92.15)*
4. *The health facility has functioning essential equipment and supplies for the detection of complications (e.g. thermometers, sphygmomanometers, foetal stethoscopes, urine dipsticks, pulse oximeter) in sufficient quantities at all times in the labour and childbirth areas of the maternity unit. (91.63)*
5. *The health facility has supplies of first- and second-line injectable antibiotics and other essential medicines available at all times for the management of women and newborns with, or at risk for, infections during labour, childbirth and the early postnatal period. (91.48)*

6. *The health facility has essential laboratory supplies and tests (blood glucose, haemoglobin or packed cell volume, blood group and cross-matching, bilirubin, urine protein, full blood count, blood culture, electrolytes, renal and liver function tests, syphilis, HIV and malaria rapid diagnostic tests) to support the management of women and newborns. (91.12)*
7. *The health facility has essential supplies and functioning equipment (including childbirth beds, vacuum, forceps, incubators, weighing machine, sterile gloves) available in sufficient quantities at all times in the labour and childbirth areas. (90.88)*
8. *The health facility has supplies and functioning equipment for the emergency care and resuscitation of women (well-stocked resuscitation trolley, suction device, pulse oximeter, airways, laryngoscope, endotracheal tubes, adult bag valve masks, infusion sets, intravenous fluids) available in sufficient quantities all times in areas designated for labour, childbirth and postnatal care. (89.70)*
9. *The health facility has a safe, uninterrupted oxygen source and delivery supplies (nasal prongs, catheters and masks), including nasal continuous positive airway pressure, available at all times in labour, childbirth and neonatal areas and the operating theatre (when available). (89.37)*
10. *The health facility has supplies and functioning equipment for emergency care and resuscitation of newborns (resuscitation table, well-stocked neonatal resuscitation trolley, warmer, suction device, pulse oximeter, laryngoscope) available all times in areas designated for labour, childbirth and neonatal care. (89.02)*
11. *The health facility has an on-site pharmacy and a medicine and supplies stock management system managed by a trained pharmacist or dispenser. (88.44)*
12. *The health facility has a dedicated budget for essential medicines, equipment (and its maintenance) and medical supplies for maternal and newborn care. (84.94)*
13. *The health facility has a functioning diagnostic ultrasound machine and trained health staff who can conduct a basic obstetric ultrasound examination to determine the number of fetuses present, gestational age, prenatal diagnosis of foetal anomalies or early diagnosis of placental insufficiency. (84.83)*

Output/process

1. *Availability of essential life-saving medicines (oxytocin, magnesium sulfate, dexamethasone, vitamin K, injectable and oral amoxicillin, benzyl penicillin, gentamicin, ceftriaxone, metronidazole, antimalarial drugs, antiretroviral drugs and vaccines against tuberculosis, hepatitis B, poliomyelitis) in the past three months. (88.84)*
2. *The proportion of all women who had severe pre-eclampsia or eclampsia in the health facility who did not receive the full dose of magnesium sulfate because of a stock-out. (79.38)*
3. *The proportion of all women who gave birth in the health facility who purchased gloves and other necessary items. (70.62)*

Outcome

1. *The proportion of all nulliparous women with a singleton cephalic foetus at ≥ 37 weeks of gestation who underwent caesarean section during spontaneous labour (Robson group 1). (82.54)*
2. *The proportion of unmet need for caesarean section as a result of lack of supplies or staff trained to conduct caesarean section. (74.81)*

References used in setting standard 8

Chartier Y, Emmanuel J, Pieper U, Prüss A, Rushbrook P, Stringer R, et al. Safe management of wastes from health-care activities. Geneva: World Health Organization; 2014 (http://www.who.int/water_sanitation_health/publications/wastemanag/en/).

Water Supply and Sanitation Collaborative Council. WASH targets and indicators post-2015: recommendations from international consultations. Geneva; 2014 (http://www.wssinfo.org/fileadmin/user_upload/resources/post-2015-WASH-targets-factsheet-12pp.pdf).

World Health Organization. Essential elements of obstetric care at first referral level. Geneva; 1991 (http://apps.who.int/iris/bitstream/10665/41740/1/9241544244.pdf).

World Health Organization. Essential environmental health standards in health care. Geneva; 2008 (http://www.who.int/water_sanitation_health/hygiene/settings/ehs_health_care.pdf.pdf).

World Health Organization. Systems thinking for health systems strengthening. Geneva; 2009 (http://www.who.int/alliance-hpsr/resources/9789241563895/en/).

World Health Organization. Evaluating household water treatment options: health based targets and microbiological performance specifications. Geneva; 2011 (http://www.who.int/water_sanitation_health/publications/household_water/en/).

World Health Organization. Service availability and readiness assessment. Geneva; 2014 (http://apps.who.int/iris/bitstream/10665/149025/1/WHO_HIS_HSI_2014.5_eng.pdf).

World Health Organization, UNICEF. Progress on drinking-water and sanitation: Joint Monitoring Programme update 2014. Geneva; 2014 (http://www.who.int/water_sanitation_health/publications/jmp-report-2014/en/).

World Health Organization, UNICEF. Water, sanitation and hygiene in health care facilities. Status in low- and middle-income countries and way forward. Geneva; 2015 (http://apps.who.int/iris/bitstream/10665/154588/1/9789241508476_eng.pdf).

6. Operationalization

Evidence-based, effective, respectful, high-quality care and the elements of health systems that support optimal care for women and newborns described in the WHO quality of care framework are to be operationalized by applying the standards of care and quality statements. The standards should be adapted to the context of each country to ensure detailed processes of evidence-based clinical care (standard 1), information systems (2), referral systems (3) experience of care (4–6), an enabled, motivated work force (7) and adequate resources (8). The standards are accompanied by evidence-based quality statements, which include measures of inputs, outputs and outcomes. These will improve quality and ensure high-quality care for mothers and newborns. Ideas for implementing the standards should be based on the county's experience and on adaptive learning within and between countries.

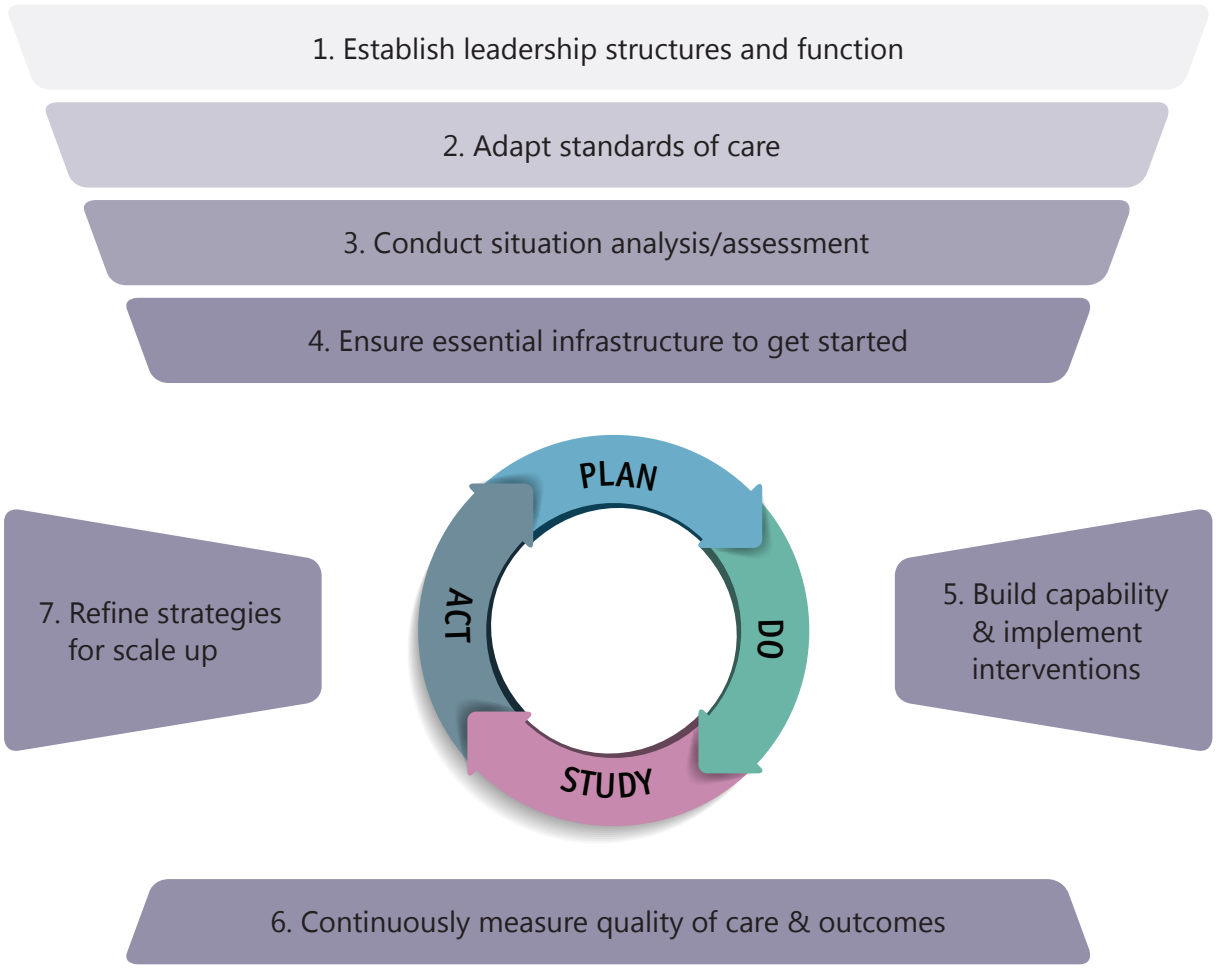
6.1 Dissemination

The framework, standards of care and quality measures are published in a technical reference document, which can be incorporated into strategic documents at country level. They are part of a package of normative tools for supporting improvement of the quality of maternal and newborn care. They will be translated into Arabic, French, Russian and Spanish in collaboration with the WHO regional offices, for wider circulation. The publication will be available for downloading from the websites of WHO headquarters, the regional and country offices, WHO collaborating centres and partner agencies involved in maternal and newborn quality of care. Hard copies of the publication will be disseminated to all WHO country offices and will be available for sale from WHO bookshop and its distribution network to all medical libraries and individuals.

6.2 Implementation approach

To increase access to and use of the standards of care and quality measures, orientation and capacity-building workshops will be conducted in all the WHO regions in collaboration with the regional offices. Targeted support will be provided to countries, and a learning platform will be created for sharing best practices within and among countries by an innovative approach (Fig. 3), which is an adaptation of the "Plan Do Study Act" model (*22*) based on synthesis of evidence, best practice and experience. It provides a plan for continuous quality improvement by setting aims and building teams to achieve desired outcomes through use of change packages (individual, multi-faceted or complex interventions, depending on the context and needs), capacity-building and other strategies to maximize the chances for sustaining implementation.

Fig. 3. Implementation approach



In addition, step-by-step guidance will be provided on establishing a system for improving the quality of maternal and newborn health within the national quality of care strategy and operational plan. The guidance will be accompanied by the necessary tools and targeted capacity-building for strong country leadership.

7. Monitoring and evaluation

Implementation of these standards will be accompanied by an internal and external monitoring and evaluation plan. Internal monitoring and evaluation will be integrated into the guidance and linked to the output of the learning platform. External monitoring and evaluation will be conducted for rigorous evaluation of implementation by various methods, sources and study designs to ensure effectiveness (pragmatic and quasi-experimental designs), process (quantitative and qualitative designs) and economic efficiency. The results of both the internal and external monitoring and evaluations will be used to improve the implementation guidance and learning platform.

8. Updating the standards

The best practices reported on the learning platform and the evaluations of implementation will be collated and used to review and update the standards of care and quality measures as appropriate.

References

1. Raven JH, Tolhurst RJ, Tang S, van den Broek N. What is quality in maternal and neonatal health care? Midwifery 2012;28:e676–e683.
2. Tuncalp Ö, Were WM, MacLennan C, Oladapo OT, Gulmezoglu AM, Bahl R, et al, Quality of care for pregnant women and newborns – the WHO vision. Br J Obstet Gynaecol 2015;122:1045–1049.
3. World Health Organization. Strategies toward ending preventable maternal mortality. Geneva; 2015 (http://who.int/reproductivehealth/topics/maternal_perinatal/epmm/en/, accessed 22 March 2015).
4. World Health Organization. Every newborn: an action plan to end preventable deaths. Geneva; 2014 (www.who.int/maternal_child_adolescent/topics/newborn/enap_consultation/en/, accessed 19 January 2015).
5. Say L, Chou D, Gemmill A, Tuncalp O, Moller AB, Daniels J, et al. Global causes of maternal death: a WHO systematic analysis. Lancet Global Health 2014;2: e323–e333.
6. WHO Global Health Observatory. 2014 (http://apps.who.int/gho/data/?theme=main, accessed 12 January 2015).
7. Bhutta ZA, Das JK, Bahl R, Lawn JE, Salam RA, Paul VK, et al. Can available interventions end preventable deaths in mothers, newborn babies, and stillbirths, and at what cost? Lancet 2014; 384:347–370.
8. United Nations. Global strategy for women's and children's health. New York; 2010.
9. Campbell OM, Graham WJ. Lancet Maternal Survival Series steering group. Strategies for reducing maternal mortality: getting on with what works. Lancet 2006;368:1284–1299.
10. Global Health Group. Where women go to deliver: overview of the project and review of preliminary findings. San Francisco, California: University of California at San Francisco, Global Health Sciences; 2014.
11. World Health Organization. WHO multicountry survey on maternal and newborn health 2010–2012. Geneva; 2011 (http://www.who.int/reproductivehealth/topics/maternal_perinatal/nearmiss/en/).
12. Bohren MA, Hunter EC, Munthe-Kaas HM, Souza JP, Vogel JP, Gulmezoglu AM. Facilitators and barriers to facility-based delivery in low- and middle-income countries: a qualitative evidence synthesis. Reprod Health 2014;11:71.
13. World Health Organization. The second report of the independent expert review group (iERG) in information and accountability for women's and children's health. Geneva; 2013.
14. Wilson L, Goldsmith P. Quality and its measurements. In: Wilson L, Goldsmith P, Editors. Quality management in health care. Sydney: McGraw-Hill; 1995;229–258.

15. Roemer MI, Montoya-Aguilar C. Quality assessment and assurance in primary health-care. Geneva: World Health Organization; 1988.
16. Institute of Medicine. A strategy for quality assurance. Washington DC: National Academy Press; 1990.
17. World Health Organization. Quality of care: a process for making strategic choices in health systems. Geneva; 2006.
18. Donabedian A. The quality of care. How can it be assessed? JAMA 1988; 260:1743–1748.
19. Maxwell RJ. Dimensions of quality revisited: from thought to action. Qual Health Care 1992; 1:171–177.
20. Ovretveit J, Bate P, Cleary P, Cretin S, Gustafson D, McInnes K, et al. Health service quality. An introduction to quality methods for health services. Oxford: Blackwell Scientific Publications; 1992.
21. Hulton L, Matthews Z, Stones RW. A framework for the evaluation of quality of care in maternity services. Southampton: University of Southampton; 2000.
22. International Organization for Standardization. Geneva (http://www.iso.org/iso/home/standards.htm accessed 24 June 2016)
23. The Joint Commission. Oakbrook Terrace, Illinois http://www.jointcommission.org/standards_information/jcfaq.aspx accessed 24 June 2016.
24. The Council for Health Service Accreditation of Southern Africa (COHSASA) accreditation standards. Pretoria (http://www.cohsasa.co.za/ accessed 24 June 2016).
25. National Institute for Health and Care Excellence. London (https://www.nice.org.uk/standards-and-indicators accessed 24 June 2016).
26. Pharmaccess group. Safe care basic healthcare standards. The Hague (http://www.safe-care.org/index.php?page=safecare-standards accessed 24 June 2016).
27. World Health Organization. Standards for maternal and neonatal care. Group 1: General standards of care for healthy pregnancy and childbirth. Geneva; 2007 (http://www.who.int/reproductivehealth/publications/maternal_perinatal_health/a91272/en/)

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